



in this place: cumulus association biannual international conference

Conference proceedings
Wednesday 27 April - Sunday 1 May 2016

Hosted by the School of Art & Design
Nottingham Trent University
Nottingham, UK



**In this Place: Cumulus Association
Biannual International Conference**

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Wednesday 27 April - Sunday 1 May 2016

Edited by Professor Duncan Higgins and Professor Venu Dhupa

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introduction from nottingham trent university

IN THIS PLACE



Professor Duncan Higgins, Conference Chair,
Nottingham Trent University



Julie Pinches, Dean, School of Art & Design,
Nottingham Trent University

On behalf of all the staff and students at Nottingham Trent University (NTU), our conference partners in the city of Nottingham and Cumulus we want to take this opportunity to thank all those who took part in the conference 'In this Place' and for making it such an imaginative and thought provoking event. In particular we would like to take this opportunity to thank Tracey Newton, Sarah Connor, Sarah Dossor and Venu Dhupa from NTU for their creative input, making the conference and this subsequent publication such a success. Our sincere thanks to them.

So to the title and questions for the conference and this publication

'In this Place'

■ What are the questions, choices and conversations we need to have as we create the future we are becoming?

There is much commentary that suggests that the people, actions and objects that inhabit a place, pass through it or the choices we make in it, define a place. Hence a place is not fixed by any one definition; it is under constant negotiation and must also be seen in relation to the situation of conflict in both a positive and negative sense. Survival and conflict in places is such a reality today and affects so many people, their choices, actions, voices and subsequently the precarious futures of places. What are the questions, choices and conversations we need to have as we create the future we are becoming?

The conference and publication asks how a shift is taking place from art and design being seen or defined as a 'service' and is increasingly now embracing socially engaged practices. This is critically framed in response to an understanding of our ability to produce and consume images and objects via a 'market economy', or to be more accurate the product of neoliberalism. There has been a lot of critical debate regarding a situation of 'exhaustion in capital'.....
...we produce more than we can consume and the by-product of the

production has led to unimaginable impact on our environment, coupled with the impact of social and material displacement. This of course is not design or arts fault, yet here we are with potential choices as we create and form a future creative culture. For example, in the UK we are now responding to the very



pressing question facing our future relationship and membership with the EU and the impact this creates.

With some of these things in mind, 'In this Place' raises an essential platform for us to discuss, inform, share and direct critical questions that can or should be asked. It has been said many times that in a school of art and design there are distinct

differences between art and design – practically, emotionally, conceptually and employability. It goes something like this... ..Design seems to want to solve problems, create solutions and answer questions. Art seems to want to ask questions, create problems and unfix solutions that seem fixed. Of course it is not that simplistic and perhaps now these divisions or territorial disputes are no longer of any use. Hence, the conference and publication brings together a wide range of artist, designers, academics, professionals and students.

'In this Place' sets out a desire and ambition to listen to others and be heard by others, as the essential route of knowledge exchange and intercultural dialogue. That this is a 'doing thing' rather than an 'owning thing', where uncertainty and not knowing become creative principles of discovery. Consequently, it is the creation of new opportunities to see and to listen beyond what is known, that has the potential to lead to the creation of new knowledge both personally and culturally. For NTU to be a place for creative knowledge exchange is our firm belief and understanding of the fundamental role of universities and art schools to host, facilitate, frame and enable exchange.

opening proceedings



Luisa Maria Virginia Collina

President of Cumulus
International Association
of Universities and Colleges
of Art, Design and Media /
Dean of the School of Design –
Politecnico di Milano



Welcome from Cumulus. The title of the Nottingham Trent Cumulus Conference “In this Place” has a profound meaning that is particularly important in our contemporary world.

In fact, to be a designer and educator nowadays it's essential...

- to be curious and willing to discover places, stories, traditions;
- to have broad and open views but also to develop the ability to enter into specific realities and understand the values, the identity and the spirit of each single one;
- to be sensitive to differences and to the mix of elements that makes a site specific and unique;
- to be interested in the cultural and social dimensions of our environments and their ongoing evolutions, as well as their physical aspects.

However, the most important point is that terms like “place” and “placemaking” focus less on the space and its artifacts, and more on the people. On the individuals and communities that live and shape these environments, who contribute to their meanings and identities, and who ultimately turn them into places.

Places resonate with the people who interact within them, impacting on their behaviors and their emotions; and in turn, places develop, thanks to the positive action and attitude towards them of the communities and the individuals who live them, and so on in a virtuous circle that significantly contributes to the quality of public spaces.

Places are also linked to democracy as public space becomes an area for meeting, for eating, for playing and running.... but also for civil engagement and for free, individual expression, for political debates and for protests.

We can all recognise that preserving and strengthening democracy is the most important task we have to face nowadays. It needs the continuous energy of everybody, individuals and communities, institutions and NGO's, schools and universities.

We are aware of the arrival of about 1 million migrants in Europe in 2015 and similar (though lower) figures are expected for 2016. A higher number of potential migrants are not even able to escape, and have to stay under perilous conditions in their home country. We see horrific images of terror all over the world, in big cities as well as in small villages, attacking children, young people, tourists and the elderly, using fragile individuals as lethal weapons against innocent people. We read about thousands of academics who have been dismissed for political reasons, and so the list could go on.

However, even in the face of such horrendous contemporary conditions, being designers and educators means being optimistic. It means being committed to conceiving better futures – different possible, positive futures, futures that are able to improve the quality of our lives in a sustainable way.

That's the reason why the Cumulus association is so important: thanks to its wide, deep roots worldwide it injects positive vitality into our daily lives; a multitude of possible, appealing scenarios that may be able to turn our world into a place in which we like to live.

Thank you to Nottingham Trent University for hosting Cumulus Working Groups on 27 April, our ongoing Cumulus Professional Sessions and our General Assembly.



Kathy McCardle

CEO of Nottingham's
Creative Quarter



Launched in 2013, The Creative Quarter (CQ) is Nottingham's flagship project for economic growth, enterprise and entrepreneurial spirit.

From its history at the centre of the lace-making industry to Ibuprofen being discovered in the buildings that are now home to BioCity, the UK's largest bio-science incubation centre. The businesses in the Creative Quarter are now drawing on that history to reinvent creative enterprise, innovation and manufacturing for the 21st Century. Kathy took us through the creative history of the area and gave vivid examples of the many initiatives, businesses and creative individuals working there today. She gave a warm welcome to all the delegates and stayed to share her experiences informally after her presentation.





Dr Daniel Glaser

Director, Science Gallery,
London

In his presentation Dr Daniel Glaser discussed the design challenges inherent in constructing Science Gallery London (SGL), a new space where art and science collide, aimed at 15-25 year olds, scheduled to open in 2018 opposite the Shard in London Bridge. The gallery is part of King's College London.

Interdisciplinary conversations are at the heart of much scientific progress but the architecture needed to support them is complicated. Particularly at the intersection of art and science there is a need to allow radically different kinds of expertise to speak to each other on equal terms subverting a contemporary hierarchy that privileges scientific and technical knowledge above all others. Once space has been opened for these conversations between experts from different domains this can be extended to allow young people and other non-dominant groups to be active participants in the creation, interrogation and framing of new work. Daniel said, "In our pre-opening programming at SGL we have actively engaged our audience through an open curatorial model and by commissioning local young people to document all of our work using video and social networks. Our building, which takes over from a McDonalds restaurant tries to reproduce the accessibility which a fast-food restaurant represents by opening itself and hence the whole university to participants from outside. All our programming is driven by themes which are chosen by a

future thinkers group. Typically a topic is identified 18 months to two years ahead and immediately we begin to engage with local young people, artists, scientists and through an open call. This allows us to commission work according to a curatorial agenda that is set by the audience from the beginning. Our 2016 season, MOUTHY, includes kissing, tongues, teeth and spit as our early research with schoolchildren suggested that this would be an interesting set of topics.

For example, through the open call we commissioned a work called Spit Crystal by artist Inés Cámara Leret who has been making crystals out of saliva.

Through the commission she began working with an x-ray crystallographer from King's to analyse and synthesise new crystal forms illustrating how this collaborative approach can generate work across disciplines. As a final note, the groundbreaking event for the building of Science Gallery London consisted of all the participants spitting into a communal bucket to create a new communal crystal. Art and science collide."



'MOUTHY' launch at The Orifice, Science Gallery London



Science Gallery London ground breaking event at Boland House ©Richard Eaton



UK Pavilion, Milan Expo 2015, Italy

Wolfgang Buttress

Artist accompanied by
Martin Bencsik, Physicist, NTU
Deirdre Bencsik, Cellist



Wolfgang Buttress graduated in Fine Art from Nottingham Trent University (1987). It is fundamental to his practice that artworks engage with their context and landscape. Increasingly Buttress has drawn inspiration from nature, collaborating with experts to explore and interpret scientific discoveries.

His artwork *Una*, Canberra, Australia (2013) connects the star mapping research of astrophysicist Dr Daniel Bayliss of the Australian National University (ANU) with a sculpture that captures a microcosm of our night sky inside a 4m diameter sphere. This research was also used for *Lucent* (2015) an installation in the iconic John Hancock Centre in Chicago, USA. His most acclaimed work to date is the UK Pavilion, Milan Expo 2015, which has won over twenty awards including the BIE's Gold Award for Architecture and Landscape and the Italian Association of Architects "Best Pavilion" Milan Expo 2015. The sculptural centerpiece of the UK Pavilion, *The Hive* is now installed at the Royal Botanic Gardens Kew, London.

The Hive (top left), highlights the decline of the world's bee populations. Bees are very sensitive to their environment and can be seen as a barometer for the health of the earth. Pollination is an essential process, underwriting at least a third of our food production. Yet the honeybee is in crisis. We have witnessed massive declines in global bee populations resulting from a perfect storm of pesticide use, disease and loss of habitat. *The Hive* represents the intrinsic and important relationship between bee and human bringing together art, science, sound and landscape through an immersive and multi-sensory experience.

The Hive is an abstracted analogue of a honeycomb. A rotational twist in

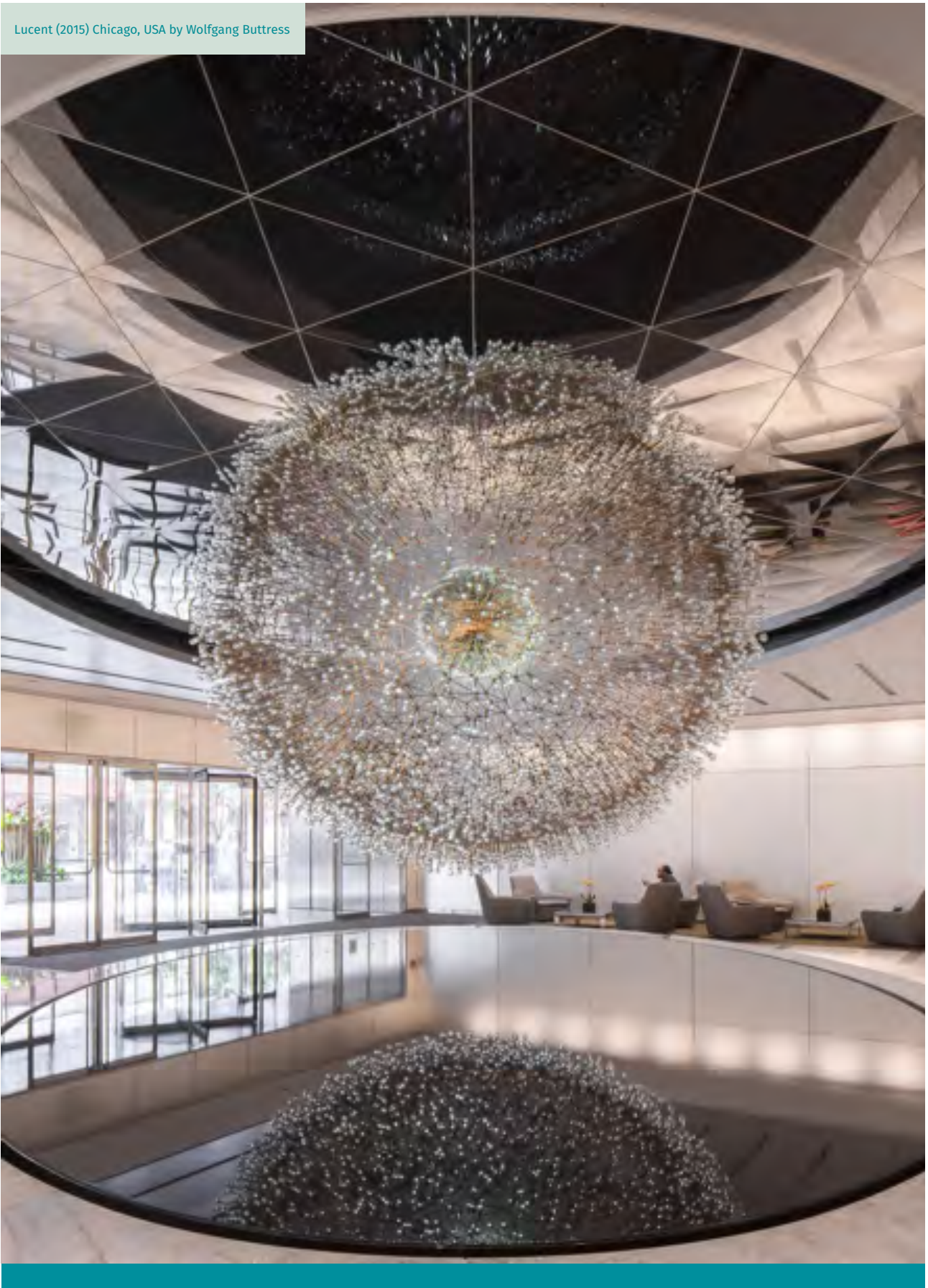
the structure introduces movement, suggestive of a swarm. The form is a 14m cube raised-up on columns, appearing almost to hover above the meadow. A spherical void hollowed from the centre, allows visitors to enter. Walking beneath the sculpture, visitors may peer up through the glass floor into the interior.

Wolfgang collaborated with Dr Martin Bencsik, a physicist based in the university's School of Science and Technology, who uses accelerometers – devices sensitive to minute vibrations – to detect and translate vibrations caused by bees during their activities and as they communicate with one another. Accelerometers (vibration sensors) are used to measure the activity of a real bee colony living at Kew, feeding live signals to 1000 LED luminaires which line the interior of the *Hive*. Algorithms are used to convert these vibrational signals into lighting effects, allowing the *Hive* to convey a visual representation of the state of the colony. This visual experience is complemented by a soundscape based upon pre-recorded bee sounds and harmonious stems crafted by an ensemble of musicians. *The Hive* acts as a medium or interface, conveying the activity of bees directly to the visitor at that point in time. Each instance is unique and changing, no two moments are the same.

Wolfgang is currently working on new sculptures in Taiwan, United States of America, United Kingdom and Turkey.

www.wolfgangbuttress.com

Lucent (2015) Chicago, USA by Wolfgang Buttress





John Mathers

CEO Design Council, UK
and Vice President of BEDA



BEDA The Bureau of European
Design Associations

John Mathers gave an update on the work of the Industry and Innovation Working Group. They held a working session with BEDA (The Bureau of European Design Associations) exploring the implications of a Working Paper provocation prepared by BEDA, led by Sam Bucolo of Cumulus and John Mathers, Vice President of BEDA

The aim of the work is to better understand and shape the role of design education to match the future demand of industry to innovative within a rapidly changing global economic environment.

- What will be the emerging design education content to enable industry to address structural economic shifts and remain globally competitive?
- What is the ideal balance between design, science, art and business education to address issues relating to industry and innovation
- What are the emerging industry engagement frameworks to enable design capability to be embedded within firms to enhance innovation
- What are the education challenges to prepare design graduates to operate within this context?
- What exemplars projects exist and what forums should these be shared in?
- How can this group provide input to influence regional and global policy?

The BEDA Discussion paper was prepared in 2015 and shared with the Cumulus partnership team in Milan. The working session explored and debated the key themes from the paper and some very good early themes and actions were agreed and presented in a separate Conference session by John Mathers.

Essentially the working session saw the fundamental challenge being that the employers of young talent, including BEDA's members, should be able to expect students leaving design schools today to meet their needs in the workplace.

Clearly there was a huge interest in the subject with over eighty attendees and a real sense of urgency around the topic...

...It's happening, how do we keep up?

The workshop also agreed the need for a common vision which can be translated contextually and regionally.

Some very early themes were apparent – the need to re-frame – we need to be asking the question “What can design do for you? What do you need it to do?”

We also said we should be re-thinking current models – how can we engage with industry/experts in different ways/different mix of approaches.

But we also need to be confident about our strengths – what can Universities do that Industry cannot?

Finally some actions were agreed.

- Firstly we need to be developing a model for Industry to invest in Innovation which doesn't just lead to a 'funding' debate.
- Secondly we need to share stories and case studies around a common format.



The Cumulus Student Ambassador Program is a special student award and merit-based initiative of the Cumulus International Association of Art, Design and Media that recognises exceptional student leaders from the universities and institutions hosting the Cumulus Association Annual Conferences.

Each year, Cumulus invites a total of four Student Ambassadors (two per annual conference) to contribute their singular voices to the Association's Conferences and the Cumulus community overall.

Through the Cumulus Student Ambassador Program, the Cumulus Association is committed to bringing the perspectives and voices of exceptionally talented and articulate students to the forefront, with the goal of highlighting the changes that the next generation of artists and designers are shaping in an increasingly complex and interconnected global marketplace for art and design.

**Kanika Kaul (top)
& Sitara Shah**

Student Ambassadors from the Indian Institute of Technology Bombay (IIT Bombay)



**THE CUMULUS
STUDENT
AMBASSADOR
PROGRAM**



Image David Baird

thursday 28 april, evening event

Cumulus and Nottingham Trent University would like to thank the City of Nottingham and Nottingham Castle and Art Gallery for hosting an evening reception for delegates.

call for papers and selection procedure

Abstracts were invited from Academics, Professionals and Students, in the following categories:

Negotiating
artefacts:
Chaired by
Professor
Duncan Higgins



How can the 'artefact' help us negotiate and construct active critical conversations concerning our transnational borders?

This might include an exploration of either material or conceptual borders of creative production. That may include examples, case studies or address the use of the following:

- Sound
- Objects
- Images
- Actions

As a site for the embodiment of social imagination, how we negotiate the authenticity of the artefact readily corresponds with methods and research protocols that are responsive and exploratory. Yet the most crucial element within this inquiry process is the need to be able to create artefacts from which critical options can be clearly assessed and addressed. Consequently it is the creation of new opportunities to see beyond what is known that has the potential to lead to the creation of new knowledge both personally and culturally.

Innovation: Chaired by Professor Anthony Kent



Please select two images from the six options below.

Respond by setting out a concise position statement for a conceptual and/or metaphorical relationship between the two as you see it and in relation to the theme of Innovation and “in this Place”.

Then create an abstract that explains how you intend to explore this position and how it fits with your ongoing innovative work or how you will develop this proposal as a research process.



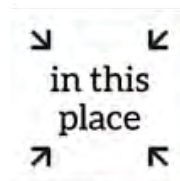
A



B



C



D



E



F

Future Crafts: Chaired by Professor Tom Fisher



Can deeper materials knowledge compliment the use of digital tools?

Crafts can create a bridge between disciplines such as design, maths, art, material science and ideas. They encourage ethical and sustainable thinking, communal activity and create an understanding of the value of distinctiveness and difference. Making things with the materials around us is important to understanding the human condition, our health and well-being, enriching the quality of our experience and building empathy.

Garth Clark, the American writer, historian, dealer and auction specialist in Ceramic Art said,

“If every crafter disappeared tomorrow, the impact would barely be felt. Yes, our community would notice, but the average citizen would not.” And, “much of craft is not current with today’s visual sensibilities.”

Advances in technology, new and different media, technical options and innovative working methodologies will lead to fresh, vital works of greater cultural relevance to our time and the future. They may harness the growing enthusiasm and energy for crafts and stimulate new and different interests and markets. Craft in the digital domain presents different challenges for the traditional crafter and enables us to question and respect traditional materials and processes often passed down through generations.

Can we embrace, adapt and see a future for craft to shape our communities, environment, economy and fraternity.

Future Space: Chaired by Dr Ana Souto



How do we think about future spaces for creative production and what examples or actions can help us define this – intimately, socially, educationally, culturally or in the widest sense?

There are a number of major challenges facing us today around belonging, identity, tolerance and gendered narratives. There is a corresponding need for proactive collaborative approaches to promote social inclusiveness through the discovery and promotion of wider narrative voices and actions explored through creative production.

The purpose of this is three-fold:

1. To learn more about the creative process, intercultural dialogue and research methodologies.
2. Implement and inspire positive action, pedagogic developments, new knowledge, expand international networks and promote multiple outcomes that can impact across interdisciplinary fields.
3. Help us understand existing and potential future spaces for creative production

Sustainability: Chaired by Professor Venu Dhupa



Does the creative sector have a role in shaping the idea of a sustainable future, or is it all too difficult and complicated and should we just leave it to city planners, highly paid architects, technologists and investors?

Masdar City is a planned city project in Abu Dhabi, in the United Arab Emirates, handled by a development agency with the majority of seed capital provided by the Government of Abu Dhabi. It aspires to be carbon neutral and is hailed as a city of the future where responsive technology will anticipate the needs of the inhabitants.

A city emerging from the desert raises questions around the ethics of production; the tension between organic artist development and imported brands and product; the contrast between high end shopping malls, amusement parks and the unique sense of place and history.

What lies behind the glossy imagery and the carbon neutral claim? What impact does such a development have on the future of art and design?

selection procedure

Abstracts were reviewed by the Chair of each strand and one external individual. Shortlisted candidates were invited to submit a full paper, these were also reviewed by the Chair and one external individual and a final selection made.

All the abstracts which were received are published later in these proceedings.

Nottingham Trent University and the Review Committee were delighted at the quality of the papers. They are published here in full under the five Academic Strands. At the conference each Academic Strand was chaired by a member of the Review Committee. The sessions allowed for questions and debate. An innovation for Cumulus was a Student Strand and these papers are also published in full. The papers are published using English spellings.

conference papers academic and professional strands

NEGOTIATING ARTEFACTS

CHAired BY PROFESSOR DUNCAN HIGGINS

The stained and bloodied cloths of Ireland *C. Harper*

Wonder design and the exploration of senses and imagination *R. Rezende, S. Araújo and D. Portinari*

Yes, and (+), maybe: cloTHING(s) as conversation *H. Day Fraser, K. Doyle, N. McKenzie, M. Daniels and N. Tillen*

Presenting 'LOST BUT NOT FORGOTTEN' at the Crypt Gallery St. Pancras: negotiating and constructing active critical conversation concerning contested human remains in museum *J. Wildgoose*

Cultural identity and the Municipal Gallery: the re-imagining of Bradford's collection as a transcultural representation of identity at Cartwright Hall 1904-2014 *J. Browne and A. Souto*

the stained and bloodied cloths of Ireland

AUTHOR:

Catherine Harper
University of Chichester and University of Portsmouth (UK)

Abstract

On 30 January 1972, British soldiers shot dead 13 unarmed civilians (another dying of wounds weeks later) during a Civil Rights Association march in Derry.

17-years old Jackie Duddy was the first fatality, shot in the back while fleeing. Father Edward Daly was running beside him, and used his handkerchief as a 'truce flag' to allow removal of the corpse as shooting continued.

In that place, in "unjustified and unjustifiable" circumstances [David Cameron, 2010], a humble hankie became an historical, locational, cultural and political artefact, preserved in the iconic, much reproduced, photographic image, and protected in Duddy's family home and subsequently in the Free Derry Museum's archives of Bloody Sunday.

That artefact embodies both personal tragedy and political transformation in the social imagination of Northern Ireland, a flag of humanity providing an alternative to those traditional flags marking sectarian affiliation or heraldic triumphalism.

When we accept that Ireland herself is a stained and bloodied cloth, marked irreversibly by history, conflict, denial and abuse, stained by repression and denial of all her people's rights and needs, bloodied by the haemorrhage of her people, then – with empathy, humility and heart – we just might make peace with our past.

Keywords: Ireland, blood, justice, culture

the stained and bloodied cloths of Ireland

On 30 January 1972, thirteen unarmed civil rights marchers were shot dead by British Paratroopers in Derry (a fourteenth died months later from wounds). The first fatality, seventeen-year-old old Jackie Duddy, was carried away from the gunfire, with Father Edward Daly using his white handkerchief as a 'cease firing' flag to enable removal to safety of Jackie's body.



Figure 1: **Father Edward Daly with the body of Jackie Duddy, Bloody Sunday 1972** (Image: copyright Fulvio Grimaldi, courtesy Museum of Free Derry)

The handkerchief, washed and ironed carefully, a labour of laundry translating into the stoic rituals of mourning and memory, was donated by the Duddy family to Museum of Free Derry in the city. The handkerchief itself was embroidered with a neat label saying 'Fr. E. Daly', stitched by the priest's mother so that the handkerchief would not be lost when it was laundered. These careful letters, picked out in navy thread by a loving mother, counterpoint the loss and absence suffered by Jackie Duddy's mother.

In that place, in "unjustified and unjustifiable" circumstances¹, a humble cared-for hankie became an historical, locational, cultural and political artefact, preserved in the iconic, much reproduced, photographic images of Bloody Sunday. That artefact embodies both personal tragedy and political transformation in the social imagination of Northern Ireland, a flag of humanity providing an alternative to the bombastic flags marking sectarian affiliation or heraldic triumphalism.

My land, my cloth, my body and my culture, continues to struggle for equality of citizenship, social justice, human rights, and full reproductive autonomy. When we accept that Ireland herself is a



Figure 2: **Father Daly's handkerchief, Bloody Sunday 1972** (courtesy Museum of Free Derry)

1.Cameron, D. *Bloody Sunday: PM David Cameron's full statement*, 15 June 2010 www.bbc.com/news/10322295

bloodied and stained cloth, marked irreversibly by history, conflict and abuse, and bloodied by its own repression and denial of *all* her people's rights and needs, haemorrhaging her people through mass emigration since the 1840s Famine, then we just might make peace with our past.

Irish, Northern Irish, and from the North of Ireland

I am Irish, Northern Irish, and from the North of Ireland. Each fragment of my national multi-identity is contested, fragmented, marginal and contingent. Of the twin political traditions – Irish Republicanism and Ulster Unionism – in my land, dominant Unionist Loyalism's domineering textile signifiers are the banners, flags and sashes that assert the history, religion and ideology of that fraternity in a vibrant and unambiguous material culture that is designed to maintain an absolutist Protestant legacy of loyalty to the British Crown. Various decorative, provocative, offensive and beautiful, these objects function as 'apotropaic or talismanic' textiles, apparently protecting Northern Ireland's place in the United Kingdom from the perceived malevolence of Catholic Republicanism and Irish Nationalism. These too have their own artifact-rich, symbolically encoded and embodied textile traditions, witnessed in other flags and embroidered emblems, and in particular woven and knitted concepts of national dress. Irish poet from the North, Seamus Heaney articulated the power difference between those twin traditions, however, configuring Ireland as violated virgin and colonised victim of a coercive *Act of Union*, back turned on a "still imperially/Male" England, and on the authoritative culture and self-affirming politics of Northern Irish Loyalism².

When you are young, significant moments in cultural history align with your own important timeline, place names resonate with where you live, and events echo with what is happening in your life. That is youth's self-protecting narcissism. In hindsight and from a distance, it is possible to see how inured my generation was to what was termed 'an acceptable level of violence' in Northern Ireland, and how normal it all felt. I was taught early the stigma of free expression and the exercise of self-denial and self-repression, the essence of sober, tight-lipped and entrenched West Belfast Presbyterianism: 'whatever you say, say nothing'. Heaney noted the tightly bound gag of our culture. 'Smoke-signals are loud-mouthed compared with us', Heaney wrote of the citizens of Northern Ireland, a 'land of password, handgrip, wink and nod / Of open minds as open as a trap...'³

Men, women, children, the unborn; Catholics and Protestants; Republican Nationalists and Loyalist Unionists; those in military, police and paramilitary uniforms, those in civilian clothes, in Northern Ireland and over here on the 'mainland' seemed to be 'legitimate targets' for somebody. Escalation of violence in the 1970s and 1980s, then the slow hungered-for turn towards partial-then-actual ceasefires in the early 1990s; the beginning of arms decommissioning; stop-start cessation of violence; Northern Ireland's fragile peace holds on by threads only today, and sorrow and suffering remains.

Not wanting to look *directly* at the murder, martyrdom and misery of the so-called Troubles around me, as some – predominantly male – artists in the North seemed able to, I created visual art that referenced older bodies, those Bronze and Iron Age bog cadavers – most likely sacrificed or executed, ritualised and preserved in the acidic, anaerobic, cold and wet peat lands of Ireland and Northern Europe, each one seeming – as Heaney said – as if 'he had been poured in tar, he lies on a



Figure 3: **CATHERINE HARPER** *Woman Mouth Staped Shut (detail)* 1988-90, mixed natural media, bitumen, metal staple, sculpture 150 x150 90 cm. **Private collection in Ireland.**

2.Heaney, S. *Act of Union* in *North*. Faber and Faber, 1975.

3.Heaney, S. *What Ever You Say, Say Nothing* in *North*. Faber and Faber, 1975.

pillow of turf and seems to weep the black river of himself...bruised like a forceps baby...beauty and atrocity...each hooded victim, slashed and dumped...⁴

Brian McAvera has referred to Northern Irish artists' tendency 'towards oblique and layered responses' to the conflict in the North in our work, and these ancient bog people resonated for me with my land's collective victims, without directly looking at them or naming them⁵. Sean Cubitt noted in *Artscribe* journal, my 'remarkable care for...materials and their resonance, and complex networks of irony and displacement'⁶, while Gemma Tipton exposed an 'inherent tension in the images of female sexuality and devotion...[and the]... tragic, futile violence behind bloody human sacrifice in the name of a land and a civilisation that is not always civilised'⁷. In my mind's eye I saw *contemporary* bodies in the bogs, the infamous 'Disappeared' of Northern Ireland's conflicted culture, several now exhumed years after their murders from their bogland burial places. The significance of bog, as an otherworldly place between solid and liquid, history and contemporary, reality and mythology, the vital body and the cold corpse, echoed the place of my birth, my land - neither wholly Irish nor wholly British, but liminal, unknowable, fearful and afraid.

Complex readings of land, culture and gender in my work were underway. Liam Kelly, in his *Thinking Long* publication, wrote of my practice as a 'cultural mapping of the psychic landscape', with land as 'a vehicle to explore more personal emotions and associations'⁸. This took the form of material and physical work constructed, woven, stitched out on the bog landscape itself where I created a site-specific ritual to *Nerthus*, Northern European tribe goddess of fertility documented by Tacitus, first century AD Roman historian. Tacitus noted too the ritual drowning in bogs of the slaves who washed the sacred cart and cloths used for veneration of this deity. My own words in the *Parable Island* catalogue of 1990 are salutary: I recognised '...bodies that, had I lived in Iron Age time, might have been my father, sister, lover, child or even myself. I might even have been their killer', and I recognised the ritual repetition of staining, washing and death as a mantra in Irish contemporary culture...⁹

Both Tacitus and respected modern archaeologist P.V. Glob recorded that many of the Bronze and Iron Age bog bodies were accompanied by votive symbolic objects or execution devices, were pinned down in bog pools with forked sticks, seemingly arranged in foetal formation, seemingly tortured before death or maimed afterwards¹⁰. Through a personal politics of despair at the trauma and horror endemic in Northern Ireland at that time, I articulated my grief in the weaving of material codes via these ancient ancestors. Articulations of my land as womb and tomb, my culture as devouring and voracious, my body a toothed and ravenous *vagina dentata*, a *Máthair Eire* or *Mother Ireland*, a *Síla-na-gig* figure; spawning and interring, nurturing and incarcerating, exposing and castigating, a goddess of martyrdom and of blood sacrifice, emblematic of sacred repression and the pious humility of acceptance, these works also began to articulate the multiple confusions of identity - virgin, vessel, mother, martyr, whore, castrator, and harbinger of death, the banshee - that women in contemporary end of twentieth century Ireland were grappling with.

Women to blame

As the Northern Troubles played out the relentless repetition of devastation, suffering, atrocity and execution, the social context of the island of Ireland was under enormous pressure too. For Northern Irish women, whose rights were obscured by the dominant discourse of the sectarian struggle in the North, who sought an 'alternative Ireland' no longer repressed by the conservative morality of Church(es) and State, and



Figure 4: CATHERINE HARPER *Sile on her haunches* 1990, mixed natural media, bitumen, hand made papers, 90 x 150 cm. Collection Tyrone Guthrie Centre, Ireland

4 Heaney, S. *The Grauballe Man* in *North*. London: Faber and Faber, 1975.

5 McAvera, B. *Parable Island: some aspects of recent Irish art* Bluecoat Gallery, Liverpool, 1990.

6 Cubitt, S. *Strongholds and Parable Island* *Artscribe*, Summer 1991.

7 Tipton, G. *Catherine Harper* at Project Arts Centre, Dublin *CIRCA ART Magazine* Spring 1993.

8 Kelly, L. *Thinking Long: Contemporary Art in the North of Ireland* Kinsale: Gandon, 1996.

9 Harper, C. *Parable Island: some aspects of recent Irish art* Bluecoat Gallery, Liverpool, 1990.

10 Glob, P.V. *The Bog People: Iron Age Man Preserved*. London: Faber and Faber, 1969.

who laboured in an impoverished morality and sexuality debate north of Ireland's border, the appointment of Ireland's first female President in 1990, the radical feminist Mary Robinson was an extraordinary and transformative moment.

A new social and feminist politics had begun to question Irish constitutional and Irish governmental bans on divorce, contraception, abortion and homosexuality. Ireland finally decriminalised homosexuality in 1993 (1982 in the North), finally abolished restrictions on contraceptive sale and information in 1993, and finally legalised divorce in 1995. In 2015 Ireland legalised same-sex marriage, and although Belfast was where the first civil partnership in the UK was registered, there remains a ban on same-sex marriage in Northern Ireland, now the only place in the UK and Ireland where this equality of citizenship is not permitted.

The Ireland of the 1980s and early 1990s was also deeply affected by growing revelation of the extensive and systemic sexual, emotional and physical abuse of thousands of children by clergy, in Church-run industrial schools, orphanages, and in the infamous Magdalene laundries and Bethany Homes (it is important to note here that while Ireland – as a whole – is predominantly Catholic, the culture north and south has been repressive across the religious range, as witnessed by the terrible regimes of the Protestant Bethany Women and Children's Homes). Many of these institutions were established to house in the main 'illegitimate' children, their unmarried mothers, or so-called 'promiscuous and precocious' girls, some themselves the victims of rape and incest. The last Irish Magdalene laundry was closed in Dublin in 1996, but from the mid-eighteenth century thousands of women and girls had lived, worked unpaid, and had 'disappeared' in these institutions, incarcerated and abused, lives spent washing stains from the cloths of ecclesiastical, governmental, civic and commercial bodies throughout Ireland¹¹.

The prevailing culture of conservative sexual morality, both in Catholic Ireland, and in the Protestantism more prevalent north of the Irish border, was the backdrop to my experience as a teenager in the 1980s. On 31 January 1984, a fifteen-year-old girl called Ann Lovett – three years my junior – slipped out of school to give birth to a little boy beside a Virgin Mary grotto in the Irish midlands¹². Wrapped in her coat, his umbilical cord cut by scissors she had brought with her, the baby was dead or had died shortly after birth. Found crying and bleeding beside his body, Ann died later that day. Her community, clergy and family purported to have no knowledge of her pregnancy, but had clearly played their parochial roles in a wilful national prejudice concerning the 'illegitimate' consequences of sex.

In the same year of 1984, the 'Kerry Babies' scandal brought unmarried motherhood, infanticide, and the ethical treatment of women in distress further into an increasingly uncomfortable Irish media spotlight¹³. The wider discourse on Irish women's rights, sexuality, maternal and reproductive autonomy, and Ireland's cultural, judicial and legal misogyny was taken up by activists and campaigners, including Nell McCafferty who wrote of Irish society's fundamental and persistent need to find 'a woman to blame'¹⁴.

The prevailing message for young women in the Ireland and Northern Ireland of the 1980s, before and since, was that female sexuality was dangerous; female desire or bodily pleasure was taboo; female bodies were potentially incendiary, volatile and inadvertently provocative; sexual transgression of narrow hetero-normative behavioural codes enshrined in constitution, legislation and convention was the way to self-inflicted social and moral damnation.



Figure 5: **CATHERINE HARPER** *Ourselves Alone (Sinn Féin)* 1990, mixed media including hand made paper, sisal, bitumen, 130 x 160 x 20 cms. Private collection in Ireland

¹¹ Cooper, R. *The forgotten women of Ireland's Magdalene Laundries* [The Telegraph](#) 4 February 2013.

¹² Gartland, F. *Church said Ann Lovett's death was due to her 'immaturity'* [The Irish Times](#) 27 December 2014 www.irishtimes.com/news/politics/church-said-ann-lovett-s-death-was-due-to-her-immaturity-1.2041461

¹³ O'Regan, M. *The case of the Kerry babies* 12 April 2014 www.irishtimes.com/news/social-affairs/the-case-of-the-kerry-babies-1.1759242

¹⁴ McCafferty, N. *A Woman to Blame. The Kerry Babies Case*. Cork: Attic Press, 1985.

In time, and through art, I would reflect on the harshness of my land and the culture that created that cold dead newborn on the ice and his pitiful haemorrhaging child-mother, a land and culture that Enda Kenny, current Irish Taoiseach / Prime Minister, referred to in 2013 as a 'cruel, pitiless Ireland distinctly lacking in a quality of mercy... judgmental, intolerant, petty and prim...that welcomed the compliant, obedient and lucky "us" and banished the more problematic, spirited or unlucky "them"'¹⁵. But stories of cruelty and intolerance have continued to surface since, and instances indeed persist even today.

Instances like one of the most controversial social, legal and moral battles in Ireland when a fourteen-year-old Irish girl, abused over two years, raped and made pregnant by her neighbour. With termination illegal in Ireland and Northern Ireland, the girl and her family sought this in London, but were forbidden to leave Ireland by a 1983 Constitutional Amendment, which placed foetal right to life as equal to that of the mother, regardless of circumstances (in fact, they had already travelled, but immediately returned by order of the Attorney General). Ailbhe Smyth, then a University College Dublin lecturer, remembers the sense of shock and fury about the Republic's message to its female citizens: "I can't remember a time when there was such a spontaneous outburst of absolute rage"¹⁶. The Supreme Court overturned the travel ban some weeks later on the grounds that the child's suicide risk was deemed extreme, and should this have happened would have killed both the – by now more developed – foetus and its increasingly distressed mother. The girl in fact spontaneously miscarried on arrival in England before her termination.

Instances like the brain dead 15-week pregnant woman kept on life support for almost four weeks in 2014, when there was no genuine prospect of a live birth, while legal process deliberated on whether it was legal to withdraw support to what was – dreadfully – a deteriorating corpse and pitifully unviable, distressed foetus¹⁷. And instances like the use of the barbaric nineteenth-century symphysiotomy procedure in Ireland from 1944 until at least 1982, and continued today in developing countries by Irish medical missionaries¹⁸. This is the non-consensual splitting apart, by circular or hack saw, of around 1500 Irish women's pelvises – some in women as young as 14 – during labour, risking incontinence, chronic pain, walking difficulties, mental trauma, and even family breakdown. Alternative Caesarian birth was avoided to ensure women – pelvises strapped up again – would be able to carry unlimited pregnancies afterwards, and Ireland's ideological restrictions on artificial contraception, cultural avoidance of sterilisation, and only limited use of so-called 'compassionate hysterectomy' well into the 1980s encouraged its practice. In 2012, Government Deputy Caoimhghín Ó Caoláin called the 'infliction of symphysiotomy on women in Ireland...a clinical scandal on a par with the clerical scandals we have seen exposed in the past two decades'¹⁹, and in 2014 the United Nations Committee on Human Rights called for an Irish government investigation into what they asserted was public policy contrary to human rights. Around 300 Irish survivors of this dreadful mass medical experiment are currently campaigning for state recognition and restitution.

The Women to Blame multi-media exhibition in 2014, documented the decades since the 1983 Eighth Amendment to the Irish Constitution, which further tightened the Irish foetal right to be born as equal to the mother's right to life - even if the foetus is already dead, dying, malformed, unviable, or the product of rape or incest. In the 2012 case of Galway woman Savita Halappanavar, a prolonged but unsalvageable miscarriage was allowed to continue *without* abortive intervention, with consequent development of *fatal septic shock* in the mother²⁰. Medical termination would have averted Savita's death, but uncertainty and contention still prevail in Ireland. An Irish referendum in 1992 clarified the right to travel and to information on UK termination, but action was not taken to clarify how medical practitioners would determine risk to maternal versus foetal life, and this remains a precarious and uncertain situation in Ireland.

About 4500 women a year are known to travel to Britain from the whole island of Ireland for terminations²¹, and there is renewed pressure from Irish citizens at home and abroad for repeal of the vexed Eighth Amendment of the Irish Constitution. The Northern Ireland Assembly, however, voted in February 2016 *against* legalising abortion in cases of fatal foetal abnormality *only*, where medical diagnosis indicates the foetus will die anyway either in the womb or shortly after birth. North and south of the border it seems women are still to blame.

15 In full: *Enda Kenny's State apology to the Magdalene women* www.thejournal.ie/full-text-enda-kenny-magdalene-apology-801132-Feb2013/ 19 February 2013

16 Sheridan, K. *The case that convulsed a nation* *The Irish Times* 4 February 2012 www.irishtimes.com/news/the-case-that-convulsed-a-nation-1.457516

17 Mac Cormaic, R. *Life support for brain-dead pregnant woman withdrawn* *The Irish Times* 27 December 2014 www.irishtimes.com/news/crime-and-law/life-support-for-brain-dead-pregnant-woman-withdrawn-1.2049636

18 *A history of symphysiotomy: the impact of Catholic ethics on Irish medicine* (Extracts from a recent article by Jacqueline Morrissey published in *History Ireland*) *The Journal* 24 November 2012 www.thejournal.ie/a-history-of-symphysiotomy-the-impact-of-catholic-ethics-on-irish-medicine-685296-Nov2012/

19 Ó Caoláin, C. *Symphysiotomy: Statements Oireachtas* 15 March 2012.

20 Holland, K. *Woman 'denied a termination' dies in hospital* *The Irish Times* 14 November 2012 www.irishtimes.com/news/woman-denied-a-termination-dies-in-hospital-1.551412

21 Available statistics suggest over twelve Irish or Northern Irish women travel to Britain per day for termination of pregnancy www.thejournal.ie/twenty-years-on-a-timeline-of-the-x-case-347359-Feb2012/

Catherine Nash wrote in 1995 that my visual practice was concerned with the ‘immobilising and vulnerable nature of motherhood [recognising] a deep vein of guilt running through Irish society for women... [with] dichotomised versions of femininity, as nurturing and treacherous...’ She recognised that in struggling to make sense of this, I was working in the “gaps between” the false dualisms of social and biological, cultural and natural “Irish womanhood”²². Nash could see that the bog landscape was, for me, ‘not emblematic of a deep, whole national or individual identity once uncovered’, but rather evidence of a composite national culture, as hybrid and layered as the land itself.

The Big Red of 1994 was a large-scale, conceptually significant and cathartic work for my overall practice. Aidan Dunne’s review in *The Sunday Tribune* (1994) captured the essence of this work, which addressed the less predominantly discussed issues of paternal absence in Ireland, most notably my own biological father’s abandonment:

...a huge, livid wall of twining, twisting red fabrics, so all-enveloping that it short-circuits any considered response...The Big Red shrouds an entire wall with masses of ragged, falling fabric strands of different textures and densities, but all dyed red. The effect is of a sanguinary waterfall which bleeds into a thick carpet of fleece that lines the floor and fills the room with a warm, heady animal odour... a formidable piece...²³

As the North lurched towards a peace process in the mid-1990s, and I completed a year-long artist residency at the Irish Museum of Modern Art, Dublin in 1996, I began to experiment in practice with a new, less essentialist, less rigidly ‘Irish / Northern Irish’ approach to sex, gender and sexuality. My land and culture mythologises and celebrates an ideal of maternity – the combination of the ideal mother and the ideal foetus. Mother Ireland enshrines the notion of land as woman, and Irish nationhood is heavily associated and constitutionally enshrined by an essentialist idea of female destiny as motherhood. Much less discussed in Ireland is the problematic concept of Irish manhood – and Irish fatherhood – in a castrated, colonised and infantilised culture that fails to chastise masculine irresponsibility...

Queenie O Queenie

Refusing the destiny that oppressed me, rejecting that essentialism that enshrouded me, my fabulous, desirous, erotic alter ego *Queenie* was born... With a nod to Judith Butler’s ‘lesbian phallus’²⁴, Sigmund Freud’s ‘female phallic lack’²⁵, and Barbara Creed’s ‘monstrous feminine’²⁶, Queenie knitted her own phallus – detachable, portable, pink, flaccid and ever expanding – in a series of public knitting performances in Derry and London. Working at a distance in England, I had opportunity to create a more experimental, marginal practice that came to investigate phallic mobility, camp performance conventions, gender stereotypical materiality, and – importantly – to explore somatic and erotic pleasure.



Figure 6: CATHERINE HARPER *The Big Red (detail)* 1994, dyed red bedding, unwashed sheep's fleece, size variable 800 x 500 cms. Collection of Belfast City Council / Waterfront Hall, Belfast

22 Nash, C. *Landscape, Body and Nation: Cultural Geographies of Irish Identities* University of Nottingham PhD thesis, 1995.

23 Dunne, A. *Private pain coloured red* *The Sunday Tribune* 11 September 1994.

24 Butler, J. *Bodies that Matter: on the discursive limits of 'sex'* New York and London: Routledge, 1993, 57-92.

25 Freud, S. *New introductory lectures on psychoanalysis* (Lecture 33: Femininity) 1933, Standard Edition v22, 136-157.

26 Creed, B. *Horror and the Monstrous-Feminine: An Imaginary Abjection* In: Donald, J. (ed.), *Fantasy and the Cinema* London: British Film Institute Publishing, 1989, 63-90.



Figure 7: CATHERINE HARPER Queenie knits one, purls one...*The Virtues* 2003, medievalmodern Gallery, Marylebone, London

Queenie's public ironing performances attracted press and media attention, as Queenie 'ironing bombed' the Derry by turning up in public spaces with bejewelled iron and sequinned ironing board. Ironing the shirts of passers-by, taking in laundry, mending and darning on the spot, and pressing hospital linens – references to the lowly, unseen domestic work that can be mobilised as an act of love or interpreted as an act of personal politics transcending cultural damage and decay.

The Walls of Derry, also known as the Maiden City because those walls were never broken down, are the iconic symbols and historic location of the 1688-89 Siege of Derry conflict between Irish and Crown forces. They have borne witness to serious and prolonged sectarian conflict through the ages, and they bear the scars. With a kitchen sponge and soapy spray, Queenie's *Washing the Walls* performance of 2001 aimed to make a domestic-scale interjection to reflect on the paradox futility and nobility of attempted erasure of history, memory, trauma and loss.

As public artefacts of the Northern Irish conflict, the inscribed and impacted walls of Derry and Belfast in particular are of considerable cultural importance as memorials, as interfaces, and as texts. Queenie took great and particular care, as with her laundering, ironing and mending, to make her intervention a domestic act of political love. And the concept of a politics of personal dimension was always an essential part of Queenie's mock-seductive presence in the city. Declan Sheehan, writing in *CIRCA Art Magazine* 2001, acknowledged Queenie's ubiquity in public appearance and media presence, in public space and public life, as 'near universal visibility' for the two months of Queenie Fest, kindly concluding that 'ultimately what outlives Queenie's physical presence is Queenie as an alluring and charming creation'²⁷.

Stained and bloodied cloths of Ireland

I was invited back to Derry in 2013 to deliver a public lecture on the city's shirt-making heritage, its textile culture and industrial history, at the Shirt Factory Project, part of the UK City of Culture celebrations. The blood-stained shirt shown here is that of James Connolly, leader of the Irish Citizen Army, at Dublin's General Post Office in O'Connell Street, during the Irish Easter Rising 1916 and worn during the fighting in Dublin before his capture and execution by British firing squad while seated in a chair, a serious bullet wound to his ankle. It is preserved in the National

²⁷ Sheehan, D. *Anatomical Drag* *CIRCA Art Magazine* Winter 2001.

Museum of Ireland, and is a key and understudied textile artefact representing a very significant moment in the Irish nation's history, a history that has still many cycles of evolution to process for Ireland to meet its full social and democratic potential as a proud and egalitarian republic.

John Hume, Nobel Laureate, and principal architect of the Northern Irish peace process, recalled his father's assertion that 'You cannot eat a flag... real politics is about the living standards, about social and economic development. It's not about waving flags at one another'²⁸, and in the context of Ireland's struggles with sexual morality and autonomy and Northern Ireland's thirty years of sectarian conflict and its aftermath, it may be worth *not* waving flags for a change.

The fabric of the island, and its culture, is marked by the leakage of persistent sores and raw wounds borne by the unhealed messy flesh of the national body, swaddled, shrouded, stifled and sheltered by cloth²⁹. Enduring stains on walls, cloths and hearts linger as indexes of moments of existence, proof of happenings, evidence of desire or grief, memories traced on cloths, physical and psychic evidence of the corporeal, imprinting the sensations of smell, touch, sorrow and mortality into fabric's history³⁰, and resisting – like prolonged death throes or the never-endingness of a death-rattle – the body's ultimate erasure³¹.

The *Healing Through Remembering* project audited over four thousand material, social and political cultural artifacts of the Troubles³², and my *Stained Cloths of Ireland* project reflects the role of cloth and clothing in receiving our human smells, our sweat, our shape even, and in illuminating social, cultural, material and gendered constructions of identity and in making meaning³³.

Paramilitary balaclavas; bulletproof flak jackets; Kevlar bomb disposal suits. The Hunger Strikers blanket shrouds, wrapping their naked bodies in prison blankets, smeared with excrement on their cell walls. Those filthy blankets came to be shrouds for those on hunger strike, marked by the fluids of dying bodies, with the intimate body-memories of sorrow and abjection, the special stigmata on a textile substrate, hovering on the border between the living and the corpse³⁴. Tar and feather warnings poured on the shaven heads of Northern Irish women accused of relationships with soldiers or policemen in the early years of the Troubles. A savage anointment, a ritual punishment for a perceived sexual transgression. A warning to women that their bodies were not theirs, but policed by the brutal politics of their land and culture. Hooded men and body bags; swaddling cloths and deathbed sheets.

These – and more – are *The Stained and Bloodied Cloths of Ireland*.



Figure 8: James Connolly's shirt 1916 Collection of the National Museum of Ireland

28 Griehsel, M. *Interview with John Hume* 2006 www.nobelprize.org/nobel_prizes/peace/laureates/1998/hume-interview-transcript.html

29 Barnett, P. *Stain In*: Pajaczkowska, C., Ward, I. (eds.) *Shame and Sexuality: Psychoanalysis and Visual Culture* New York: Routledge, 2008, 203-215.

30 von Busch, O. *TEXTILE PUNCTUM - embroidery of memory* Selfpassage, 2005, 5.

31 Barthes, R. *A Lover's Discourse: Fragments* London: Vintage, 1979, 26-27.

32 Brown, K. *Artefacts Audit - A Report On The Material Culture Of The Conflict In And About Northern Ireland* Belfast: Healing Through Remembering, 2008.

33 Stallybrass, P. *Worn Worlds: Clothes, Mourning and the Life of Things* In: Ben-Amos, D., Weissberg, L. *Cultural Memory and the Construction of Identity* Detroit: Wayne State University Press, 1999, 28.

34. Kristeva, J. *Powers of Horror: An Essay on Abjection* New York: Columbia University Press, 1982.

wonder design and the exploration of senses and imagination

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Abstract

This article explores the relationship between design, imagination, senses, places and objects. It was based on Richard Holmes' theoretical concepts, particularly on the period designated "Age of Wonder", Robert Silverman and Thomas Hankins theories on "Instruments and the Imagination" about the parallel of imagination and the real world, the ideas of Juhani Pallasmaa on senses and architecture, and the Design Fiction theories of Stuart Candy. A conceptual survey of the correlation between imagination and the senses makes us wonder how objects/spaces present themselves to men and how men perceive them. Which senses rules this communication? We examine the relevance of senses and imagination on the creation of artifacts and surroundings, in order to build a more intimate relationship between them. To explore this connection we developed the "Wonder Cards" card game focused on the development of ideas, objects and surroundings that stimulate senses and imagination. We are testing the game on Pontifical Catholic University of Rio de Janeiro and workshops to analyse and understand the use of these elements in design projects where emotion and wonder is the key factor.

Keywords: design, imagination, innovation, methodology

wonder design and the exploration of senses and imagination

“To the natural philosopher there is no natural object unimportant or trifling... a soap bubble... an apple... a pebble... He walks in the midst of wonders.”

John Herschel, *A Preliminary Discourse on the Study of Natural Philosophy* (1830).

1. Introduction, reflections and guiding questions:

The reflections presented in this article have arisen from the perception of the saturation of project methodologies focused on linear structures based on modern science: the rationalism and the scientific method. From this initial impetus, some questions, inspired by Evan Jones¹⁸, steered the development of this paper.

They were:

How to escape linear and systematised structures of project development?

How to stimulate the commencement of creation and exploitation inspired by the romantic science period?

How to make it encourage an exploratory method?

How do objects/spaces express themselves to man and how does man make the same opposite movement?

Which senses rule this communication? How to build a more intimate relationship between them?

Before we take any chance to answer these questions, it is important that we explain some concepts that will sustain this conversation.

2. Imagination, perception and senses.

What is imagination? Its etymology (online etymology dictionary 2015) bring us to Latin, IMAGINARI or “to make a mental picture of something”. This definition leads us to another question raised by Saes (2010, p. 9): “Would you be able to imagine something you have never realised before?” Would we be able to imagine something we have never felt? Is our imagination limited by our reason and knowledge?

According to Aristotle (Aristotle, cited in Saes 2010, p. 11), “imagination (in greek, phantasia) is the ability upon which we are apt to produce images or representations (in greek, phantasmata).” We believe desire drives imagination. The desire to see and discover something that does not exist stimulates imagination to make its creations to life. Imagination connects the intellect to the senses, mediating the relation between them. This connection is possible by what Aristotle defined as “sensus communis”, which is the sensor organs’ ability to capture what surrounds them, and make these elements intelligible via imagination. Our focus was to bring these elements closer, through a design process experience that stimulated the creation of living objects, that is, objects that while being conceptualised, incorporated the stimulation of the “sensus communis” enabling a bigger sensorial and imaginative involvement from the participants.

3. Romantic science, the wonderful and imagination instruments

The romantic’s science period, particularly the one denominated by Richard Holmes (2008) as “The Age of Wonder”, was a period between the first trip Captain Cook took around the world aboard the *Endeavour* in 1768, and Charles Darwin’s trip to the Galapagos Islands aboard the *Beagle*, which started in 1838. Intense scientific experimentations and poetic spirit characterised this period: the scientists of that time were also poets, explorers, and inventors moved by their desire. According to Holmes:

It was a movement that grew out of eighteenth-century Enlightenment rationalism, but largely transformed it, by bringing a new imaginative intensity and excitement to scientific work. It was driven by a common ideal of intense, even reckless, personal commitment to discovery. (Holmes 2008, p. xvi)

Our intent is to bring closer this romantic spirit of design, using an instrument of imagination that helps to create projects that allows the exploitation of senses and imagination, whether from its creators or from its participants. This way, artifacts able to have a higher impact on each other (objects, creators and participants) would be developed.

Another source of inspiration, are the instruments invented in XIX century that focused on entertainment, but allowed great advances in science. The book “Instruments and The Imagination” by Thomas L. Hankins and Robert Silverman (1999) mention the use of instruments by the “*natural magicians*”

The natural magician revealed in his ability to trick the senses of his audience and to conceal the causes of the effects he produced, and he did it with instruments. Della Porta's *Natural Magick* (1558) was loaded with trick mirrors, secret speaking tubes, and automata of all kinds along with recipes for removing spots from clothes, curing diseases, removing pimples, making seeds grow, and other such "secrets". But among his tricks were the germs of the telescope, microscope, barometer, and air pump. It is not coincidental that the earliest known sketch of a telescope is by Della Porta, that Galileo probably got the idea for his thermometer from Cornelis Drebbel's famous perpetual motion machine at the court of James I, that Robert Boyle learned of the air pump from reading the *Mechanica hydraulico-pneumatica* (1657) of the natural magician Gaspar Schott, and that even Newton got his prisms at a fair where they sold as instruments of natural magic. Most of the "philosophical" instruments, which were the foundation of the experimental philosophy as it developed during the Scientific Revolution, had existed in an earlier version in natural magic. (Hankins & Silverman 1999, p. 4)

As Hankins and Silverman stated, there was no separation among the objects created to cause wonder and those directed to stern scientific purposes. There were no defined roles. The authors specified that (Hankins & Silverman 1999, p. 4): "Natural magic never really disappeared. It was merely subsumed under new categories such as entertainment, technology, and natural science." Hence, how to break the methodological rigor set on modern science at times incorporated by design?

Paul Feyerabend ponders, on his book "Against Method", some crucial reflections that answer this question.

4. Against method

In his work "Against Method", Feyerabend deconstructs the myth of modern science, especially rationalism. He analysed different scientific discoveries and categorised four science characteristics: "anything goes" "the incommensurability", "Science is not necessarily above other fields of knowledge" and "individual freedom". (Feyerabend, cited in Chalmers 1993)

According to Feyerabend, "anything goes" lies in the fact that there is no universality on science: each field sets its own theories and methods. This way, there would be no common element. He stated,

The events, the procedures and the results which constitute science have no structure in common. There are no elements which occur in all scientific investigation and are missing in other places. (Feyerabend 2001, p. 17)

In our epistemological debate about the process on design, Feyerabend theory validates the experimental procedure in design. Because not having a common element to all, we cannot establish standards for what is (and what is not) design in a canonical form. Hence, there is incommensurability. Feyerabend points out that each researcher employs both theoretical basis and specific repertory to analyse his activities. There is not a universal ruler to measure each study. According to Feyerabend,

The observations made insofar do not mean that the research study is random and lacking direction. The standards exist, however, they arise from the very research process and not from abstract point of view upon reality. (Feyerabend, cited in Preston 1997, p. 172)

Therefore, when we create design projects who escaped this rationality, we would not break any academic standards. Nonetheless, how to escape this methodological monism? Why is it important to break the methodology to enable imagination?

It is important to highlight two characteristics raised by Feyerabend (Feyerabend, cited in Chalmers, 1993, p. 181-182): "Science is not above other fields of knowledge", better yet, scientific rigor ignores other forms of knowledge that do not fit its structure, and so it compromises "individual freedom" and restrain the quest for accomplishments instigated by the author's wishes. Our hypothesis is that strict methods repress experimentation and fantasy. It goes against intuition and dreaming. The norm limits imagination and reduces the sensorial connection.

To discourse about senses, we will discuss the architect Juhani Pallasmaa theoretical contribution, which reflected on architecture and senses.

5. Design and senses

In his work: "The eyes of the skin: Architecture and the senses", Juhani Pallasmaa (2011) asserts that we live in a period in which sight is overvalued to the detriment of the other senses. According to the author:

The concept that sight is our most important sense is deeply rooted on perceptual, physiological and psychological facts. (...) the isolation of the eyes and of its interaction to other sensory structures and of disposal and suppression of the other senses (...) limits the experience of world to sight's exclusive sphere.

This reduction and separation divides the complexity, coverage and the plasticity inherent to the sensory system, enhancing the alienation and seclusion feeling. (Pallasmaa 2011, p. 37).

In our point of view, and in accordance with Pallasmaa's theories, this produces a perceptual and empirical atrophy on individuals. A reduced amount of perception, experience and imagination leads us to a duller living and, regarding design, to project insipidness. The sovereignty of sight induce absence of existential deepness and the exacerbation of wish to instantaneous impact. (Pallasmaa 2011, p. 29). Why are the senses important to imagination? The senses stimulate the perceptive system, thus, taking the individual out of his comfort zone by confronting him with mixed emotions. Essentially, a complete sensorial experience grants veracity and recognition. Without this experience, we risk deluding ourselves, since a message is not established. (Pallasmaa 2011, p. 29-30). The senses can stimulate, for instance, pleasure and joy, but also fear and anxiety. Pallasmaa embraces Rudolf Steiner's 12 senses theory: touch, life, movement, balance, smell, taste, sight, thermal, hearing, word, thinking and me.

These senses, highlighted by Pallasmaa, are used on Wonder Cards. These cards are aimed at a project's creation that stimulates senses (touch, smell, hearing, taste and sight). They attempt to explore other ways and perceptions that expand the relation between imagination and project process. And here comes another character to contribute in this reflection: Giulio Argan.

6. Project and imagination

Giulio Carlo Argan was a historian, politician, professor and art theorist. In one of his speeches, he spoke about the relation between imagination and project. Considered by him a layer on the development of a project:

Let us try to see these layers or stages of which I talked about. First, we have historical knowledge; it is necessary, clearly, if we must make comparisons: facing the task of making a circular temple, I must know all the constituted experience on circular temples. We have, then, the first layer: historical knowledge. Second layer, the analysis; Third layer, the critics; Fourth layer, imagination, and here is that, when mentioning the word imagination, we already establish a relation to the first, historical knowledge. What is historical knowledge? What is history? History is, before anything, memory. What is imagination? Imagination... What is memory? It is the imagination of the past. What is imagination? It's the memory of posterity. (Argan 1993, p. 3)

For this article, to imagine is to build, continuously, possible realities and bring them to life according to one's wishes, transforming life experience from personal tastes and issues as the romantics used to do. Argan alerted about the delivery of complete experiences, leaving no space to creation, imagination and consequently, according to Aristotle, who believes imagination connects senses to the intellect, without the possibility of experiencing that boast these elements. To illustrate, Argan raises the possibility that excess of technology could lead to impoverishment of creation and experience.

I would like, on the contrary, to reflect upon these automatism problems, these possibilities of new technology creating mechanisms able to correct themselves. I say that automatism is not a conscience achievement, as projects are, but the unconscious achievement. Nowadays, we can find on most texts about cybernetic and some other on the same category questions like: why to bother about projecting, studying, if there are computers who can organise everything for humankind? In the Middle Ages it was common to say: why do things, accomplish things, if there is a God who makes everything for us? Mass communication philosophy tell us yet, that nowadays, in reality, it is not necessary to project, or even be utopic, for contemporary technology achieves much faster than imagination. It is useless to have imagination if there is a technological device that produces images, and offers images to consume in such a quantity that imagination can only receive instead of producing. (Argan 1993, p. 7)

How to escape this? How to escape this blunting experience, provided by a society driven to not allowing this experience? Is it possible to project having imagination and the senses as main pillars? Reflecting upon these questions, we have developed the Wonder Cards. Influenced by objects developed in "Age of Wonder", related by Holmes, Hankins and Silverman, the cards are an "Imagination Instrument", and they aim to assist the creation of projects who incorporate imagination, senses and feelings, which may be expressed through a number of objects or places. We call them living objects, which are our topic now.

7. Living objects

Living objects are a developing concept, but at this moment, they represent objects created to have their own lives, better yet, to influence and be influenced. They have an inherent narrative, a story to tell, which contains empathy and sympathy. The "living" does not concern the opposite of "dead", since that all objects have an influence upon something, but the kind of language they transmit. Wonder cards are a tool used to develop artifacts that excite an explosion of feelings, and not the dullness, sterility, and emotional tiredness (already exist many objects like this).

Hence, they are not passive and static, but rather interactive, for they communicate this emotion exchange. The importance of language exploration occurs because of the human being, who he is. Sennet, in his book “The Craftsman” says (Sennet 2013, p. 18): “people can learn about themselves by anything they do, the material culture is important.”¹⁵ The artifacts, therefore, are part of someone; his thoughts, sense and sensations. These are the Living Objects.

It is justified, then, the importance of senses and emotions as guides of project process. More than that, the necessity of tools that may benefit this link, in a mashed world of ephemeral visual impact. Therefore, the Wonder Cards issue elements for the creation of projects, like a Tarot card that once played, projects possible futures and influences the life of who is playing, and from this person’s actions, affect the world. Eventually, they help in the creation of other objects and by that, they build other realities.

8. Wonder Cards

The Wonder Cards are an “Imagination Instrument” and a tool that helps in the development of living objects. It consists of 54 cards, split in five categories: Imagination, Senses, Emotions, Objects and Spaces.

Figure 1: Wonder Cards – front view



Figure 2: Wonder Cards – back view (portuguese version)



8.1. Imagination

There are three imagination cards, which are inspired by two romantic poets: the categorising of imagination, performed by Samuel Taylor Coleridge, associated to William Wordsworth’s ideas that Dan White¹⁶ presented. In this categorisation, imagination is fragmented in the following way:

Essentially, the Imagination is a mode of memory, a mode of perception, and a mode of projection. As a mode of memory, the imagination “dissolves, diffuses, [and] dissipates, in order to recreate” (Coleridge, 750). It has the power to “conjure” up images from the past in order to recreate the feeling or the experience in the present, “For our continued influxes of feelings are modified and directed by our thoughts, which are indeed the representatives of all our past feelings” (Wordsworth, *Preface*, 577). As the “living power and prime Agent of all human perception,” the Imagination interprets and evaluates new images and information (Coleridge, 750). As a mode of projection, the Imagination can create images and experiences, for a Romantic poet has the “disposition to be affected more than other men by absent things as if they were present an ability of conjuring up in himself passions” (Wordsworth, *Preface*, 577). In addition, Romantic poets also possess a “greater promptness to think and feel without immediate external excitement,” although the “causes which excite these...moral sentiments and animal sensations” might include “the operations of the elements and the appearances of the visible universe” (Wordsworth, *Preface*, 579). Thus, this definition of the imagination emphasises the role of memory and creativity. (White, 2015)

These three modes of imagination have been adapted to a more appealing terminology: memory mode for emotional imagination, perception mode for intellectual imagination and, finally, projection mode for fantasy imagination.

On emotional imagination, the creative impulse comes from the designer's (or creator's) personal emotions and experiences. He puts, therefore, his experiences in his creations, not worrying if they reach a target audience besides him, and not specifying (clearly) a social gap for the accomplishment. For instance, the taste of some typical childhood food. The intellectual imagination is evoked based on social, technical, scientific, political or historical data or knowledge. From this point, the designer creates something, adopting a manifest, work or any existing intellectual production and modifying it, creating something new from these elements. Fantasy imagination, on the other hand, is the one who has a bigger opening, for it comes from a fictional experience, which may come, for instance, of any book, story or of the own mind. Like an imaginary friend, it allows the designer to create anything he wishes: worlds, kingdoms, future or past. His creation must distance itself from present and current elements. This card, therefore, encourages the displacement from reality and allows objects to be created or possible futures for that who creates, affecting reality by influence on time and on the imaginary.

8.2. Senses

The sense cards were inspired on comments and suggestion from Juhani Pallasmaa about Rudolf Steiner. Steiner was a philosopher, mystic and an educator, and he created anthroposophy and Waldorf's pedagogy. As the proposal of Wonder Cards is to expand to areas of science beyond restrict rationalism, we employ Steiner's base of senses in the cards.

Steiner defines twelve senses as: touch, life, movement, balance, smell, taste, sight, thermal, of word, of thinking and of self. To bring closer the concepts to the Portuguese language, the sense "word" is called language; the "thinking", intuition; and the "self", being.

It is worth highlighting, however, that Steiner's study, on which he clearly defined each acting areas of each sense, suits in a more free way to Wonder Cards. Thus, we expect that the one playing the cards will freely interpret what each sense means to him. After all, the main purpose of Wonder Cards is to offer a creative impulse benefitting imagination and senses, not limit the result of this incitement. Helping to develop a state of mind as Bachelard pointed out (Bachelard, cited in Legros 2007, p. 225): "it doesn't matter the way an invention is made, what matters is always being ready for an inventive daydream, an imaginary inclination".

8.3. Emotions, Objects and Places

When we chose emotions, objects and places that would be used in the cards, we applied brainstorm methodology. That is, we generated a word list, and later, cut and added emotions according to our wishes. Particularly, regarding emotions, after initial research study on psychology and the nonexistence of an established taxonomy for the possible types, brainstorm proved to be an adequate methodology. On the other hand, the objects and places were inspired by Professor Stuart Candy's cardgame from OCAD University. He is a fiction design researcher, and created a card game called "The Thing From the Future", focused on creation of objects originated on the future. Our attention on objects and places was to consider a structure that allowed an expansion of the relationship between purpose and individual, a interchange.

Figure 3: Illustration of a card of each category (imagination, object, emotion, sense and space) besides the back of the cards



As the final words on brainstorm appear from a personal choice and knowing that it would be impossible to cover all possibilities, in these three categories there is a free choice card. This card allows the one who plays it to put an emotion, an object or a place of his preference, allowing the participant to be more influential in the creation process.

8.4. Suggestions of Use

We developed three initial ways to use, but the participants also can create their own ways to play. Which are:

1. The player chooses, according to his will, a card of each category.
2. The cards selection is secret and at random.
3. The player already has in mind the kind of object or space he intends to create, but he cannot go any further or wishes to have new ideas. Hence, the player puts the selected card of the object/space on the table and takes out a card from each category. For instance, someone who intends to make a jewel project can previously lock "jewel" in the category of objects and take out other cards until a group is formed.

Figure 4: Participants developing their ideas



On the workshop held during Rio +Design 2015, we chose the way of picking the cards secretly, second option, aiming to offer a greater creative challenge, for chance is part of the game and it is a way to stimulate reverie. One of the groups formed during the dynamics picked the cards: emotional imagination + touch sense + pleasure emotion + object tool+ place bedroom. From them, the created concept was that of an installation similar to a bedroom (place). In the bedroom there were memory objects (emotional) - a castle, a teddy bear (tool), for instance – that when touched (touch sense) lead the one who touched it to another plane (pleasure). In the practical plane, one of the solutions imagined was dealing with virtual reality eyeglasses, which enable the view of other spaces.

Figure 5: Participant writes about the solution proposed by these cards

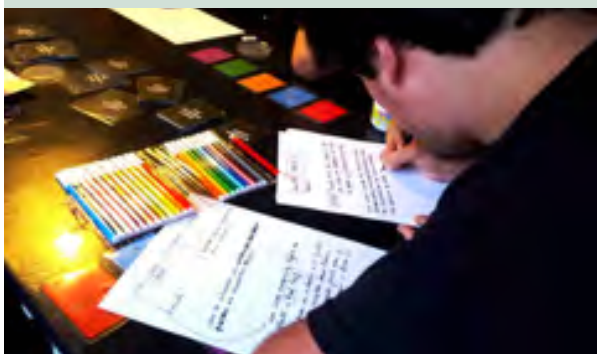


Figure 6: Scheme developed by participant



In another use, on the third way, a user locked the object card to his choice, thinking about the object "surfboard". Later, the other five categories were chosen secretly. They were: intellectual imagination + taste sense + nostalgia emotion + place kitchen. This group of words led to imagine an edible paraffin wax (intellectual + taste + kitchen), that, by taste and smell transported the surfer to the surfing experience, seated on his surfboard in the sun, listening to the ocean sound (nostalgia). In practice, it could be similar to a bubble gum with soothing properties, like passion-fruit and chamomile, and sea smell. This way, it could be eaten or spread throughout the surfboard.

9. Conclusion

The Wonder Cards, especially, are a creativity exercise. Hard, but extremely rewarding for whomever wishes to enter the world of senses and imagination. Mostly in the secret and random way of choosing the cards, it is interesting to see the creative turn of the participants. If they initially deny themselves the possibility to develop solutions: “– That’s impossible!” They manage to break their creative barriers. Above all, they start to believe again.

The cards, therefore, fulfill the purpose of their origin: serving all who wish to look at design from a more emotional perspective, from reverie and dream. Without, however, forgetting to bring this to the practical, viable and possible plane. Associating romanticism, enchantment, imagination and senses, it originates what we call as – for now – Wonder Design.

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yes, and (+), maybe: cloTHING(s) as conversation

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Abstract

CloTHING(s) as Conversation is an interdisciplinary research initiative that seeks to disrupt contemporary expectations of clothing. Our work questions longstanding tendencies to characterise garments as forums for creating statements linked to who we wish to be, what we do, who we are, and where we feel we belong. We are exploring clothing as mechanisms that encompass notions of meaningful interchange and dialogue.

One of the key artefacts in our work is a plus(+) form template that we use to create clothing. The plus(+) has been manipulated into hundreds of garment forms. It is an idea artefact. It helps us to negotiate and construct active critical conversations concerning Design for Sustainability, Fashion, Distributed Manufacture and Wearable technology.

The plus(+) has been consistently reconfigured by draping and folding and by using fastener objects (found and made). It has been placed in the built and natural environment and observed along the West coast of North America, the Canadian Prairies, Paris France, Venice Italy. It has been made, worn and observed by numerous participants over extended periods of time. Embodied experiences, documentation of actions, conversations, and other residual designed artefacts are all acting to expand perspectives and generate new models pertaining to how clothing is designed, produced and used.

Keywords: clothing, conversation, dialogic templates, contemplation, embodiment, sustainability, wearable technology, fashion

yes, and (+), maybe: cloTHING(s) as conversation

Introduction

The cloTHING(s) as Conversation project is focused on the discovery of new knowledge through the application of practical skills, product service systems and residual artefacts that enable novel pathways in sustainable design, production and the critical use of clothing. Our research is committed to questioning and identifying how technology fits into this equation. We are seeking generative protocols and affordances intended to facilitate individual and collective capacities to deal with the unpredictable unknowns implicit in climate change. An abstract form, a plus(+), acts as baseline and means for our explorations.

This paper will reflect on and discuss the Researchers' (faculty and students) recent experiences and insights connected to the utilisation of the plus(+) form template. It will detail research methods and approaches to inquiry that align with our own creative practices. It will reflect on thematically linked experiences through; *uni+form*, *Traveling/Pitching Plus(+)* and describe pathways of inquiry that have informed further interventions. It will move on to detail the format and objectives of: *oneplus7days* (a worn study taken on by four members of the research team) and the subsequent *untitled*, one month worn exploration taken on by the Lead Researcher. Insights from these cumulative experiences will be discussed along with a forecast of the framework that is in development for our next stage of inquiry and exploration.

Method

For several years the cloTHING(s) as Conversation team has been intent on developing new sets of relationships with clothing – interested in affording more expansive synergies with worn artefacts and the experienced world. As Designers, we pull on participatory research methods such as cultural probes (Gaver et al. 1999) and co-creation (Sanders & Stappers 2010), critical design approaches (Dunne & Raby 2013; Babke & Walker 2013) and material practice regularly as a means to inform new potentials and possibilities. Qualitative practices of Heuristic and Mindful Inquiry also informs the way we are currently working (Hiles 2001; Bentz & Shapiro 1998). As design researchers addressing the sustainable design, production and use of clothing we find that our own personal (self) experiences and perspectives are implicit and ever present (ed. Given 2008). Aspects of phenomenology, hermeneutics, critical social theory, and Buddhism also permeate our work (Hiles 2001; Bentz & Shapiro 1998). We apply self-dialogue, tacit knowing, intuition, indwelling, focusing, and the identification / application of internal frames of reference as a means of better understanding current lived experience (ed. Given 2008). We regularly seek out practices for comparison and phenomenological engagement (Hiles 2001). This is facilitated through the consideration of familiar clothing practices and subsequent acts of making, observing and wearing an unfamiliar and unusual textile form – the plus(+). Interventions using the plus(+) serve as a means of exploring and discerning new experiences. The documentation of these experiences and collection of residual artefacts offer up insight – a way to identify significant points of meaning making and emergent themes – a means to formulate new directions. It has allowed us to move into our current stage of inquiry that is seeking further iterative insight by sharing with others (Hiles 2001).

Also key to our research process are transpositional moves that connect insight from our social construct interventions and our material practice (Day Fraser & Doyle 2015; Braidotti 2006). Intuitive response and reaction play a significant role in the process. In the studio, designers not engaging directly with the plus(+) form regularly design in response to it. Proximity and accessibility to the experiences connected to the plus(+) have triggered new sets of form explorations pertaining to fastener development and novel applications of technology via re-purposed hardware from a "hacked" flatbed scanner.

Figure 1: silicon/textile explorations via a re-purposed "hacked" flatbed scanner



Informing

Uni+form

In 2013 cloTHING(s) as Conversation made it's first foray into using the plus(+) as a mechanism for insight. *Uni+form*, was conducted as a one day study. Eight individuals wore the plus(+) in a self directed manner. The experience was documented through individual journals and a before and after interview process. Through acts of wearing, the constraints and possibilities implicit to this unusual clothing form became apparent. We realised that the plus(+) functioned more easily as an accessory or expressive article of clothing. We identified areas for further design development and noted improvisational and structured approaches for dealing with its ambiguous nature. What began as an artefact-centred approach shifted to an experience-use centred one (Day Fraser et al. 2014).

Travel/Pitch Plus (+)

The shift to an experience-use perspective has led to more expansive investigations. *Travel/Pitch Plus(+)* was initiated as an alternate means of consideration. The plus(+) form was moved 'off-the-body' as means to explore shape language, proximity and context, self and the collective. Abstraction, Experiential Learning and Reconsideration of the 2-Dimensional plus(+) form, have offered the research team the opportunity to reflect on the self in relation to environment, community, and connectivity. It has allowed us to consider the plus(+)'s potential as a site for locating us 'in-the-moment'. Since February 2015 the plus(+) has been placed and observed (it has been *pitched*) in the built and natural environment in a wide range of locations. It has travelled along the West coast of North America (from Tofino to the Baja and back), to Paris France, Venice Italy, and the Canadian Prairies.

Poetic records (images and words) have tracked the artefact's course and sites of intervention. Through it's travels the plus(+) has served repeatedly as a facilitator: a protector from the sun, a place to sit, a means to collect and carry. Each time the plus(+) has been pitched we have taken notice of the surfaces it has rested on. The *pitchers* of the plus(+) have inadvertently been reoriented to water - cracked mud seen and considered "When was the last rain?" (M. Daniels, 2016 pers. comm, 11 January) - and air - "it's heat, movement rhythm, confounds simple actions... I was unable to lay my plus(+) down - flat" (H. Day Fraser 2015, pers. comm., 24 July). We have taken

notice of possibility (a cactus that the plus(+) was swung up and on to) and proximity (birds seen and listed: "Hawk, Pelican, Cormorant, 2 types of Gulls, Grey doves, Tijeras, Vultures" (M. Daniels 2016, pers. comm., 11 January). The plus(+)has served as a focal point as we consider relations between humans, between humans and other beings. It has also been a means to observe local acts (hunting/gathering crabs, communing over coffee). Habits, social maneuvers, acts of consciences behaviour and adaptation have all been noted.

Through this process the *pitchers of the plus(+)* have recognised a new relationship with the textile/worn artefact that involves embracing impermanence, and spontaneity. Acts of accessible improvisation connected to:

- actions (performative)
- engagement with surfaces (built + natural)
- relations with changing weather (airflow, wind, water)
- found associations (beach-combing, discarded remnants of culture)
- contemplation (of foreign culture, religion)

Back in Vancouver, the collection and transmission of these insights to the rest of the research team led to: storytelling (speculative fictions), acts of illustration, the development of archetype/persona and detailed use scenarios. We began to consider how we might co-locate and connect with the colleague, peer, or the friend away on a *walkabout* - how the form of the plus(+) augmented by technology might allow for a different understanding of the subtle experiences of the *pitcher* of the plus(+) and facilitate a means of transposed experience (Braidotti 2006).

Figure 2: Travel/Pitch Plus (+) - Tofino to the Baja and back



We noticed that in each location our marker – the plus (+) – augmented experiences. It allowed to us to reconsider and change up our assumptions of both the known and unknown. It facilitated reflection on the part of the *pitcher*/documenter and the design team in the studio. These notations and observations (holding of thoughts) were shared and used a means of continuing the conversation about the experience with one another in the present and at later dates. It became clear to us that the plus(+) acted not only as an aggregate prop and marker of experience but also as instigator. That the act of pitching plus(+) became “a conceptual model to enable more multi-faceted relationships with our community and environment” (M. Daniels 2016, pers. comm., 11 January).

Oneplus(+)⁷days

Oneplus(+)⁷days was an exploration into the possibilities of acceptance of the plus(+) form as an everyday expressive garment. As with previous interventions, the plus(+) was applied as a strategic, interrogative platform - this time serving as a means to reconsider and be attentive to acts of making, observing and wearing. *Oneplus(+)⁷days* built off earlier insights from *uni+form*. It aimed to apply form and fastener development from 2013 – 2015, and insights derived from the *Traveling/Pitch Plus (+)*. While the ‘*Traveling/Pitch Plus (+)*’ was designed to consider environment and place from an observational perspective, ‘off-the-body’, in unfamiliar territories, *Oneplus(+)⁷days* sought to engage individual participants in an embodied ‘on-the-body’ experience, situated in the ordinary everyday.

A set of mutually agreed, conditions were applied to the study. The (+) plus form would be taken on by individual research team members who would make, pitch, and then wear their plus(+) for seven consecutive days. Final decisions on scale, openings, finishing, types of fabric were determined by each participant. Observations connected to their experiences, would reflect on individual (body), collective (social), and environmental (natural) relations. Journaling through photo documentation, diary, sketchbook, or blog notation, and poetry/prose would be used to archive the personal experience - serving as a means of knowledge transfer to the other research team members.

The study was primarily located in and around Emily Carr University in Vancouver, but also took place in rural British Columbia and extended into lived experiences outside of the research studio. The plus(+) was worn in a range of everyday settings: from professional to social, formal to casual. We were interested in the daily experience of translating the flat plus(+) form into 3 Dimensional worn artefacts. We were interested in knowing to what extent instinct might play a role in informing this unusual act and mode of dress. We were seeking to uncover clues (mechanisms, triggers) that would inform us. We saw this intervention as a means of creating affordances for accessible wear – for mapping ‘how to’ assembly scenarios for future wearers of the plus(+). In addition to the pragmatics of getting dressed, we also wanted to investigate to what extent this simple (yet complex/puzzling and at times abstract) plus(+) form could be integrated into our regular social and spatial contexts. As designers we saw this as an opportunity to gain insight and inspiration in patterning for the unexpected – in facilitating and making acts of improvisation accessible and synonymous with clothing. We were interested to see if a new relationship with plus(+) as a worn artefact might take shape and potentially expand the action/observation potential of the garment.

Figure 3: wearing and pitching in rural B.C.



To date four women have participated. Ranging in age from early 20's to mid 40's, they have marked out and created forms indicative of their experiences, expectations and point in life. Tight fitting sundress forms, loose shawls, baggy pants, asymmetric constructed forms, informal outfits and formal attire have all been explored/worn. Metrics for personality have emerged through the varied approaches to the exercise: forms constructed (acts of making), fabric choices, finishing details, fasteners used, and additional adapted attachments.

Untitled: One month with the plus(+)

For the Lead Researcher the cumulative experience of the plus(+) through; *make, pitch, and wear*, catalyzed a tacit

understanding of the form. Both opportunities and details that remained to be worked out in order to facilitate accessibility for others became apparent. Based on this new understanding and insights, the Lead Researcher committed to *making, pitching and wearing* a second plus(+) for the entire month of August 2015. This longer period of activity allowed for an ongoing conversation with two other Research Assistants (RA's) on the project. The first of these RA's was enlisted to prototype fasteners that could address functional garment stability requirements, and encourage improvisation (through appropriation of existing and available fasteners such as bulldog clips and bobby pins) and have the capacity to act as placeholders for technology. Dialogue with a second RA working on exploring ways to 3D print silicon directly onto fabric also led to alternate mechanisms for connection. Plug, hinge and pocket prototypes were produced in response to the Lead Researcher's daily wear.

Insights and discussion

The information that was documented from the two sets of worn studies was colour coded (by participant) and collated into different categories based on key observations. Emerging categories were: deterrents, expectations, configuration, responses/reactions from others, direct compliments pertaining to the plus(+) form, care, wear, accidents, skill, personal preferences, questions, thoughts on design, choices and decisions made. This section will detail and discuss key insights from several of these categories. It will reflect on the experiences of wear that have informed and provoked the design research team.

Figure 4: further engagement with an uncertain form



Expectations and deterrents

As an unusual piece of clothing situated outside of the norm, the plus(+) compels a negotiation of comfort levels and perceived social acceptance. At the onset of this project, concerns about expectations of others (having to deal with expressed and imagined responses to the worn plus(+)) led to different approaches. The prospect of having to take on conversations and answer questions, along with the fear of looking slightly odd - of being a spectacle - gave cause for pause. Considered choices were made about how best to approach and start the experience. Some of us avoided public places, others depended on familiar, safe environments, others applied 'copy cat' tactics as a conscious means for manoeuvring into the unfamiliar.

Site tactics aside, it became apparent that all of the participants took to mimicry and camouflage of their plus(+) forms as a main means of adaptation. Forms that "looked like", hoods, sleeves, cuffs, etc. were created throughout the experience. Physical affordances such as 'pocket like' spaces 'to locate hands' or 'put things into' were devised. Lapel-like features served as a means of acceptance in more professional contexts. The format and balance of different plus(+) configurations (symmetrical verses asymmetrical) were the implicit implications of these observations. Repeatedly, decisions pointed to a desire to normalise the scenario - to self situate as closely as possible to existing social conventions. Linked to this inclination for predictability was the concerted effort to create stable configurations on the body. The plus(+) often defied this, however, and could be repeatedly depended on to do the antithesis - to slip.

Connected to the sought after qualities noted above, were expectations of the plus(+) form in relation to other items of clothing. Participants intentionally tried to create garment forms that could 'work/look good' and/or be worn with others. Pragmatic approaches to navigating both the functional and the social led to the formation of options that could easily be removed in specific situations in order to go: swimming, get through security at airports, etc. Unsurprisingly, observations about practical decisions connected to perceived needs of being warm or keeping cool were ever present.

Throughout the study there were moments when all of the participants expressed a lack of enthusiasm for having to wear it yet "again". Repetition became a burden. Once each of the participants continued past this initial reaction (usually in day four or five), however, things picked up and additional insights were uncovered. For the Lead Researcher who chose to continue for another month, and subsequently for three to four days/week thereafter

(in an informal context), the cumulative experience led to a new degree of comfort. Attempting and succeeding to wear the plus(+) in high pressure environments (public talks, airport security, dinners with new social contacts) has helped establish a growing comfort with the unstable clothing form. Anxieties about looking peculiar have receded.

Configuration

Approaches to assembly of our daily wear have shifted through the experience with the plus(+) and varied from person to person. Some of us began by finding a detail or point of entry and then assembling the plus(+) from there. In other cases we took on configuration ahead of time...exploring possibilities and making decisions the night before 'in preparation' (N. Tillen 2015, pers. comm., 26 July). Garments were clasped strategically and hung up on hangers ready to go. When solutions did not appear easily some of us slept on it – letting dreams unravel the issue – waking the next morning knowing what to do. When things got tricky, when time was short, all of the study's participant researchers reverted to wearing previous garment configurations. For the Lead Researcher the tactic of referring to earlier photo documentation and notes was also useful. The need to improvise, changing forms as required, throughout the day was experienced by everyone. Taking detours to private spaces in order to try and sort out sections of the plus(+) that had inadvertently released and gone array was a common occurrence - a matter of course in regard to wearing the plus(+).

As an open source form without the common affordances and constraints of arm, leg, neck placement or inside/outside, the plus(+) offers up countless configurations. Navigating this is a key part of the participants'/practitioners' experience. The best intentions for clothing forms often did not work as anticipated.

Improvisation

Adaptability of intent and improvisation impacted our new relations with the clothing form. As Participants we noted when we sewed ourselves in (N.McKenzie 2015, pers. comm., 2 August). We added things, strings, ties, and holes as needed and dealt with slippage by improvising; using Bamboo 'twigs' taped together as a clip binding (H.Day Fraser 2015, pers. comm., 27 July). We observed and noted additional opportunities in conventional accessories such as, belts and buttons, and found new ways to secure and pull ourselves together. We did not hesitate to pick up magnets, cut out cardboard, use paperclips, and attempt methods of connection suggested to us by others. Through this lived process we innately began to evaluate what was worth continuing with: insights into mechanisms for fastening, as well as additional details and affordances provided by straps, tabs, drawstrings and hems became jumping off points for future explorations.



Figure 5: improvisation and mechanisms for fastening

Wear/gestures-movement

Adaptability of intent and improvisation also occurred as we navigated our new relations of securing and adjusting this garment form. New physical gestures were noted as we consciously and subconsciously oriented ourselves to the boundaries of the form. Old actions were altered. New body movements were informed by our attempts at avoiding being caught: in doorways, getting out of cars, going up stairways. Adjustments and ongoing re-alignment to the garment form were frequent/commonplace.

Checking the format of the plus(+) and placement of the fasteners was part of our new wearing experience. Alternate tactics were taken when mirrors and reflective surfaces were not available. Gestures were devised in order to assemble elements of the plus(+) – the 'collar', the 'sleeve' etc. – and assure they 'sat straight' (H. Day Fraser 2015, pers. comm., 5 August).

The comfort levels and willingness to take on acts of

improvisation throughout the day were varied – integral in the ability to adjust initial intentions and expectations – but acknowledged as intrinsic to the forms worn. These movements and new garment/body relations also began to point to new terminology related to details (fasteners, tabs, etc.) located and in relation to the body.

Responses/reactions from others

The plus has encouraged many reactions from others: surprise; curiosity; descriptions of other's people's clothing; things remembered; concern for the wearer's looks; touching gestures; attempts to deconstruct the clothing form; concerns about reproduction and ownership; and a repeated request and desire to own/have one too.

The plus(+) has also inadvertently created a platform for conversation through play, acts of shared dressing and exploratory dress-up. Initiated by observers these actions have involved individuals taking on and trying out wearing the plus(+) as a garment. At other times the fasteners used for assembling the plus(+) have been picked up and reassembled. Manipulated and reconsidered the plus(+) and its mechanisms for assembly have enabled observers to make connections to other cultural, historical, pop references and clothing forms (N. McKenzie 2015, pers. comm., 28 July). People have asked about and considered this project in relation to their own experiences. A case of individual and communal navigation, of speculation and understanding mediated through form, the plus(+) has repeatedly provoked conversation about what it could be or how it might function.

Reactions from others have also included positive observations vocalised and directed at the wearers of the plus(+) by friends, colleagues and others. Taking on the *unusual* came with unexpected benefits of feeling 'cool' in social settings (N. McKenzie 2015, pers. comm., 3 August) and the unfamiliar experience of being noticed positively – and in a familiar way – by strangers in large public settings (H. Day Fraser 2015, pers. comm., 18 August). It also provoked discomfort connected to notions of performance, and of being the spectacle - attention to self as an act of isolation (M. Daniels 2016, pers. comm., 19 January). Some wearers questioned the sincerity of compliments while others equated these as a positive “I have realised something I really enjoy – triggered by things I choose to wear – compliments! – are wonderful treats” (H. Day Fraser 2015, pers. comm., 2 August). Worth note and consideration is the observation of compliments and subsequent identification of these perceived commendations as notable motivators of clothing choices – compliments and their role as affordances or deterrents for changed behaviour and sustained sustainable clothing practices.

Onwards

Our experiences have allowed us to acquire a heightened awareness of clothing through adjustment + improvisation, and constraints that are physical, social, and ecological. These observations have given us direct insight and pause for reflection. We have become aware that we seek to create affordances for both acceptance and action. We see these as means to augment our connections to the environment through clothing. Metrics and mechanisms for both stability and change are required. Improvisation has emerged as both a method and a design outcome in of itself. It shifts the emphasis from the design of objects (artefacts) to the design of actions (modes of engagement). The design-object becomes subordinate to conjunctive relations and empathetic comprehension (Berardi 2014). Artefacts such as our plus(+) become a mode of conversation. The shared experience with individuals, the collective and the environment - the actions surrounding them - are a key component and arguably the work itself.

Moving forward, the experiences of *making, pitching, and wearing plus(+)* form variations – and the experience and application of a *critical use* - will be shared with others. Individuals located in New Zealand, Holland, Germany, Spain, England, urban and rural North America alike have expressed interest towards plus(+) engagement: “can I have one too?”. Through the next iteration of the plus(+) form – gifted as invitation – an extension of experience and broadening contribution of perspectives is envisaged – one that facilitates and centres us on possibility and proximity – in the *how and now*.

Note

All of the participant based research described in this paper has received official Research Ethics Approval from Emily Carr's University of Art + Design's Research Ethics Board.

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presenting 'LOST BUT NOT FORGOTTEN' at the crypt gallery st. pancras: negotiating and constructing active critical conversation concerning contested human remains in museums

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Abstract

Lost But Not Forgotten is a commemorative wreath made from donated human hair using Victorian techniques for creating mourning artefacts. It memorialises the lives of people whose skulls were taken from the colonies for museums during the late nineteenth century - a historical moment described by Stephen Jay Gould as 'the heyday of craniology'¹, which remains a significant factor in claims made by Indigenous peoples for return of ancestral remains from museum collections in the UK today. Lost But Not Forgotten was made as the focal point in the culminating exhibition of a practice-based doctoral research project conducted in the School of Art and Design History at Kingston University². This paper, which is presented in three parts, describes: the background, and rationale for the project; research and development of the Lost But Not Forgotten wreath as an artefact designed to facilitate active critical conversation concerning contested human remains in museums; and the role played by the Crypt Gallery St. Pancras in the process of presenting this artefact and associated historical evidence to the public.

presenting 'LOST BUT NOT FORGOTTEN' at the crypt gallery st. pancras: negotiating and constructing active critical conversation concerning contested human remains in museums

I Background to the project

In 2006 I was commissioned as Resident Artist/consultant to write a report on the Human Remains collection at the Natural History Museum in London. At that time the Museum was deciding whether it should repatriate the bones of 17 Tasmanian individuals – the first return of the kind for the Museum – under new legislation, which gave nine named national museums in England (of which the Natural History Museum is one) the 'power to de-accession human remains'³. I was commissioned because of my work as an artist and writer with research interests in remembrance, mourning, and the narrative potential of objects. I had been participating for several years in public debate about the ethics of the display of human remains in both science and art contexts, and I had developed a performative role as Keeper of The Wildgoose Memorial Library: a collection of found and made objects, documents, photographs and books, which acts as the focus for my practice, and a forum for discussion about the history and ethics of collecting⁴.



The Wildgoose Memorial Library ©Jane Wildgoose.

1 Stephen Jay Gould, *The Mismeasure of Man* (New York & London: W. W. Norton, 1996), 105.

2 Jane Wildgoose, *Collecting and Interpreting Human Skulls and Hair in Late Nineteenth Century London: Passing Fables & Comparative Readings at The Wildgoose Memorial Library; An artist's response to the DCMS Guidance for the Care of Human Remains in Museums* (2005), [unpublished] PhD thesis, Kingston University London, 2015.

3 "Human Tissue Act 2004," "47 Power to de-accession human remains," Legislation.gov.uk website delivered by The National Archives, accessed June 6, 2014 www.legislation.gov.uk/ukpga/2004/30/section/47

4 The Wildgoose Memorial Library was the subject of a NESTA (National Endowment for Science, Technology and the Arts) Dream Time Fellowship, 2005-06.

At the Natural History Museum I discovered archival evidence indicating there had been an active programme of skull collecting at the Museum during the late nineteenth and early twentieth centuries. This discovery led to further research, which included devising and presenting a Sunday Feature for BBC Radio 3, in which I investigated the provenance of two human skulls that had been donated to The Wildgoose Memorial Library, and examined my responsibilities in being in possession of them. It also led to the doctoral research project I am going to discuss today: in which I made a commemorative artefact from donated human hair, as a means of negotiating and facilitating active critical conversation with the public about human remains in museums.

Human remains in museums have come under considerable scrutiny in recent years. In 2004 a change was made to the law concerning them, with the introduction of Section 47 of the Human Tissue Act (2004), which gave the national museums in England the ‘power to de-accession human remains’⁵. To accompany this change, and to provide an advisory framework for best practice in England, Wales and Northern Ireland, the Department for Culture, Media and Sport published *Guidance for the Care of Human Remains in Museums* (2005)⁶. The process that led to these measures was initiated in 2000, when Prime Ministers Tony Blair (in the UK) and John Howard (from Australia) issued a joint public statement, in which they agreed to take action in response to Australian Aboriginal and Indigenous people’s claims for return of ancestral remains from museum collections in the UK⁷. In 2001 the UK Government set up a Working Group on Human Remains, which invited and received submissions from a range of interested parties within and beyond the UK, and it also set up a scoping survey to determine the number and distribution of human remains in collections. When the Working Group reported in 2003, it found that there were ‘at least 61,000 human remains’ housed in museums in England⁸.

Pete Brown (who was Head of Learning & Interpretation at Manchester Museum from 2005-2010) has described ‘fierce debate erupting over questions of retention, repatriation and reburial’ during the period of consultation leading to the change to the law and the publication of the DCMS *Guidance for the Care of Human Remains in Museums* (2005), which accompanied it. But while this ‘fierce debate’ went on within the museum sector over a decade ago, not much information about it - or the historical legacy that led to it - has reached the museum going public. If we look, for instance, at what the British Museum has to say about human remains on its website today, it tells us that, ‘surveys show most visitors are comfortable with, and expect to see, human remains as an element of Museum displays’⁹. However, my doctoral thesis would argue that this attitude on the part of the public indicates a lack of awareness of the historical legacy that has led to claims for the repatriation of human remains from museums. It would also demonstrate that museums have been reluctant to include information about human remains collecting practice from the colonies in the narratives they present to visitors. Citing the work of artists including Fred Wilson, Pippa Skotnes, Daniel Boyd, Christine Borland, and Yinke Shonibare, my thesis would be located within the field of artists whose work engages the public in critical conversations about a range of colonial legacies concerning museums. Facilitating conversations with the public in exhibitions and presentations related to my research, I would conclude that, when the public is given access to information about the circumstances in which human remains were collected under colonial rule, their expectations and perceptions about the inclusion of them in museums are not as simplistic as the unattributed surveys cited on the British Museum website would suggest.

Elizabeth Edwards and Matt Mead have argued that, ‘the failure of museums to integrate colonial pasts into their narratives...is both a symptom of and metaphor for the “invisibility” of the colonial past’¹¹. They conclude that, if museums do not engage visitors with difficult aspects of their institutional histories, then, ‘what is missing is a sense that the colonial past, however disturbing, is a shared social and cultural history, profoundly relevant to all constituencies’¹². When the Working Group on Human Remains reported in 2003, it revealed a complex picture concerning the historical legacy of human remains collecting during the colonial era, and its relevance to museums and claimants today. The DCMS *Guidance for the Care of Human Remains*, which was drafted in response to the Working Group’s findings, acknowledged that the question of human remains in museums has become ‘an issue of increasing significance to the museum sector’¹³. Specifically, the *Guidance* recognised that ‘some human remains’ in museums were ‘obtained in circumstances that are considered unacceptable...between 100 and 200 years ago

5 “Human Tissue Act 2004,” accessed June 6, 2014, www.legislation.gov.uk/ukpga/2004/30/section/47

6 *Guidance for the Care of Human Remains in Museums*, Department for Culture, Media and Sport, 2005, National Archives website, “dcms, department for culture, media and sport,” “Guidance for the Care of Human Remains in Museums,” accessed June 8, 2014, webarchive.nationalarchives.gov.uk/+http://www.culture.gov.uk/reference_library/publications/3720.aspx

7 “Joint statement with Tony Blair on Aboriginal remains,” “PM Transcripts,” John Howard, Australian Government Department of the Prime Minister and Cabinet website, July 4, 2004, accessed June 6, 2014, pmt transcripts.dpnc.gov.au/browse.php?did=11611

8 Department for Culture Media and Sport, *The Report of the Working Group on Human Remains*, November 2003: 13. See: the National Archives website, “dcms, department for culture media and sport,” “Working Group on Human Remains Report,” accessed January 18, 2016, webarchive.nationalarchives.gov.uk/20100113212249/http://www.culture.gov.uk/reference_library/publications/4553.aspx

9 Pete Brown, “Us and Them: who benefits from experimental exhibition making?” *Museum Management and Curatorship* 26, no. 2 (2011): 133, accessed June 26, 2014, www.tandfonline.com/doi/abs/10.1080/09647775.2011.566713

10 “Human remains” “Collections and display,” British Museum website, accessed January 18, 2016, www.britishmuseum.org/about_us/management/human_remains/collection_and_display.aspx

11 Elizabeth Edwards and Matt Mead, “Absent Histories and Absent Images: Photographs, Museums and the Colonial Past,” *Museum & Society* 11, no. 1: 19.

12 Edwards and Mead, “Absent Histories”: 24.

13 DCMS, *Guidance*, 5.

from Indigenous peoples in colonial circumstances, where there was a very uneven divide of power¹⁴. Overall, the *Guidance* established that ‘different people have different attitudes to death and human remains¹⁵’. It advised that, while human remains ‘have the potential to make a contribution to the public good, through research, teaching, and, in appropriate cases, display...they [can] also have a personal, cultural, symbolic, spiritual or religious significance to individuals, and, or, groups’. It concluded that museums ‘need to address cases [of claims for repatriation of human remains] both in the light of the present day situation and in a full and deliberate consciousness of all the historical circumstances¹⁶’.

II Researching & developing the *Lost But Not Forgotten* wreath as part of a practice-based PhD project

The ‘unique status¹⁷’ ascribed to human remains in the DCMS *Guidance* – their potential to be understood as either *objects* of study, or *subjects* of ‘personal, cultural, symbolic, spiritual or religious significance to individuals, and, or, groups¹⁸’ – and the ‘need to address cases [of claims for repatriation] both in the light of the present day situation and in a full and deliberate consciousness of all the historical circumstances¹⁹’ – became the starting point for my doctoral research project. Overall, I wanted to extend my practice as an artist who works with collections and collecting as a means of engaging the public in active critical conversation about the circumstances in which human remains were collected for museums under colonial rule, and the relevance of this historical legacy to claims for their repatriation today. My primary research question was: ‘how may an artist’s practice-based comparative study of the collection and interpretation of human skulls for scientific research, and human hair for memorial purposes, in late Victorian London contribute to public understanding of the legacy, and “unique status” ascribed to human remains in museum collections today as articulated in the DCMS *Guidance for the Care of Human Remains in Museums* (2005)?’

I began by focusing on the vast collection of human skulls that was amassed at the Hunterian Museum of the Royal College of Surgeons of England during the nineteenth century – several thousand of which were transferred to the Natural History Museum in London during the late 1940s, and the 1950s²⁰. My research included reading, and transcribing excerpts from hundreds of previously unpublished letters in the Archives of the Royal College of Surgeons, from suppliers in the colonies who shipped skulls and skeletons to its Hunterian Museum²¹ where the circumstances of their collection were documented, together with detailed measurements provided in the *Catalogue of the Specimens ...Contained in the Museum of the Royal College of Surgeons of England, Part 1, Man* (1879²² and 1907²³). The letters – from surgeons and physicians, military officers, naval officers and the Admiralty, Her Majesty Queen Victoria’s British Consuls in the Colonies, missionaries and clergymen, explorers, the Chief Justice of New Zealand, the Governor of the Falkland Islands, the Governor of Australia, museum curators in New Zealand and the USA (and others) – showed that human skulls were taken systematically, and in great numbers, from the recently dead in graveyards and hospitals in the colonies. The letters also revealed that a large proportion were removed without consent, and in the knowledge that this would interfere with local mourning custom and cause distress to the communities from which they were taken.

From the Royal College of Surgeons’s catalogues I learnt that the systematic measurements taken from the skulls (a practice known as craniometry, or craniology) provided data that was used to develop physical anthropological theories of hierarchical racial differentiation. In the 1880s these theories were applied when the anthropological collections were introduced at the British Museum-Natural History in South Kensington, and they were still in evidence in the public galleries there during the first decades of the twentieth century. The Museum’s *Gallery Guide* for 1931, for instance, explains that displays illustrating ‘the science of physical anthropology²⁴’ demonstrated ‘the different types of human skulls and methods of measuring and estimating brain capacity²⁵’. It also asserts that:

‘...The human skull differs from that of the other mammals in the great relative size of the brain-case, and the reduction of the bones of the face; this is related to the high development of the brain, the disuse of the

14 DCMS, *Guidance*, 8.

15 DCMS, *Guidance*, 8.

16 DCMS, *Guidance*, 8.

17 DCMS, *Guidance* 7, 8, 16.

18 DCMS, *Guidance*, 7.

19 DCMS, *Guidance*, 8.

20 See: Getty Images/Hulton Archive, gty.im/80831163

21 For a detailed reading of correspondence between William Henry Flower, Conservator of the Hunterian Museum at the Royal College of Surgeons of England from 1861-1884 and William Lodewyk Crowther, a medical officer resident in Tasmania, concerning the acquisition of human osteology, see: Helen MacDonald, ‘The Bone collectors’, *New Literatures Review*, No. 42, October 2004: 45-56; also see: Helen MacDonald, *Human Remains: Dissection and its Histories* (New Haven & London: Yale University Press, 2006), 108-117, 172-173, and Helen MacDonald, *Possessing the Dead: The artful science of anatomy* (Melbourne: Melbourne University Press, 2010), 110-111, 133.

22 William Henry Flower, *Catalogue of the Specimens Illustrating the Osteology and Dentition of Vertebrated Animals, Recent and Extinct*, Contained in the Museum of the Royal College of Surgeons of England, Part 1, Man, 1st ed. (London: Printed for the College), 1879.

23 William Henry Flower, *Catalogue of the Specimens Illustrating the Osteology and Dentition of Vertebrated Animals, Recent and Extinct*, Contained in the Museum of the Royal College of Surgeons of England, Part 1, Man, 2nd ed. (London: Taylor and Francis), 1907.

24 *Illustrated Guide to the Exhibition Galleries* (published by order of the Trustees British Museum [Natural History] London, S.W.7, 1931), 157.

25 *Illustrated Guide to the Exhibition Galleries*, 159.

jaws and teeth as weapons, and the perfection of binocular vision. The races of mankind with prominent jaws and small brain-cases are consequently regarded as being of a lower type than those in which the jaws are more reduced in size and the brain-case is larger²⁶.

The *Gallery Guide* (1931) adds:

‘All the different races of mankind are commonly treated as belonging to a single species: and while numerous classifications of these races have been proposed, three main groups are here recognised. These groups, best defined by the character of the hair, are typified by (1) the Caucasian, or white races of Europe; (2) the Mongolian or yellow races of Asia; and (3) the Negro, or black races of Africa²⁷.

But while the scientists at the Royal College of Surgeons and the British Museum-Natural History were measuring and assessing human skulls, and hair, in order to differentiate man into a hierarchy of ‘higher’ and ‘lower’ types, in wider society in the nineteenth century hair was ubiquitously used and understood as the *subject* of mourning artefacts commemorating known individuals. For this aspect of my comparative study I referred to Elizabeth Hallam and Jenny Hockey’s argument that,

‘the potency of human remains as facilitators of personal memory is evident in the uses of hair jewellery from the seventeenth to the nineteenth century in Northern Europe. Worked into brooches, lockets, rings, and bracelets...human hair has extended memory connections through the powerful evocation of the person to whom it once belonged²⁸.

I took a research trip to Leila’s Hair Museum in Independence, Missouri USA, which is probably the largest collection of hairwork in the world.

Leila’s Hair Museum, Independence, Missouri, USA.
Photo Jane Wildgoose ©from Leila’s Hair Museum



Leila Cohoon with 19th Century examples of hairwork.
Photo Jane Wildgoose ©Leila’s Hair Museum



Hairwork Samples ©Jane Wildgoose



26 *Illustrated Guide to the Exhibition Galleries*, 158.

27 *Illustrated Guide to the Exhibition Galleries*, 158.

28 Elizabeth Hallam and Jenny Hockey, *Death, Memory and Material Culture* (Oxford: Berg, 2001), 136.

At the Museum I found thousands of examples of hair jewellery dating from the seventeenth to nineteenth centuries, and hundreds of wreaths produced during the nineteenth century, in many of which each flower had been made from the hair of a known individual. Sitting across a table from Leila Cohoon (who owns the collection) and surrounded by her framed nineteenth-century hair wreaths, I learnt techniques for binding and looping hair and wire; for threading using a knitting or darning needle and multi-strand braiding.

By referring to the wreaths and individual flowers that had become separated from them I also learnt how the components I was making could be manipulated into petals and leaves.

Cohoon suggests that the women who made the wreaths in her collection 'were doing it to keep track of the family'²⁹, and Helen Sheumaker (who has written comprehensively on hairwork in America) concludes that they 'made [them] as a testament to ...[their] emotional lives'³⁰. The smallest wreath in Cohoon's collection is presented in a daguerreotype case that would fit into a pocket. It contains the hair of six named individuals: '1. Stella Harris 2. Carrie May H. 3. Jennie H. 4. Juliet H. 5. Gracie H. 6. Crissie [?H - obscured by wreath]' The numbers 1-6 are written in ink on the paper forming the background to the wreath, and a corresponding enumerated list occupies the centre of the work. The largest example in Cohoon's collection incorporates the hair of 150 individuals looped and threaded into flowers, leaves, little birds, and a butterfly that floats above a handwritten enumerated list of the names of the donors of the hair incorporated in it, which is headed: 'INDEX TO HAIR WREATH 1881-1882 Made by Estella Miller'³¹.

During my trip to America I talked to a young woman who took an interest in my work, who identified herself as being 'half-Cherokee'. She emailed me saying how inspired she was by the work I was developing 'for all of the lost but not forgotten'³² whose remains were taken without consent for museum collections. Her endorsement provided the title for the new piece of hairwork I was planning to make, and when I returned to London I began including information about this work in formal and informal talks to students and the public. By August 2014 I had received donations of hair from 15 people who volunteered following my talks about the work. Each hair flower in the *Lost But Not Forgotten* wreath is made from donated hair, and commemorates the life of an individual whose skull was taken from the colonies to provide data for physical anthropological research.

Each hair flower has two cards attached to it: one has the hair donor's initials or signature written on it; the other is stamped with the number assigned to an individual whose skull was taken from a burial-place or a hospital in the colonies, as published in the *Catalogue of the Specimens... Contained in the Museum of the*

19th Century hairwork flower. Photo Jane Wildgoose ©Leila's Hair Museum



Lost But Not Forgotten wreath, detail ©Jane Wildgoose



29 Leila Cohoon, Double Visions Lecture Series, Kemper Museum of Contemporary Art, Kansas City, Missouri USA, author's notes, November 8, 2013.

30 Helen Sheumaker, *Love Entwined: The Curious History of Hairwork in America* (Philadelphia: University of Pennsylvania Press), 119.

31 Author's notes and photographs at Leila's Hair Museum, Independence, Missouri USA, November 8, 2013.

32 Paige Sanders, email to author, November 12, 2013.

Royal College of Surgeons of England, Part I: Man (1907). The hair donors' names and the date on which the hair was donated, the number of the skull it commemorates, and the published details of how it was taken are recorded in ledgers accompanying the wreath³³.

III In this Place: Exhibiting the *Lost But Not Forgotten* wreath at the Crypt Gallery St. Pancras

From the outset of this project I wanted to present my findings and the artefacts accompanying them as a new “archive” of The Wildgoose Memorial Library, in a place that would bring a material dimension to facilitating critical conversation concerning contested human remains in museums. I selected the Crypt Gallery St. Pancras in northwest London – a venue that doubles as both contemporary art gallery and historical burial site – as the place for presenting the historical evidence I had gathered, and the *Lost But Not Forgotten* wreath that I had made to accompany it.

Exhibiting my archive within this impressive tomb would be substantially different from presenting it under state-of-the-art lighting in a white cube gallery, in the sterile environment of a temperature/humidity-controlled museum, or on Powerpoint in a university seminar room. In a series of underground chambers dedicated to the dead and their memorialisation the physical environment would, I anticipated, encourage visitors to reflect on their own feelings concerning the dead and their treatment, and the mourning traditions that were current in the UK during ‘the heyday of craniology’³⁴ in the nineteenth century.

Lost But Not Forgotten wreath, with accompanying ledgers, Crypt Gallery St. Pancras 2014 ©Jane Wildgoose



Entrance to Crypt Gallery St. Pancras ©Jane Wildgoose



Crypt Gallery St. Pancras ©Jane Wildgoose



Memorial Stone, Crypt Gallery St. Pancras ©Jane Wildgoose



³³ Notice accompanying *Lost But Not Forgotten* hairwork wreath in *The Wildgoose Memorial Library presents Passing Fables & Comparative Readings: Collecting & Interpreting Human Skulls & Hair in Late Nineteenth Century London*, Crypt Gallery St. Pancras, 20-21 September 2014.

³⁴ Gould, *Mismeasure of Man*, 105.

Following the exhibition, a visitor emailed me saying, 'I was quite overwhelmed contemplating the wreath as juxtaposed with the "cargo lists" and correspondence about "acquisitions"³⁵. Another described how the Crypt evoked a profound sense of 'facing up to one's own mortality...the end game after all'³⁶, while another wondered: 'were I not...entering these dreamlike chambers – could I find the psychic space to encompass the moral dilemma?'³⁷ Another visitor wrote to me saying that the Crypt, 'works on the senses...the below-ground experience is an emotional as well as a sensory one', and, 'the mystery, adventure, shapes, shadows...these factors induce new patterns of thinking and potential understanding through the body'. She also made an observation that went to the heart of my motivation for embarking on this project in the form of practice-based research, and for making an artefact as the means of facilitating and negotiating active critical conversation about human remains in museums. She proposed that, 'overall, the exhibition is the aesthetic, physical expression of values, of ethics', and concluded that, 'if it is possible [for the audience] to experience this rather than read it alone, the ideas and knowledge will extend, affect, bring change'³⁸. [Emphasis in original.]

The *Lost But Not Forgotten* wreath is a work in progress; it will continue all the while there are people willing to donate their hair to it, and while there are individuals still to be commemorated whose skulls were taken from the colonies, as published in the Royal College of Surgeons *Catalogue* (1907). The conversations this work has prompted have encouraged me to continue to use my practice as an as an artist to addresses the emotional, as well as the intellectual interpretation of collections. They have also encouraged me to continue to make artefacts, and to work site-specifically, as a means of engaging the public with the research I have conducted in order to address the legacy of a painful historical moment as part of 'a shared social and cultural history, [that is] profoundly relevant to all constituencies'³⁹.

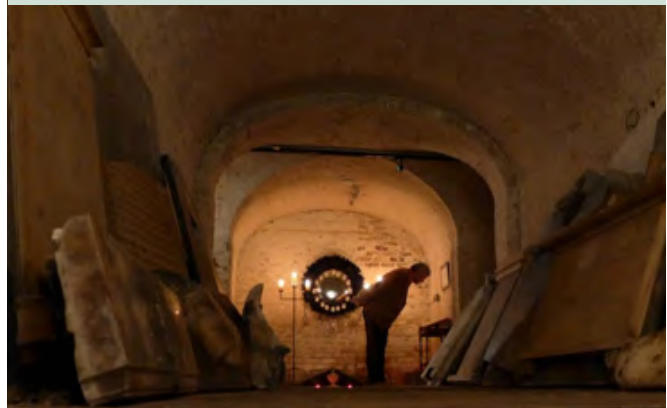
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Family Vault, Crypt Gallery St Pancras ©Jane Wildgoose



Visitor reading ledgers accompanying *Lost But Not Forgotten* wreath, Crypt Gallery St Pancras (2014) ©Jane Wildgoose



35 Sarah van Riemsdijk, email to author, October 20, 2014.

36 Mary Hooper, email to author, October 9, 2014.

37 Sarah van Riemsdijk, email to author, October 20, 2014.

38 Kay Syrad, letter to author, October 13, 2014, 3.

39 Edwards and Mead, "Absent Histories": 24.

cultural identity and the municipal gallery: the re-imagining of bradford's collection as a transcultural representation of identity at cartwright hall 1904-2014

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Abstract

Museums have historically played an important role in the formation of cultural identities; they evolved in their current form in the late nineteenth century concurrent with the emergence of the bourgeois public sphere (Bennett, 1995). As cities have been spatially transformed through time by the layering of new and existing expressions of cultural identity, galleries and museums have struggled to retain their meaning as representational spaces. The municipal gallery at Cartwright Hall in Bradford presents a timely case study demonstrating how it ensured that its collection evolved to reflect the changing communities in the city and how, by re-imagining the idea of heritage, it has created a transcultural representation of identity.

Keywords: cultural identity, collective memory, empire, transcultural space

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1. Identity formation: museums and the public sphere

Museums and galleries are important cultural spaces within our cityscapes; they present unique opportunities to shape and represent multiple cultural identities, disseminating ideas and memory through both their exhibitions and the architectural form they take. This paper uses the example of Cartwright Hall to explore how museums have used multi-temporal strategies to communicate collective memory and represent cultural identities through time. Completed in 1904 to commemorate the city's industrialists and mark the opening of the Bradford's Great Exhibition. It is now curated as a transcultural space (Macdonald, 2013), with tangible connections to Empire explored both explicitly and implicitly through the collections.

Bennett argues that through the late 19th and early 20th centuries, museums, galleries and exhibitions could be conceived of as an 'exhibitionary complex' (1995, p. 59); a set of linked sites which both encouraged and supported the dissemination of emerging knowledge, often in the form of new disciplines such as anthropology or psychology. The Foucauldian manner in which they were conceived of, promoted and sanctioned by municipal institutions suggests that they formed a discourse that can be associated with knowledge and power. He argues that there were three main strands to the development of these discursive elements; their development as social and public spaces, rather than the selective private institutions they had been previously, their transformation into spaces to use culture and knowledge for enlightenment, and a consideration of how the spatial organisations of museums might encourage new norms of public conduct. (1995, p. 23-25)

Until the Public Museum was established the general public had only been able to access material culture at fairs, theatres, exhibitions and tournaments. The new discourse was formed in the context of unequal means of engaging with material culture; associations with professional guilds, wealthy philanthropists, and political figures meant that through these codes of engagement, museums came to be part of the production of particular social realities. In the case of significant collections such as the Victoria and Albert Museum or South Kensington Museum as it was first called and the British Museum this was achieved through historical acquisitions and enshrined a particular world view of Victorian Imperialism (Barringer, 1998, p. 11). Whereas smaller municipal collections such as Bradford's museums, evolved on a more ad hoc basis, relying heavily on bequeathed works of arts and loans from individuals, thus reflecting the particular tastes or interests of a few. Despite these differences, the development of the museum as a public space saw the sponsorship of particular exhibitions and display of symbolic artefacts contributing to the reproduction of a collective cultural identity as mythologised and upheld by what we can loosely call state-sanctioned informal coalitions of local power. The idea of the 'museum' emerged as a concept at the same time as the formation of nation states, and gave agency to the collecting of items deemed representative of national heritage and consequently cultural identity. The 'new spaces of representation' (p. 33 Bennett op cit.) became sites for the creation of 'three-dimensional identity stories for the public.' (Macdonald, 2013, p. 166)

Museum buildings also presented a new opportunity in the public sphere to convey meaning and identity through architectural styles, spatial arrangements, decoration and the use of allegorical imagery. Even minor municipal building used the classical styles revived in the Victorian and Edwardian periods to demonstrate Greek, Roman and Italianate forms and bring grace and order to the public sphere. The housing of cultural objects, paintings and sculptures within purpose built museums or galleries brought a further dimension to the Victorian urban landscape, enabling cultural values to be inscribed upon the city. The exterior could communicate the ideas and values of contemporary society and culture, cloaked in the Classical language of the ancient Greeks and Romans; whilst the interior would present mutable scenarios to disseminate cultural values of that time.

In Bradford, this was manifest in the grand Baroque façade of Cartwright Hall designed to convey a sense of civic monumentality. The allegorical sculptures on the domed tower (see fig. 1) represented values that reflected the cultural and mercantile identity of the city. On the upper part there are six figures representing Art, Literature, Music, Architecture, Sculpture and Drama, whilst four larger scaled figures at the base of the cupola depict Spinning; a woman holding a distaff, a figure depicting Commerce holds a model of a ship, signifying the global nature of trade and connectivity with other nations. In addition Fortitude and Abundance are symbolised on the North side, itself less prominent and perhaps signifying the central position that trade and industry played in creating the city and its cultural position. (Collections of Bradford Museums and Galleries, 1997)

Cartwright Hall was built on the former bequeathed estate of the Lister family, owners of Manningham Mills. This distinguishes it from many municipal buildings in the Victorian and Edwardian eras as most were sited within civic quarters forming boulevards or malls and creating new public spaces with memorials and monuments. The placing of monuments and public buildings within this new cityscape formed part of the narratives of national and regional power and has since been identified as a representation of Imperial Identity. (Driver & Gilbert 1999, Crinson, 2003, King 1990)

2. Memory and the spatial organisation of museums

Having established how the emergence of the museum created social spaces of enlightenment within the public sphere where social realities were communicated both through museum collections and displays and the buildings themselves; this paper argues that from this historical perspective museums become sites of memory.

Exhibitions articulate a form of collective memory through the display and curation of material culture as heritage. Assmann argues that through objectivised culture, such as buildings, texts and customs, memory becomes collective and it is culture that fixes collective memory as a form of shared identity; a group, or society can reproduce its identity through an understanding of shared knowledge. (1995, pp. 127-128) Pierre Nora makes similar spatial claims for memory; distinguishing between memory and history; memory is a group recollection whilst history is a construction or representation of the past, he argues that *sites of memory* (Lieux de Mémoire) are the spaces where collective memory can be articulated (1989).

The concept of Lieux de Mémoire in relation to Cartwright Hall can be applied to both the physical siting of the building and the principles underlying the display of the collections. There is a strong sense of temporality within the site, the tall chimney of Manningham Mill still has an overbearing presence in the area, connecting us implicitly with the Lister family's fortunes and reminding us that this was until quite recently also an industrial landscape. We can also recall other spatialities; the Great Exhibition of Bradford was held on this site to mark the opening of the Hall in 1904, itself an early staging of industrial fortitude positioning Bradford at the centre of an imperial culture. In its current manifestation, positioning itself a transcultural space, Cartwright Hall traverses the cultural memories and identities of the many communities in the city. It could be argued that this is accomplished through a curatorial strategy of layering multiple sites of memory. An examination of the viewer's phenomenological relationship with material objects will help to demonstrate how this can be achieved.

3. De-stabilising the temporal context: museums as sites of memory

By foregrounding the context of memory, Shelton suggests that in the process of curating an exhibition, objects are de- and re-temporalised. (op cit. p. 484) Removed from their context, the chronological relationship becomes secondary and we can re-imagine cultural objects within the context of memory rather than historical time. The viewer and object now exist within the moment, the object is no longer enveloped in an 'other' time and the opportunity for connections with collective or individual memory is more tangible. The Connect Galleries at Cartwright Hall are arranged on the thematic basis of People, Place and Imagination, which implicitly allows the fabric of collective memory to envelop the complete exhibition. By de-temporalizing paintings, sculptures and fine arts, they situate them in the present past (Macdonald, 2013, Butler, 2006), and the viewer connects with memory more readily. Presenting the connections with people or places, the collection stimulates the possibility of prompting memory (sometimes individual or familial, or sometimes collective) but often in the context of shared heritage.

4. Negotiating difference

Museums were important historically in the assemblage of people collectively, thus adding to the possibility of the formation of collective memory and identity which helped to make the idea of distinctive cultures more tangible and publicly accessible. (Macdonald, op cit. p. 166) The display of material culture elevated items giving them notoriety and significance; this is called the museum effect whereby museums create a two-fold dimension; the act of placing an object within a museum infers a special meaning, but also, paintings create a framework within which

Figure 1: The cupola at Cartwright Hall, seen from the South façade- Allegorical figures depicting civic values is positioned at its base. (source: author's own 2013)



the audience constructs meaning for their own life (Kirshenblatt-Gimblett, 1991). Or as McClellan suggests, it 'raises the viewer above the plane of normal existence through contemplation of the ideal' (2008, p. 29). These examples all point towards the structure of experience and also suggest a way of understanding the role of museums in constructing a sense of [shared] cultural identity. Macdonald concludes that given the important role that museums played in the past in shaping identity through their contribution to collective understanding of material culture and the formation of spaces for 'objective' or distanced observation, they are now able to reflect more fluid ideas of identity formation and heritage. (ibid. p. 166)

5. The spatial negotiation of difference at Cartwright Hall connect galleries: a post-colonial collection?

The ways in which both 'South Asia' and 'locality' are evoked, then, are multi-perspectival and plural. In the galleries there is no attempt to arrange artefacts in terms of separate cultures; and nor is there a historical narrative. (Macdonald op cit. p. 179).

A progressive collecting strategy beginning in the late 1980's, has resulted in Bradford Museums and Galleries now holding the largest collection of South Asian art and material culture in the UK. The museum staff acknowledge the influence of post-colonial thinking in the curating and collecting philosophy behind the Transcultural and Connect galleries, but equally hold that whilst the work of Said, Bhabha and Spivak may have influenced them on an intellectual level, (Poovaya-Smith, 1997) the driving force behind the acquisition of South Asian art has been to reflect the cultural heritage of the settled migrant communities and to inform the wider community, (Misty, 2014). The areas of the collection embrace many facets of material culture reflecting the rich heritage of Bradford's communities; including gold, silverware, glass, fine art and fabrics. There is no clear cut reasoning determining how the collection developed in this way although it can be attributed to a number of progressive and proactive collaborations and collecting methods in the latter part of the twentieth century.

In an interview conducted by the author, the current International Art Collections Curator Nilesh Misty explained how Bradford Galleries and Museums were amalgamated in 1974; there was no active engagement with migrant communities from the Ukraine and Mirpur at that time. However, the Schools Learning Project had the forward thinking policy of travelling to the South Asian subcontinent and purchasing crafts and fabrics which they used on a loans basis to educate children about different cultures and faiths in the city. These items later became part of the gallery's collection, and whilst most held no intrinsic museological value, they reflected the rich material heritage of the settled communities. In 1983 the Director of Museums, Richard Hopper staged the first significant exhibition of South Asian art outside of London in collaboration with the Victoria and Albert Museum (V&A) called *Petals from a Lotus*. The exhibition contained many items from the V&A's India Collection and consequently attracted wide audiences from the South Asian Community, which up until this time had not visited Bradford galleries in any significant numbers. The exhibition was a landmark as the first in a series of collaborative events which culminated in the establishment of the *Transcultural Galleries*.¹ From the perspective of the V&A it was a strategic attempt to think about communities beyond London, but Adams considers that the exhibition was also a move to re-focus discursive aspects of the V&A's collection towards where it came from, as opposed to how it came to be there. (2010, p.68) As was the case with a number of exhibitions that followed, such as *Calligraphy in the Muslim World* (1987) and *A Golden Treasury: Jewellery from the Indian Sub-continent* (1988)² significant loans were obtained from the V&A, the British Museum and Library and the Royal Collection (Misty, 2014, Poovaya Smith, 1997). These exhibitions are now considered to be the foundation of the collections strategy in Bradford. They served as both a consultative platform for different communities in Bradford and as widening participation events, attracting new audiences. However, whilst they were popular in representing aspects of the settled communities' material heritage their provenance seems to have been relatively unquestioned at the time.

There has been wide debate as to the claims of legitimacy of ownership of the collections of many of the British National Museums (Barringer, 1998, Adam, 2010) and it is now accepted that a significant proportion, as legacies of Empire have questionable provenance; however this dialogue does not seem to have been widely present in the curatorial decisions made during the 1980s and early 1990s. Pragmatism seems to have prevailed; as a provincial gallery it recognised the importance of representing the material heritage of their residents and providing opportunities to showcase such displays was perceived as prestigious and fell in line with the strategies to engage diverse populations (Collections of Bradford Museums and Galleries, 1997).

For the curatorial team at Cartwright Hall, the representation of a rich and multi-layered material heritage appears to be the primary aim. Poovaya Smith writes,

¹ These galleries were restructured in 2008 and became the Connect Galleries.

² The temporary exhibitions staged in the 1980s and 1990s were as follows: *Islamic Calligraphy* (1987), *A Golden Treasury*, (1988) *Earthen Shades: The Paintings of Shanti Panchal* (1989), *Manuscript Paintings from the Ramayana* (1989), *Warm, Rich and Fearless: An Exhibition of Sikh Art* (1991), *101 Saris from India* (1992), *Living Wood: South Indian Sculpture* (1992), *Worlds Beyond: Death and the Afterlife in Art* (1993), *An Intelligent Rebellion: Women Artists of Pakistan* (1994).

The decoding and deconstructing of various modes of thought such as Orientalism have been invaluable to a general understanding of structures of dominance and how these infiltrate and influence culture. Many aspects of this discourse are valid and applicable to the Bradford Collection, (...) but this is essentially a long term project (...) while reaffirming a deep respect for this discourse, [the gallery] temporarily sets it aside in order to let the public and the Bradford Collections develop their own momentum. (1997 p. 82, op cit)

However, whilst the overarching questions of where the collections sit within a post-colonial framework may not be explicitly addressed, many questions posed within the displays clearly sit within the post-colonial narrative. For example, the blurring of distinction between artefact and fine art addresses perceptions of art-makers and artists which could be said to be rooted within a colonial paternalistic idea of the *Other*. Similarly, whilst the Collection avowedly acknowledges its South Asian focus, the displays do not seek to valorise or privilege artists from any particular geographic locality, instead cutting across boundaries and making thematic connections. This philosophy was borne in part from an anxiety to avoid problematic demarcations traditionally found within the art establishment. Who, by seeking to identify and maintain discrete ethnically defined traditions, maintain the orientalist paradigm of the *Other*. For example, in 1996, Sotheby's previewed the auction *100 Years of Modern and Contemporary Indian Art* at Cartwright Hall. They included only artists who were living and working in India or Pakistan, excluding over 40 artists who were Indo-Pakistani by descent but living or working in Britain. Sotheby's, which sits at the epitome of the art establishment, was defining what it believed to be pure Indian Art; in doing so it was maintaining the imperial hegemony of partial representation of non-western culture. (Adam, 2010, p. 64) At this time, a debate had emerged regarding the relationship between Western and non-western artists in the Modernist cannon, centring upon the exhibition *Primitivism in 20th Century Art* at New York's Museum of Modern Art (1984), which positioned tribal arts as secondary to Western Modern artists; valid as a source of inspiration, but intrinsically quotidian and craft based.

The Connect Galleries operate specific practices to unsettle this distinction. For example, the painting by Arpana Caur, *The Embroiderer* (1996) (fig. 2) is painted onto a traditional Mithila stylised folk painting. Despite Caur's notoriety, she is ranked within the top ten most well-known painters in India, the Gallery felt it was important to acknowledge the Mithila women who painted the backdrop before including it in the current display.

Figure 2: *The Embroiderer* by ARPANA CAUR (born 1954) [and the women of Mithila] (1996) Oil on Canvas 165 x 137.5 cm (by kind permission of The Collections of Bradford Museums and Galleries [CoBMG])



As with most of the exhibits, the painting can be read on many levels; displayed within the Place gallery, the female figure's association with fabric is a clear reference to Bradford's long association with the cloth trade. Similarly it is likely that the symbolism of the scissors, whilst referring in this instance to the Goddess of Destiny who cuts the thread of life, would have broad appeal across different audiences in Bradford. The Mithila painting tradition is a bounded art; practiced only in the Bahir region and mainly in two villages, Mithila and Madhubani, the mythological stories and painting techniques are handed down through generations bestowing a powerful sense of place.

6. Spatial organisation of the galleries

When the gallery was designed in 1904 it was intended that the spaces on the first floor would also be used for civic functions and the East Gallery was designed with American black walnut panelling which conveyed the sense of grandeur required for its use as a banqueting hall. (CoBMG, 1997) The current *Connect Galleries* occupy the entire first floor. There are five gallery spaces with additional passageways which incorporate the stone balcony looking over the sculpture hall. There is a strong sense of connectivity between all the spaces and between the ground and first floor; with long open views through the entire floor. The glazed domed atrium of the sculpture gallery can be

viewed from both the stone balcony and further back within the central gallery and is echoed by three sets of vaulted roof-lights. The sense of monumentality is further created by the two sets of coupled Corinthian columns, which support archways and mirror the pilasters articulating the outer curved wall of the sculpture gallery. The spatial harmony and fine quality materials including polished oak, marble, stone and moulded plasterwork communicate the wealth and culture of Bradford in the late 19th and early 20th Century.

Within this setting, the careful juxtapositioning of late 19th Century and Contemporary paintings creates a powerful dialogue across time. Analysing the arrangement of paintings, textiles and sculpture in the central vaulted hallway will give us a sense of the Connect Galleries overarching transcultural philosophy.

Figures 3 & 4: The grand central hallway on the first floor, holds the grouping of Fehr's marble statue of Dr. Cartwright (1904), with John Collier's portrait of Samuel Lister (1901) on the left, continuing the narrative of Textiles and Empire, Yinka Shonibare MBE's *The Wanderer* (2006) and *Dastarkhan* a 19th century fine floor cloth are displayed alongside.



Hanging on a side wall of the People gallery is a *Dastarkhan*, a 19th century, fine cotton block printed floor cloth from Machlipatnam Andhra Pradesh upon which food would have been served. The well-preserved cloth is coloured with vegetable dyes, tea and henna in reds, greens, fawns and black. The Persian couplets around the borders are blessings to the people eating and are translated in the catalogue as

O you the spreading out of whose table cloth is exalted and
O you, of whose banquet of generosity is time (destiny) (p. 121, 1997 op cit)

This cloth has a powerful evocation of people being together through time; used objects or artefacts privilege memory in a way that fine art cannot. The couplets, particularly the second one, seem to speak directly to the painting of Samuel Lister, opposite, whom the people in Bradford still hold in high esteem for his generosity bequeathing the funds to create the Hall. The central hallway is dominated by the marble statue of Dr. Edmund Cartwright, (Henry Fehr, 1904). It has been suggested that Lister named the Hall after Cartwright, poet- clergyman and inventor to detract attention from the public and legal quarrel he had with Isaac Holden regarding the square motion wool combing machine, to which both claim to have owned the patents. (CoBMG, 1997, Burnley, cited in Heaton 1972) However, portrait painted by John Collier (1901) specifically commissioned for hanging in the gallery, Lister is proudly positioned seated next to the disputed combing machine. Behind him we can see timber panelling reminiscent of the American Walnut in the East Gallery, and his hand is placed in a proprietary manner on the machine; the painting seems to speak out to the viewer through time, you can feel my presence, in this moment- see all that I achieved.

It is therefore, all the more humbling to view the small sculptural piece by Yinka Shonibare MBE³ *The Wanderer* (2006). The piece is a scaled model of a slave ship which made its voyage between Africa and Georgia in 1858, despite slavery having been outlawed at that time. During the journey, 80 of the 487 slaves on board died. Shonibare's inclusion here works both in the context of Bradford's legacy of textiles and empire, but also he is widely recognised for the construction of cultural and post-colonial identities as read across many of his artworks. (Hobbs, 2009, Kent, 2009, Downey, 2005, Sumartojo, 2013) Much of Shonibare's work is characterised by the colourful representational Dutch-African Batik fabrics he uses. Here on the sails of the ship, other works include three-dimensional tableaux which recreate paintings by significant European artists such as Fragonard's *The Swing* (1767) and Thomas Gainsborough's *Mr. & Mrs. Andrews* (c. 1750) in which witty scenes are created with headless figures clothed in the batiks, rich with symbols that poke fun at high culture. The provenance of the fabrics themselves construct the first signifier of hybrid identity (Kent, 2009, Hobbs, 2009, Perella 2001, Shonibare, 2004). At first we read the cloth as representing African identity particularly in the post-independence 1960's with the rise of Pan-African nationalism (p.12 Kent, op cit) although the patterns are actually inspired by Indonesian batik prints. However, they are Dutch fabrics (originally designed for an Indonesian colonial market in the 19th century), designed and produced in England and the Netherlands and bought at Brixton Market, London. Through the simple use of fabric, Shonibare begins to convey some of the complexities of postcolonial identity and the ways in which culture is spatially layered through time. The content of his work often attempts to deconstruct questions of representation, identity and belonging; *The Picture of Dorian Gray*, (2001) is a photographic series; a black man (Shonibare) plays the lead role within a nineteenth century aristocratic setting (Shonibare/Downey 2005) and most recently the *The British Library* (2014) an

³ Yinka Shonibare MBE uses the initials MBE after his name after he was awarded the Order in 2005 as a deliberate 'doubling' gesture acknowledging with irony that Britain is itself a postcolonial nation.

installation of 10,000 books covered in different varieties of his signature fabric, with each spine bearing the name of someone who has made a significant contributions to 'British' culture, who has an immigrant ancestry.

His works demonstrate a tendency to subvert the image or object by projecting new layers of meaning, forcing the viewer to confront uncomfortable realities of nation, history and identity. This suggests that the central positioning of *The Wanderer*, within the gallery makes a clear statement that the collection cannot be easily read as a historical jaunt through either British or South Asian contemporary art over the last century.

7. Museums as spatial representations of memory and identity

The Connect Galleries in Cartwright Hall demonstrate a meaningful approach to the representation of cultural identity in particular amongst migrant communities settled in the city. The innovative curatorial approach plays to the fluidity of cultural identity which cannot be universalised as found historically in museum settings. In the past, art and artefacts from former colonial settings were displayed with ethnographic dialogues set up between audience and displays. The galleries in Bradford suggest that whilst cultural identities evolve and change, there are shared threads which may be linked to both displacement and rootedness and that by thinking thematically through collective memory these questions can be examined. Conceiving of museums and galleries as sites of memory they can have a powerful impact both shaping and reflecting cultural identity. Cartwright Hall achieves this not only through its displays, but also in its architecture and its urban parkland setting with its strong sense of spatial memory. As Shelton (2006) argues, by de- and re-temporalising works of art, the audience is able to have a more immersive experience in the moment, rather than trying to access meaning within an abstracted historical time. The spatial organisation of the paintings is such that they also create a dialogue across time with one another adding to a sense of memory and place. The displays also serve to dislocate the viewer from a bounded geographical idea of space, by subverting the traditional groupings which used either temporal or locales as taxonomies, the audience is prompted to make new connections which represent a more fluid or layered sense of identity. By smoothing out difference rather than drawing attention to diversity, the galleries purposefully avoid exoticism and a sense of otherness through thematic groupings which emphasise connectivity and in doing so make fluid representations of diverse, but settled communities within Bradford.

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Picture credits

Figure 3. *The Wanderer*, Yinka Shonibare MBE.

www.mylearning.org/the-wanderer/p-3756/

Photograph of the central hall by kind permission of The Collections of Bradford Museums (Author's own 2014).

conference papers academic and professional strands

INNOVATION

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Work on the move *R. Firth, T. Jennings, R. Cochrane, M. Taks and P. van de Graaf*

As a future working place: co-working places *F. Curaoğlu and D. Tütüncü*

Suburban safari: co-designing a cultural network for Sutton *N. Ryan*

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C. Overby, E. Cianfanelli and G. Goretti

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Towards a common space for research in fashion *M. Mossinkoff and A. Kent*

In-situ 3D printed souvenirs and their affect on visitors' engagement with built heritage
S. Vettese Forster and C. Anastasiadou

work on the move

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Abstract

'Work on the move' is a design, process-driven methodology, which uses multiple locations within an outdoors setting and movement between locations, all of which function as learning places, confined to a specified time period.

Between 2012 and 2015, a team of international Higher Education product design educators (all members of Carousel, a co-operation of Erasmus members in Zwolle, Edinburgh, Nantes, Rome, Kortrijk and Oslo), industry professionals and product design students developed and tested four case studies. Each case study was conducted in a different international location and was constructed with a different focus, to help define and refine a definitive working methodology.

'Work on the move' explores the influence of 'place' upon design, in terms of the impact it has on productivity and creative problem-solving, when working away from the traditional studio/office-based environment. It also explores the significance of shared place, when working directly with a client in situ, and experiencing the place-based influences upon their businesses. While identifying location as part of the design process, the study also seeks to understand the effects of time restriction and working in transit upon creativity and productivity, within the context of specific projects.

Keywords: digital Do-It-Yourself (DIY), making, skills, design

work on the move

Introduction

The designer, as the traveling figure whose “making” and “belonging” are embedded in the traditions of artisanal cultures, is brought to the fore in Sennett’s *The Craftsman* (2009); wherein he presents a description of the craftsman as someone that fuses cultural production with social values. Sennett (2009) tells us that “learning becomes local” (p.179) and involves improvisation where microenvironments inspire and produce experiences and forms. Sennett’s craftsman moves through society responding to hidden and complex orders and materials. Sennett’s work is useful to the study that follows, because it reminds us that relations between place, making and materials are fluid and provide design research with a set of tools through which we might “approach the world in order to discern the preconditions of a design” (Nelson and Stolterman 2012, p. 120).

It is interesting to consider how, as globally-influenced and highly-mobile professionals, designers continue to respond to places as our nomadic craft forefathers did. However, whether the designer’s interaction ‘with and through place’ is as rich and generative as Sennett’s craftsman is less clear. Certainly, there are shifts made possible by the flows of goods and networks of finance, through exploiting digital communication technologies and tools, where present-day design teams often work remotely, in multiple locations.

Crary (2014) compellingly argues not only that technology has vastly changed how we think and how we do but also that the immediacy and veracity of digital information can relegate some real-life activities, which do not have an online correlate, to a lesser relevance or even allow them to be robbed of meaning. “Indeed, it seems that there is always something online that is more informative, surprising, funny, diverting or impressive than anything in one’s immediate actual circumstances” (p. 59). It is now a given that the limitless availability of information or images can override any human-scale communication or exploration of ideas. ‘Work on the move’ is a response to those shifts in mobility, place, time and informational networks that not only influence how and where we conduct research but also acknowledge their transformative influence on the self-narration of the designer’s experience. ‘Work on the move’ explores how a slower, peripatetic design relationship with the world brings the designer closer to the social world and informs design research, collaboration and creative outputs.

Solnit’s (2001) reflections upon the cultural history of walking reveals the significance of walking and transitional, nomadic experiences in many professions across time and culture. Referring to the sometimes transitory status of musicians to medics, she comments on how they can possess a type of diplomatic immunity from communities that keeps its participants local: “a solitary walker is in the world, but apart from it, with the detachment of the traveller rather than the ties of the worker, dweller and member of a group” (Solnit 2001, p. 21). Solnit’s treatise on “Wanderlust” reflects upon thinking through walking as an embodied creative rhythm; thoughts and places according to this line of reason are symbolically charged. She refers both to Rousseau’s (1712-1778) confession, “I can only meditate when I am walking. When I stop, I cease to think my mind only works with my legs” (2001, p. 14), and to Thomas Hobbs’ (1588-1679) personally-modified walking stick, built with an inkhorn, to allow him to jot down his ideas as he strolled through the streets of London and Paris. (2001).

International beginnings: aims, place, time and movement

The initial idea for “work on the move” was developed through co-operation with product design academics from Edinburgh Napier University in Scotland, and Windesheim University of Applied Science in Zwolle, Netherlands, and was tested with design lecturers from Sapienza Università in Rome, Italy, and from Howest University College West Flanders, in Kortrijk, Belgium. The group, called ‘Carousel,’ are formed from these universities, which also include the L’École de Design Nantes Atlantique in France and the Oslo and Akershus University College of Applied Sciences in Norway. Carousel is the main vehicle for further exploration and development of this innovative methodology. Within Carousel, there is a significant opportunity to test and develop the methodology with lecturers, students and external clients. Using this international stage also makes the results more relevant for both design educators and those whose work demands inter-cultural competences in design and research.

According to Nelson and Stolterman (2012), design is adaptive, connective and compositional and is always part of a creative, generative relational process. As a designer:

... you participate in the creation of a real world. To do that, you need the world to make sense to you. To design is not to create things that make the world more reflective of the true. It is rather to create a world that has more meaning, that makes more sense (Nelson and Stolterman 2012, p. 122).

Our research explores and develops design innovation methodologies in relation to processes involved in idea generation and problem solving. In particular, the study explores how working away from the traditional studio-based environments—in multiple locations—impacts creativity and the group dynamic among students, co-workers

and clients. Time restrictions and the experiences of journeying between places relates to ‘embodied cognition’ (Barsalou 1999; Schwartz and Black 1999) in terms of the influences on movement and thought. The research results may be used to inform student projects, to develop HE design curricula, and to create a methodology for industry application.

The research team developed four case studies, each with a different location and design brief, to explore the impacts on collaboration, place, movement and time. Within each case study, multiple venues were identified, each used to mark a different stage of the design process. Routes between venues were planned to encourage shared experiences of traveling temporally, geographically and collectively; being in between design processes allowed for reflection and discussion, before consolidation at the next location. Through the constant flow and transition of working around a city, this activity sought to create the opportunity for random acts and experiences that could potentially influence the design process. These shared experiences challenge the traditional studio-based work flow, and the internal relationship hierarchies within a design team. In addition, such a work process expands the external relationships between client, designer and user. In other words, this mobile workshop allowed participants to be both tour guide and tourist.

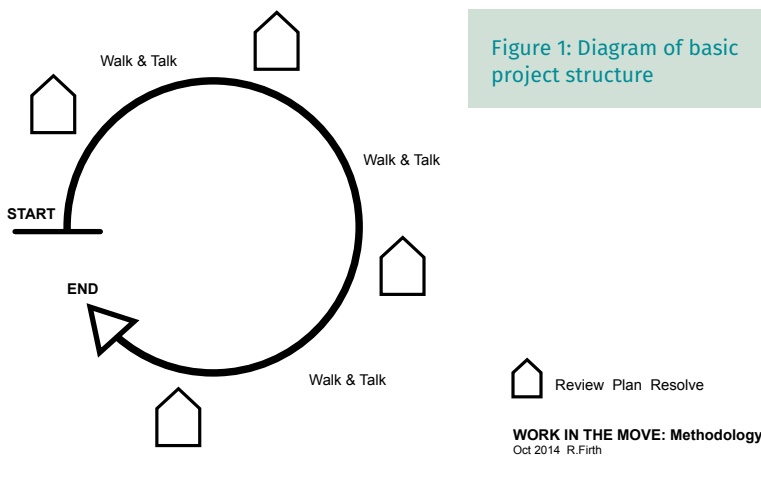


Figure 1: Diagram of basic project structure

Methodology

The host participants set a design brief then prepared a specific brief-related itinerary, containing locations and routes around a city. Careful consideration was required to allocate appropriate time at and in-between venues. Time was allocated at venues for more focussed reflection, and to collate and visualise discussions. Time spent moving between places was used to encourage more casual discussion and reflection. Participants’ relation to time and space was organised to make them feel confident to embrace and discuss random experiences, and to respond to the larger group’s collective

knowledge. The methodology proposes an important emphasis between travel and the development of knowledge, which is supported by studies such as that of Oppezzo and Schwartz (2014), where walking is identified as having had a strong influence on the expression of associative memory: “The act of working and experiencing a variety of external stimuli increased, talkativeness between participants. We hypothesised that when walking, people generated more ideas, and more of those ideas were novel and site-sensitive”. (2014 p. 1148).

All participants had complete, non-prescribed freedom to record and express their ideas, using their preferred method to capture data. Our aim was to mitigate issues of restriction, potential conflict, or of authority by not imposing a specific method. It was interesting to observe the variety of methods used: from a phone/camera, a sketchbook, a napkin, the back of a hand, or a tablet, to using pencil or charcoal with which to write.

Four case studies were conducted to explore the effects on the design process, through engaging with different places and routes, plus different team collaborations and time restrictions, within “a real world setting” (Bromlry 1986, p. 23), focusing on contemporary, as opposed to historical, phenomena (Yin 2003). The research findings were refined over each consecutive workshop, with the aim of creating a definitive, working methodology.

Case study one: project: ‘Tea’ — Edinburgh, March 2014

The first of the case studies was conducted by four members of academic staff—two from the BDes(hons) Product Design programme at Edinburgh Napier University, and two from the Product Design Engineering programme at Windesheim University of Applied Science, Zwolle:

Our brief was designed to be very open, using the simple title, “Tea”:



Figure 2: Route taken for Tea Brief

- Tea represents: object, service, ceremony, habit, ritual.
- It allows us to stop, reflect and down tools.
- It provides an opportunity to talk, council, gossip and listen.
- Tea evokes multiple meanings and experiences, such as tea lady, tea trolley, greasy spoon, café, builders tea, high tea, flask, and “more tea, vicar!”

Observation and reflection was our starting point. Over the course of a day, during a twelve-hour period, we visited a variety of places where tea is served and people interact: 1) the Social Bite—a social cause-driven business, tea and sandwich shop, which trained and employed homeless members of the community; 2) a repurposed police box/coffee station, of which many are located around the city; 3) a bike store/café hybrid business; 4) a community arts centre; 5) a hotel for high tea; and 6) a city centre bar, for a themed tea and cocktails event. Each venue was chosen to provide an experience with a diverse user group, a unique social experience, and a separate context for taking tea.

Figure 3: Observation of an additional role of a tea pot during a conversation



A key finding of the day was how the group dynamic worked during each walking phase of the study. In particular, we observed how random encounters impacted conversations within the group and influenced the direction of the design brief. For example, while walking, a team member from the Netherlands noticed and enquired about ‘tenement living’, which is common in Scotland; this quickly escalated into a lively group discussion about other examples of domestic living from both historical and literary references. These conversations lead us to agree upon our first design direction: our solution should address both community and social interaction. Walking freed us to think in tangents and contradictions without fear of being judged, and the use of anecdotes from historical literary references became a common practice to draw people into the conversation.

Case study two: project: ‘Eat in the City’— Edinburgh, March 2014



Figure 4: Using portable data projector to brief students in the city centre

This workshop was run over four days within the Edinburgh City Centre. Participants were organised into teams from an international student cohort of forty year two product design students from Edinburgh Napier University and Windershiem University of Applied Science, Zwolle.

Using the experiences and examples from case study one, students were encouraged to actively use the city’s various locations as studio, research and user testing places, and to exploit their personal digital devices and social media platforms to record, gather and manipulate information. The four-day project structure allowed students to focus and commit to the project without interruptions. The activities outlined for each day were as follows:

- Day one: Observe, record, and develop concept.
- Day two: Present in studio, build full-size models.

- Day three: Take models back into the city, test and create a one minute film presentation.
- Day four: Present your film, in location to your year group.

The students commented that the immediacy of working in different places created a quick turn-around of ideas and consolidated decision-making. The variety of locations and tasks, and the time-restrictions we imposed, challenged the more traditional linear learning structure to which the students had been accustomed. We also observed students' stamina and endurance greatly increased, due to the variety of tasks and changes in learning places. It was commented on that the transitions between places gave students downtime to reflect, refresh, and plan for their next tasks.

Students worked in teams mixed from the different international design schools, with the host students taking responsibility to act as tour guides for their visitors. The host students enjoyed the autonomy and responsibility to show 'their city' outside the boundaries of their regular university surroundings, time tables and structure. We observed students building relationships quickly, taking pride in their city, and taking ownership of their projects.

Students worked in a variety of places including bars, cafes, art galleries, libraries, parks, and on public transport. Of particular value to this study was observing the visiting students' integrating their studies with their experience of a new city, as opposed to being based in a design studio during the day, and only engaging in outside social activities in the evening. One comment from a student participant reveals this unique experience: "We got to see parts of a city that a tourist might not, you got to feel like you were part of the city and lived here a little, it made me feel confident to apply for longer (international) student exchanges." (*3rd year product design exchange student.*)

Case study three: project: 'A Greener Town' — Zwolle, March 2014

Case study three was devised to observe how the methodology responded to the participation of a larger, academic design team. The group increased to include Carousel members from Italy and Belgium, for a total of seven participants, and some members had not met before. We conducted the case study using the one-day time format developed in case study one.

It was noticeable that the interaction between participants in the larger group was not as effective as it was within the smaller group used in case study one; we were mindful that this might be due to personality and cultural differences. It was reasonable to conclude that teams with larger participant numbers would benefit from the introduction of a team leader role to organise and pace the day.

The Netherlands hosts had planned in advance to spend most of the day traveling on foot and by bicycle. Poor weather conditions made this unworkable so alternative travel methods, routes and places were improvised on the day. This proved to validate the flexible nature of the 'work on the move' philosophy, by working with and responding to changes in the environment. However, we felt the reduced opportunities to 'walk and talk' did impact the ease and flow of interactions between some group members. It was also observed, when we sat around tables in different venues that it was not always easy to find adequate spaces to accommodate the group, and inevitably there would be some participants seated at opposite ends of the group.

During this case study, one of the participants made an active choice to be the 'group scribe', documenting each conversation and milestone through illustrations in a sketchbook. This proved to be an extremely effective approach for capturing, organising, and distilling conversations and data. Sketching, in the moment, gave a linear, working account of the day, which meant that that content for the final presentation was being produced as the project developed. As a result, there was very little additional work to do at the end of the workshop regarding collating, organising and presenting the findings. This meant more time could be allocated to design development and refinement, rather than spending time working up additional presentation content.

Case study four: project: 'Baggee' — London, May 2015

Case study four explored the 'work on the move' methodology through collaboration between academic staff and an industry partner. Our client, Baggee, Ltd., required some initial R&D on one of their existing product ranges, with regard to developing product and market diversification opportunities. We organised the workshop around a smaller number of participants, using the results from the previous case studies that found smaller groups to be more effective for this work: one client, and two academics from Edinburgh Napier University. The smaller group size was less intimidating for the client, while moving around a city, working peer-to-peer, broke down some of the traditional client/consultant hierarchies. As our client became more familiar and confident with the methodology, he suggested alternative venues to the day's original agenda; this helped the client shape his thinking, take ownership of the project and, in turn, stimulated the design team. Our client commented that there was "just enough organising and loose outline structure to the day to not be threatening."

At venues, we used hand-sketching to provide visual feedback to the client and to plan the objectives for the next location. This structure kept the momentum and focus of the day moving forward, while acting as a softer approach to traditional project management and organisation. Indeed, it was due to this less formal discourse that inspiration

and innovation occurred with regard to the project outcome. For example, we randomly encountered a party of co-workers celebrating at a lunchtime venue. We observed the exchange of gifts and the reactions to them, which then inspired us to think about our own brief to design ‘themed party event’ products. This was an extreme shift in the focus of the day’s thinking. As a result, we quickly reorganised the rest of the day to research this specific market sector and user group. Through this collaboration, we experienced inspiration, primary research and site-specific observation in a rapid, two-hour time frame, with both client and consultants sharing real-time experiences, discussing possibilities and creating concepts.

Discussion

‘Work on the move’ responds to shifts in mobility, place and informational networks, bringing the designer closer to the social world. When reflecting upon the research throughout the case studies, we noticed similar behaviour trends in relation to: controlling time on specific tasks; reacting to random encounters; using multiple venues to inform the brief; and using physical movement. These behaviours all contributed to facilitating more informal communications between participants, which encouraged the sharing of more diverse and abstract thinking.

Limiting the time spent at venues meant decision-making was physically framed within defined short chunks of time. This encouraged the participants to focus on specific tasks, limited ‘mission creep’, and helped to clarify new deliverables when planning for future locations.

The variety of workshop structures, and the introduction of random stimuli, helped prevent project fatigue and allowed participants to let their minds wander and refresh, particularly in the phases of walking between venues. Solnit (2001) refers to “the time in between” the time spent walking and meandering, as important to facilitating “uncluttered time” and to providing relief from screens, earphones and mobiles, which we found a positive influence in the design process.

When observing students’ participation, we witnessed a shift in their use of mobile technologies. Students engaged more with their physical surroundings, and spoke with the public and with each other. Digital devices were used primarily as a working tool, rather than as a form of physical, social distraction. This observation is particularly revealing and offers a more positive view of technology’s influence on social interaction than that offered by Crary (2014), who comments: “Instead of a formulaic sequence of places and events associated with family, work and relationships, the main thread of life stories now is the electronic commodities and media services through which all experience has been filtered, recorded or constructed” (p. 58). Observations and experiences that are offline begin to atrophy or cease to be relevant.” (p. 59)

By keeping results in a constant state of movement and working in the moment, there seemed to be a spontaneity and freshness to ideas and to presentations, which might otherwise be compromised by the expectation to use studio resources to complete more finished, polished project presentations.

Conclusion

Crary (2014) describes a framework, through which the world can be understood to be depleted of complexity and drained of whatever is unplanned or unforeseen, with many forms of social exchange remade “into habitual sequences of solicitation and response” (p. 59). Responses, Crary argues, “become formulaic and reduced to a small inventory of possible gestures or choices” (p. 59). ‘Work on the move’ allowed its participants to experience a revised relationship to the work experience as informed by place and interaction between collaborators.

The major contribution to innovation provided by ‘work on the move’ is the methodology’s use of time, place and movement between multiple locations. In all of the case studies, participants used familiar problem-solving processes, engaged with common accessible technologies, and communicated through talking, sketching, note taking and moving images. However, it was the impact of place and time on these familiar working methodologies, which influenced how they were implemented and the effect they had on the various projects’ creative outcomes.

‘Work on the move’ kept processes fluid, limited the time to dwell on decisions, physically changed environments and facilitated random unplanned stimuli. An important cumulative effect of these conditions was the impact it had on the group dynamic. Through the nomadic engagement with place and project, participants were more willing to share ideas, and were not paralyzed by the pressure of having to conform to a prescribed presentation format, or by a standard most associated with studio culture (Clayton, Thomas and Smothers 2015).

As Clayton et al. (2015) comment, “Walking meetings act as micro versions of the bonding that can be experienced when co-workers travel together on business trips” (p. 2). Complementing this statement is the conclusion that ‘work on the move’ helps to dissolve some organisational hierarchies, a finding that also agrees with the work of Clayton et al. (2015), who state: “The fact that we are walking side-by-side means the conversation is more peer-to-peer than when I am in my office and they are across a desk from me, which reinforces the organisational hierarchy” (p. 2).

Despite the importance of place, and more specifically, movement through place, it can be argued that design can all too easily be satisfied by technology and platforms that dissolve distances and time, while only allowing for a mediated understanding of culture. 'Work on the move' offers social and cultural experiences in a contemporary real-world setting with a broad stage on which to explore, play and contribute. 'Work on the move' is also structured to provide closure at the end of the day. We noticed that implementing short timescales, and reassuring participants that all contributions were acceptable, created more relaxed, energised and enthusiastic outcomes.

Thinking about 'work on the move' as an educational methodology, could using place and mobile learning within our cities be integrated into the HE Product Design curriculum; what would be the impact on teaching costs and resources? To further explore these questions, both the Norwegian and Scottish design school participants have incorporated this methodology into some of their module structures, using site specific out door learning spaces to deliver learning and teaching experiences.

Finally, we return to Sennett, who makes a case for such "lost spaces of freedom" (p. 114): spaces in which craftsmen can experiment with ideas and techniques, risk mistakes and lose themselves to find themselves. This notion echoes the principles of 'work on the move', wherein its participants were offered an environment in which to escape, think, discuss and create, without the traditional protocols of an office, or studio, setting.

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as a future working place: co-working places

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Abstract

'Work on the move' is a design, process-driven methodology, which uses multiple locations within an outdoors setting and movement between locations, all of which function as learning places, confined to a specified time period.

Between 2012 and 2015, a team of international Higher Education product design educators (all members of Carousel, a co-operation of Erasmus members in Zwolle, Edinburgh, Nantes, Rome, Kortrijk and Oslo), industry professionals and product design students developed and tested four case studies. Each case study was conducted in a different international location and was constructed with a different focus, to help define and refine a definitive working methodology.

'Work on the move' explores the influence of 'place' upon design, in terms of the impact it has on productivity and creative problem-solving, when working away from the traditional studio/office-based environment. It also explores the significance of shared place, when working directly with a client in situ, and experiencing the place-based influences upon their businesses. While identifying location as part of the design process, the study also seeks to understand the effects of time restriction and working in transit upon creativity and productivity, within the context of specific projects.

Keywords: co-working, furniture, design, interior

paper as a future working place: co-working places

Introduction

Innovations and new lifestyles of the new world quickly entered our lives, these, together with different technology, are forcing us to change our work habits. These changes taking place in social and everyday life enforce traditional habits to transform and pave the way for new relationships. Innovations we encounter one after the other, deeply affect our scientific, social, cultural and economic relations and has changed our tools and systems. These changing tools and systems also changes the form of work and production systems as well as reveal a new user typology.

Development of new forms of work and production by those users defined as new generation of users; Generation Y, also transforms spaces accompanying these activities. New generation of users aren't used to working nine-to-five and also aren't familiar with restriction of personal freedom and creativity space, primarily they prefer a collective form of life in their working spaces. (Bentley University 2014) (Black 2009)

Bentley University's PreparedU Project gives an insight about an emerging era for working styles with the "The Millennial Mind Goes to Work: How Millennial Preferences Will Shape the Future of the Modern Workplace" survey. The research group, emphatically, points out that 75 percent of the global workforce will be from this generation in ten years. (Bentley University 2014). Within the partnership of The US State Department and IDEO design company "Millennium Train Project", is a very interesting project in terms of providing a new form of space to new generations of young innovators to make (active) innovative studies. The predisposition of new generation for team work, collaborative project approach constitutes an important input for this project where all entrepreneurial candidates take seminars and training courses and create workshops together. (The Millennial Trains Project 2012). Parallel to these initiatives, co-working places, evolving from individual working styles to collective ones, has begun to take place in our daily lives as a new spaces of production and working.

In this study, results of an international study conducted in Turkey, Austria and Germany, which mainly focused on co-working spaces where interpersonal and intercultural futuristic production forms are shared together with social relations and creative productions also being shared. User-space relations will be the main dimension of the research.

Co-working spaces

Shared working environments (co-working places) provides a collective workspace to people with different professions and interests outside the traditional office environment. Co-working users can rent a desk for a limited time or for a day, week, month even for a year instead of renting the entire office or building. Co-working spaces serve a new and different way of renting that, also, can be considered as a new kind of real estate. Co-working spaces have a wide range of facilities from a room to an apartment flat or whole building where you can rent desks or rooms as your personal office. Generally, the first emergence of a shared working environment has had a parallel development to the use of the Internet and especially mobile communication devices (smart phones / lap-tops etc.) occur, though, it has a rather old history. Therefore, co-working is not a new term. Co-working, is a term first used in a publication at 1628 and then used in more than one publication at 1645, 1651, 1653 and 1657 (Foertsch & Cagnol 2013).

The term in all of the resources, as represented in its most basic, is used to describe working in the sense of together but of independent action. The beginning is a hackerspace named as C-Baz ?n Berlin. In 2002, offering free Wi-Fi networks in public, these spaces are considered as the first social-oriented workspaces where embodiment of new business models begun. Therefore, these formations are also the first models of co-working areas. In parallel with this process, for the first time in 1999, DeKoven by using the Word "co-working" describes a working environment where business meeting and co-working will take place with the support of computers. DeKoven, by prioritising the "working together as equals" approach he intended to support non-competitive co-working spaces rather than hierarchical and isolated work spaces (DeKoven 2015).

In 2002, "Schraubenfabrik" at Vienna opens, considered as the first co-working space, which was opened for entrepreneurs. Then it was followed by "Hutfabrik" in 2004 and "Rochus Park" in 2007. These points were the first local network of co-workings. The common point in all spaces, was to adding new life to the old factories by re-functionalising old structures. Later, in San Francisco, by programmer Brad Neuberg, the first co-working opened in America in 2005. Today, there are nearly a thousand co-working space in about 87 countries on five continents (Global coworking map 2016). Co-working spaces are structured in order to create pluralistic solutions for basic office needs; meeting, working, communication, for individuals from quite different professions.

Based on eliminating the problems of hierarchical and fixed work styles within traditional working offices that have closed systems, together with problems of isolating home office working systems (Sykes 2014), co-working spaces also take over the responsibility of users' mandatory expenses of furniture, secretariat, rent, lighting and taxes.

Daily life technologies (laptops, tablets, smartphones) that have changed especially in the last 10 years, accompanied by a change in production methods. Transformation of forms of production, is changing the construction of multiple work spaces and consequently the way of working. At the base of this transformation there lies behind a new generation growing up using daily life technologies. The most effective generation in education and business today, are born between 1980 and 1999 defined as “Millennial Generation.” This generation has gained new skills and have a common history in the digital environment where new expectations come into this regard. The opportunities for collaborative work and networking is crucial for this generation (Pedro 2009).

One important fact about this generation is they have never seen a life without internet (Prensky 2001). Therefore, free and open internet connection is a main amenity in co-working spaces. This is an indicator of the transformation of tools using while working; like laptops, tablet pc which are used for online operations. Today, a person during a desk-based working, can use mobile phones and also input data on their laptop / tablet and computer. While continuing the meeting in a conference room, can also text messages with mobile phones. A new generation of users who can simultaneously perform different information productions and sharing, they pave the emergence of new workplace where daily lives technologies can be in combination.

While co-working spaces makes new generation users have different spatial experiences, it also enables (allows) them to use variety of different working environments. The users of this working environment, which is structured by interactive and social sharing, can work alone or with a company. At the same time users which come from different research interests work on different projects by sitting next to each other. There are shared desks which are rented as commercial or private to people, and they are used to make meetings, entertain a guest in these places. Co-working spaces meets the different spatial needs of new generation users while offering more creative working environments. With co-working spaces, not only the collective working styles but also types of productions change.

Especially, the common usage of 3D printers has made the alteration in types of production essential. With the help of co- working, collective production (co-production) styles have become widespread. We see users of these spaces work mainly at creative sectors in research. Without being connected to a single firm, in terms of ability to serve many different firms, creative professions such as web design, graphic design, interior design, product design, constitute a quite convenient ground for this new generation.

Methods

This study is structured to share results of research conducted between 2014-2015 in 3 spaces in Turkey-Istanbul, 7 spaces in Vienna -Austria, 8 spaces in Berlin-Germany with a total number of 18. The results will be shared in a perspective of user- space relations. Major research is built on two basic questions.

1. How spatial relationships of co-working spaces are structured?
2. How user-furniture relations are structured a co-working spaces?

In this study, the data of the first problem will be shared. This research project is structured in two phases by the scope of these questions.

The first phase of the project lasted about five months, planned as 12 months for total project and in this process, the data was collected by observation, interviewing and surveys at three countries with a total number of 18 co-working spaces. Space sketches are extracted and evaluations of spatial relationships through plans are made.

In the first phase of the study, primarily observation techniques were used through qualitative research approach. Observation forms have been used for randomly selected 35 users at co-working spaces in Istanbul, Vienna and Berlin through observation sessions. To improve the reliability and validity, the research was supported by observations and interviews. Semi-structured interview forms were used as a data collection tool for users who accepted the interview request. During The research process, audio recording is taken during interviews with participants, and also interviews diaries were kept.

In parallel to these methods, used to collect qualitative data, an online survey was been sent to 24 co-working spaces with a request to share this through their member mail systems. 26 members of these co-working spaces responded. For local application Turkish questionnaires were used, and for application to be made abroad English questionnaires were used. Interviews, observations and questionnaires collected via quantitative and qualitative data were used to answer the two research questions identified at the beginning of the study.

Results

In this study the results of the question “How spatial relationships of co-working spaces are structured?” will be shared. Relationships between new generation of co-workers and spaces, and areas through these spaces will be explained.

The scope of the study, at Istanbul, Berlin and Vienna, ‘co-working spaces’ and inner areas are listed, sketches of them were made, and detailed layout sketches of 8 co-working space are prepared. Space relationships were

analysed by these layout drawings. As a result of examination of these 18 co- working spaces, 9 major areas for working and production,10 sub-areas are determined in all co-working spaces. Function and contents of the locations are described below.

Percentages means the overall appearance of these areas in visited co-working spaces. This percentage gives us a general idea about facilities of these places. Comparison of major areas to other areas within the same co-working space isn't given in this research.

1. Entry (the entrance part)

Meeting Area; 60%

Most of the part of co-working spaces there is a meeting space used with info-desks. This part is usually used for meetings held while standing and it takes place in the same area with the info desk where registration, information and payments are held.

Info Desk; 100%

In all of the co-working spaces there is an info desk with different designs where registration, information and payments are held.

2. Working areas (100 %)

It is the core area of co-working spaces where individual, group and either individual or group working takes place. It is the space where basic activities of co-working spaces are held. 80% of the space is used open while 20 % as closed. It is the area where people work either individually or as a group and pursue their learning process visually and auditory from other users in the same working area. Quietness is generally at prior importance therefore it is preferred that people working there used earphones – headphones. In the working areas each desk serves per one person. Daily, monthly, yearly subscription options are available for co-working space usage. For every visit, another working desk would be booked as your office. This type of collective working options brings together people from diverse occupations with different working fields. It enables getting rid of the sameness of the working spaces by letting your colleagues change frequently which attracts new generation workers choose those spaces for working. These diverse interactions act as a source of knowledge for personal improvement.

Shared individual working spaces (100%)

Shared group working spaces (100%)

Here are the lay out sketches of co-working spaces that we visit.



Urban Station Maslak-Istanbul-Turkey




WC

Meeting areas

Print Area
Lunch area
Entry

Working Areas







(https://www.maslak.com.tr/urunler/urban-station-maslak)

Urban Station Maslak-Istanbul-Turkey 2nd Floor





Meeting areas

Meeting areas

Working Areas




(https://www.maslak.com.tr/urunler/urban-station-maslak)

Raumstation Co-Working -Berlin-Germany

The floor plan for Raumstation Co-Working shows a central 'Working Areas' section with several long tables and chairs. To the left, there are 'Meeting areas' and an 'Entry'. At the bottom left is a 'Lunch area'. The photos show a bright, open-plan office with large windows, a central desk area, and a meeting room.

<https://www.funkhaus.com/berlin/raumstation-co-working/>

Tanterenate_Berlin

The floor plan for Tanterenate Berlin features a 'Lunch area' on the left, an 'Event Space' in the center, and 'Working Areas' at the top and bottom. A 'Meeting areas' section is located in the middle. The photos show a kitchen area, a lounge with sofas, a meeting room with a large table, and a workspace with a white desk.

<https://www.funkhaus.com/berlin/tanterenate-co-working/>

3. Meeting areas (100%)

This space is set up for users who are self-employed, users who prefer to get this as a service who do not have a private meeting room in their workplaces, users who prefer to meet with the work stakeholders in city centres because of the inner city distance, traffic, etc., users who have to do meetings in different regions of the city, users who conduct conferences, seminars for educational and other purposes; users who organise paid or free educational activities.

It consists of visual and sound systems for presentations, food and beverages section for private meetings and sitting units organised according to the number of attendees. Meeting areas can also be used as a separate unit from working spaces for work meeting purposes. Hardware and software equipment for online conferences in meeting rooms, international meetings via Skype, periscope broadcasts which are compatible with the working ways of today's generation are the services and distinguishing features of co-working spaces.

Users of traditional office systems use co-working spaces time to time to get rid of daily routines. From face-to-face meeting sessions of the research it is inferred that people work in creative sectors like advertising and media work which serves to more than one firm.

Classroom Type Meeting Area (20%): It is a space group that is added to shared working spaces with the emergence of new needs in recent years. It is used for conferences and educational purposes.

Meeting (100%); it is generally used for private meetings.

4. Private conferences room (70%)

These areas are used for individual calls like skype or telephone, separately from other areas in co-working spaces. These specific areas are usually identified by a telephone box or a moving wall inside the space with a sound insulation system.

5. Event space (60%)

These areas can be defined as inner or outdoor areas set aside for common activities in co-working spaces, depending on the structure of the building (like roof, quad, garden). These areas are quite important both for social interaction of users and the creation of new business partnerships. Special events such as film performances, communal meals or brainstorming meetings take place here. These places are important in the framework of social expectations of new generations.

6. Workshop space (20%)

Recently encountered "Maker-movement" is explained by transportation of collective ways of working of this new generation to production spaces and emerging manufacturing areas for these new kind of work and worker typology.

Workshop spaces have a relative percentage for co-production areas; (maker-space) depending on physical state of the co-working building and the user profile. Issues like the cost of production equipment, hardware and software resources and labour safety defines the allocated percentage of this special spaces.

Atelier Style Workshop space (10%)

Maker-space (20%)

7. Print area (100 %)

An important advantage of co-working spaces is having an opportunity to use printer, scanner, and even a 3D printer without ownership. Most of these services are provided free for members or included in membership fees. For this generation using services that provide access to products without the burdens of ownership, such as cars, offices, technologic devices are preferential. (Research n.d.). This links us to "sharing economy" which also take place in the background for co-working spaces.

8. Lunch area (100%)

Co-workers aren't only in the expectation of a worktable they also demand comfort boosting elements. With properties like short-focus time spans and ability of multi-tasking; that means being busy with or concentrating on more than one task at the same time, (Lowe, 2008) areas for food, drink and resting are important as it allows to switch between different areas within the inner space. All the spaces visited for research have a special area for having a breakfast of lunch.

Cafe (80%)

Kitchen (80%)

9. WC (100%)

Depending on our research all 18 co-working spaces in buildings have an average age of 25 and over. This result is also parallel with the result of “First Results Of The New Global Co-working Survey” conducted by Deskmag (Foertsch 2015). In this respect, co-working spaces, as collective structures for collective living and working, carry the responsibility of being a bridge between past and future by findings life in these buildings. This shared history of these buildings defined as spaces of future working life is an interesting intersection.

Discussion

1. New generation of co-workers have a high usage of technology and devices.

Observations made in the scope of work has brought an important determination. The habits of new generation, using technology consequently technological tools like computer, laptop, tablet, tablet PCs create an another necessity for users to carry other complementary tools such as charging cables, mouse, USB memory. Nevertheless, there isn't any special place in the work area for the backpacks that almost all users use. Therefore, seats are used as a coat stand, with the backpacks, jackets, along with other outerwear products such as scarf and gloves. This leads to an unnecessary mess in the work area as well as a chaotic image that spread to the space. In all places examined, it was observed there are storage problems around the work area of special items. Smart phones, Laptops and tablets are indispensable for this new generation of users in their daily lives. Therefore, the table surface and the size of such dimension that can meet these enhancements. But still there are problems about using these devices away from the plugs, especially at tables located at the centre space.

2. New generation of co-workers works collective; it is important to be side by side

It draws attention of a form of collective structure in learning among the new generation. These places are both creating a communication channel for new generation and intertwining of different disciplines in embedded in social relationships at the same environment, feeding from each other to ensure the emergence of new and original ideas. Time spent in the same medium, after a while, sets the stage for common business initiatives/ partnerships and also short-term learning environments for co-workers those sitting at the closer tables.

3. Learning From each other

Learning from each other is key issue for co-working spaces. This situation is also supported by collective events. Performance of a drama artist, presentation of a bird watcher and other activities and events like these are important for users of the facility, which is very difficult for an employee working from 9 to 5. A bird watcher (which is the most interesting user we encountered through the research) can share his experience in the same environment with different professionals such as international newspaper columnists and program makers of an international TV channel. The multicultural and multinational working environment brings a rich life experience for users.

4. New generation of co-workers transforms spaces

Co-working spaces aren't used only for working or meetings, but also new generation users transform spaces to their individual field of interests like yoga or Pilates. Trying to teach while learning is another characteristic property of this generation. Sharing experiences let users to create an unique usage of a space. Therefore, an important outcome of this research is co-working spaces need to have a flexible interior design approaches as well as the user requests and demands.

Sources of innovation can vary from individual properties to cultural or social background which motivates, trigger individuals to look for new and original, inspiring ideas. Interaction through these spaces, brings people from many sections of business, mostly from creative industries indigenously. Knowledge, ideas, professional skills and approaches collide spontaneously in co-working spaces. The interior design of these spaces also have a significant impact on these interactions. Not only the user's interaction among themselves but also interaction between spaces and users, furniture and equipment have a direct effect on creative outcomes.

We can say depending on the data obtained under research and evaluation results, co-working spaces will be the places of this new generation where they would prefer to work primarily. Examining the user-space relationship is important for designing better spaces for more efficient and creative spaces.

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suburban safari: co- designing a cultural network for Sutton

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Abstract

It is predicted that London's population will increase by approximately 1.5 million in 15 years. As property prices rise and more relaxed planning laws make the British capital city accessible only to developers, wealthy home owners and tourists, it is the less densely populated periphery or suburbs that will provide the location for these new Londoners. The rich potential of Outer London as a site on which to build affordable housing runs in parallel with a prevailing view of suburbia as dormitory commuter habitation lacking in cultural and entrepreneurial vibrancy.

This paper considers the challenges of the suburban place in generating creativity, ideas and design and its value as site of learning. A co-design project between London College of Communication MA Design Management and Cultures, MDes Service Design Innovation students and the local charity Arts Network Sutton (ANS) serves as a case study through which to analyse key challenges, issues and possible solutions. The Double Diamond research process developed by the Design Council is used by students to work in collaboration with relevant stakeholders. The aim is to re-envision the charity as a vibrant cultural network and promote the suburbs as the next creative frontier.

Keywords: suburbia; arts; creativity; innovation

suburban safari: co-designing a cultural network for sutton

Introduction

As London's population is predicted to increase by approximately 1.5 million in 15 years, property prices rise and more relaxed planning laws make the British capital city accessible only to developers, wealthy home owners and tourists, it is the less densely populated periphery or suburbs that will provide the location for these new Londoners. Reports of rising costs in suburban house prices already reflects the move out of the urban core as soaring property prices make living in central London unachievable for the majority. The rich potential of Outer London as a site on which to build more affordable housing runs in parallel with a prevailing view of suburbia as dormitory commuter habitation lacking in cultural and entrepreneurial vibrancy.

Popular culture including cinema, television shows and novels are replete with images of suburbia as a monotonous, banal, homogenous and alienating place. These stereotypical images of the suburbs which prevail in the collective imagination make it challenging for creative and cultural enterprises and organisations to develop and grow in what is perceived to be a soulless and banal milieu. Discussions about the creative class (Florida, 2002) and its relationship with economic and cultural revival have fetishised metropolitan centres as the prime locus of creativity and cultural production. But as Massey (2005, p. 9) has argued places do not have fixed identities but are constantly in the process of transformation. Space is always under construction; 'it is always in the process of being made. It is never finished; never closed'. Suburbia as place in Massey's terms is a constantly shifting articulation of social relations through time.

This paper builds on previous work which has explored collaborations between business and the arts and the physical spaces in which these relationships are embodied. For the last decade I have worked on live projects and collaborations with cultural networks and institutions involving curating exhibitions, events, catalogues and websites. My interest in spatial practices has included research with local residents from locations as diverse as Crystal Palace and Las Vegas exploring issues of community advocacy in the regeneration of place. This project continues my interest in place and space, community engagement with the arts and the wider role of art and design in society.

This research considers the spaces of the periphery or suburbs as an alternative site for the development of creative practices and networks. Using the case study of a suburban arts organisation called Arts Network Sutton (ANS) the challenges of the suburban place in stimulating and supporting creativity, art and design are analysed. Postgraduate students from the London College of Communication, University of the Arts London on the MA Design Management and Cultures and MDes Service Design Innovation courses worked with ANS using a co-design approach. The aim of the project was to re-envision local charity ANS as a vibrant cultural network and to promote creativity and cultural production within a suburban setting.

Students conducted field work in the borough of Sutton and worked on proposals for the ANS Executive Group to help them understand their audiences and to suggest ways in which they could create a vision, identity and strategy that was relevant and sustainable. The Double Diamond research process developed by the Design Council was used as a means of working in collaboration with relevant stakeholders. Using this method, the students identified the challenges and issues faced by the network and proposed some low cost practical solutions to support them in achieving their aims. This paper will begin with a historical and theoretical analysis of suburbia and creativity followed by a description of the specific case study and preliminary findings.

Suburbia: place, process and participation

Suburbia or suburb means 'beyond the city' and refers to residential communities beyond the centre of the urban core. Although physically separate from the city, suburbia is often characterised by its relationship to the city in terms of an economic, cultural and social dependency. Fishman (1987) defined it as 'large enough and homogeneous enough to form a distinctive low density environment defined by the primacy of the single family house set in the greenery of an open, park like setting'. Literature on suburbia has predominantly focused on developments in Britain and America where the suburban landscape has featured as a key trope in the popular imagination through film and television. Suburbs developed at a rapid pace in Britain from the mid nineteenth century as the middle classes sought to escape from poverty and over crowding in the inner city. Improved infrastructure including rail, underground and bus networks combined with cheap land and a growth in speculative building projects created new forms of urban space predicated on the primacy of family life.

By the mid twentieth century the suburbs had become the dominant method of social organisation in both Britain and America. In the latter families moved out of cities in the 1950s and 60s as a response to rising levels of crime, racial tensions, overcrowding and urban decay. State sponsored interventions and subsidies to the oil

and automobile industries stimulated the expansion of the highway system and growth in car ownership which made it possible for more people to achieve home ownership, proximity to nature and a sense of community which were marketed as key indicators of living 'The American Dream'. In 1961 American urbanist Lewis Mumford (p. 553) expressed disillusion with suburbia critiquing it as 'a multitude of uniform, unidentifiable houses [...] inhabited by people of the same class, the same income, the same age group [...] conforming in every outward and inward respect to a common mould'. This negative view of suburbia as a series of monotonous and uniform developments spreading across the landscape has been further perpetuated by North-American literature on sprawl (Duany, Plater-Zybeck and Speck, 2000).

In 'The Geography of Nowhere' (Ross, 2013) and 'Dead End' (Kunstler, 2014) the authors discuss the economic and social costs of urban sprawl and unrestrained planning in America and put forward practical proposals for change. These suggestions include a reinvention of the suburban place through grass roots advocacy, building communities and reviving civic art and civic life. This Anglo-American perspective on suburbia has to date dominated suburban studies although as Clapson et al have argued (2010) the majority of the world population live in suburban regions, including the 'shanty towns of Asia, favelas of South America, slums of Africa and inner-city suburbs of the developed nations'. As the interest in global suburbanisms increases it is also important to acknowledge the global in the local as Massey (2005, p. 9) has argued. Space is 'constituted through interactions, from the immensity of the global to the intimately tiny'. In thinking about the politics of suburbia it is necessary to engage with the existence of multiple processes of coexistence in order to question the predominance of territorially based democracy in what Massey has characterised as a relational world.

'The suburbs are places that are defined in the imagination as much as by geography' (Huq 2013, p. 29). Suburbia is more than a physical space or a collection of residential buildings outside of the city but is rather an idea, an ideology, a process and a performance. Baker (2014) and Whelan (2010) for example describes how as early as Victorian times, the suburban ideal with its emphasis on social conformity, cleanliness, health, privacy, status and respectability was part of a British middle class attempt to control outsiders and enforce its own values. Based on notions of the Beautiful and Picturesque, the suburbs rarely lived up to the idealistic expectations of its inhabitants and created a set of anxieties that was reflected in the literature of the time. This bourgeois utopia of family life, leisure and closeness to nature was a spatial sensibility defined as much by what was excluded as included. Work was somewhere else and the home once an economic unit became a domestic sphere managed by women who were segregated from the world of power and productivity.

A view of the suburbs as dull and lacking creativity may be one that lives on in our collective consciousness, but over the last half century there have been major changes in demographics, family structures, working patterns, home ownership and the relationship between cities and the periphery. In 'New Suburbanisms' (2013) De Jong argues that suburbs have become more like cities and vice versa through the hyper-programming of public spaces and the reciprocating influences of the urban and suburban. The suburbs have lost their traditional meaning as a satellite of the city and now have their own expanding economies and are functionally independent of the central core. A more nuanced understanding of the suburbs is required beyond the oppositional urban and suburban comparison. The suburbs can no longer be portrayed as parasitic on the core as they progressively operate as 'personal worlds' (Huq 2013) where inhabitants work, sleep, eat, socialise and pursue leisure activities.

The focus in suburban critique is gradually shifting from a predominantly dystopian view of the suburbs as 'non-places' (Augé, 1995) to investigations of the everyday practices of suburban inhabitants as a means of redefining and differentiating their localities (Archer, 2013). There is a growing interest in suburbia as a construction made legible and habitable through everyday actions. For example, Dickinson (2015) explores the idea of building 'The Good Life' through suburban living and analyses the importance of notions of memory, safety, and family all framed by consumer culture in creating the suburban imaginary. Mace (2013) considers not only the processes of suburbanisation but also the practices of being suburban. Suburbia is viewed as a process, an ongoing practice which acknowledges the socio-economic forces that shape the physical manifestation of place and brings to the fore the lived experience of its inhabitants. Mace argues for an understanding of suburbia which stresses its permeability and relationship to the city, its polymorphic nature over time and adaptability to the present. The fact that suburbia is and 'has always been fractured, multiple and diverse' (p. 18) can still be obscured by the dominant stereotypical post-suburban motif.

Creativity and innovation in the suburbs

Creativity has a long history of being associated with the dynamism of urban living and the idea of 'the creative city' and 'a creative class' as proposed by Richard Florida (2002) has provided a template and toolkit for governments and policy makers keen to revive the economic and cultural potential of cities in the 21st century. Creative quarters, cultural hubs, clusters and networks have been promoted as a means of generating the vibrancy necessary to attract knowledge workers and to provide a catalyst for invention and innovation. Innovation has multiple meanings but for the purposes of this paper will be defined as 'a new idea, method, or device. The act of creating a new product or

process, which includes invention and the work required to bring an idea or concept to final form' (Kahn, 2012, p. 454). It is the transformation of 'a valuable offering that is new to a specific context and time, creating user and provider value (Kumar, 2013, p. 1).

Prevailing discourse has characterised creativity and innovation as spatially clustered in the inner city with for example, London as the heart of the creative industries in Britain (Nesta 2010). For Landry (2000, p. 35) creative places are dense, for Florida (2002) they are bohemian, culturally diverse, tolerant and characterised by thriving agglomerated clusters of creative workers. A creative cluster according to De Propriis (2008) is a community of 'creative people' who share an interest in novelty but not necessarily in the same subject; a catalysing place where people, relationships, ideas and talents can spark each other; an environment that offers diversity, stimuli and freedom of expression; and a thick, open and ever-changing network of inter-personal exchanges that nurture individuals' uniqueness and identity. The alignment of creativity with the inner city in discourses relating to creative clusters and creative cities positions the suburbs as 'other' to the city. This binary opposition positions the spaces of the periphery as devoid of creative inspiration and innovation, a site of passive consumerism, conservatism and dull conformity.

This view has been challenged by geographers, economists and cultural commentators such as Tim Edensor, Emma Felton, Anne Markusen and David Crouch who critique the creative class theory and explore the alternative vernacular and everyday landscapes of creativity. They argue that innovation does happen outside the city and that the spatiality of creative work can be re-defined in terms of a suburban aesthetic. The suburbs are a cultural creation and as Silverstone (1997) has argued it is important to shift the emphasis in the analysis of modernity and postmodernity away from the city 'the trumpeted cauldron of cultural creativity' and innovation to the cultural and social spaces on the edge. In his discussions of post-suburbia Phelps (2010) highlights the transformation of the periphery to a space of greater social, cultural and economic complexity where culture and creativity animate vernacular spaces through everyday practices that accommodate social dynamics. Re-imagining the suburbs as productive places where creativity prospers will provide a more nuanced and complex account of the cultural geographies of its workers, entrepreneurs and makers.

Case study: arts network sutton

Arts Network Sutton ANS is a voluntary organisation partially funded by Sutton Borough Council. The local charity was established in 2014 with the aim of facilitating, developing and enhancing local arts community activities, facilities and partnerships. ANS is an independent organisation that promotes, champions and nurtures a diverse range of arts and is run exclusively by a group of volunteers. ANS does not have a physical site where it is located but uses council owned buildings for Executive Board meetings, training activities and exhibitions. The charity has a virtual presence through a website created by one of its volunteers (ans.wildapricot.org) and a small membership base which it communicates with through a monthly newsletter. Members of the Executive Team are predominantly white 60+ male volunteers formerly working in the arts with a female Chair and secretary recently appointed. Sutton Council representatives also sit on the Committee and there are rigorous reporting mechanisms in place to monitor ANS activities and use of funds.

The demographics of the Executive Committee broadly reflect that of the Borough which has a high level of White British inhabitants – 71% compared to the London average of 45% (Census 2011: Ethnicity). There are significantly more White 75+ year olds living in Sutton compared to other ethnic groups. The borough is divided into 18 political wards and has six key hubs including Carshalton, Wallington, Cheam, Beddington, the Wrythe and Worcester Park connected to the central urban core of Sutton. Each hub has very different characteristics from a socio-economic, cultural and physical perspective which makes it difficult for a small voluntary organisation to cater for all the Borough's needs in a meaningful way. There are areas of affluence, high levels of employment and home ownership juxtaposed with places of deprivation, poor health and rising unemployment. Recent council cuts of 54% which formed part of the government's austerity measures to combat national debt have put pressure on the Council to prioritise the funding of essential services at the expense of the arts.

When the project was first initiated ANS had no permanent Chair and was at risk of closing due to the threatened withdrawal of funding by the Council. Its relationship and dependency on the Council was problematic and income generation and attracting funding and sponsorship from other sources extremely under developed. The organisation was perceived to have lost its direction and purpose and did not have a clear strategy, identity, active and growing membership or diverse Executive Group. The student project came at an opportune moment for ANS to reflect on their purpose and future within the political context of shifts in funding within the Borough. ANS is genuinely seeking guidance on ways to support artists and designers within Sutton and open to the ideas and perspectives of LCC students. The membership of the charity's Executive Group is made up of individuals volunteering their time alongside managing jobs in other industries. Members are all artists (musicians, actors, painters, etc.) but lack the design management and business skills necessary to optimise the potential of the network and its limited financial resources.

The aim was to give students the experience of being co-creators of a project through working on a real-world challenging brief, to re-envision ANS as a vibrant cultural network, to help the charity understand its audiences and create a vision, identity, strategy and action plan to promote the suburbs as the next creative frontier. ANS would benefit from receiving a diversity of international perspectives on their work and students would gain experience of working in suburbia, a very different place to London, capital city and global hub.

This project involved extensive primary research and field work in the locality and gave students hands on experience of implementing design research methods and project management skills in a meaningful context. Students used the Double Diamond design process model, which includes divergent and convergent thinking, developed by the Design Council in 2005 to problematise and understand the brief. The research process is divided into four distinct phases: Discover where the problem is explored through primary and secondary research, user research and creative thinking that lead to ideas. Define where the research is analysed and ideas synthesised to create a clear definition of the problem. Develop where multiple concepts are generated through creative iteration. Deliver where the final concept is chosen and iterated.

We introduced critical theory, historical and contextual information to this model to ensure that the research process incorporated multiple global perspectives and an analytical and questioning approach to defining terms, overcoming stereotypes and challenging and exposing the limitations of current policies and discourses. We were keen to help students understand design as an agent of sustainable and ethically responsible change and social innovation. Marc Augé (2015) defined innovation as a 'social fact' and this project explores design as a process that concerns all aspects of society and its participants. Here design is construed as a critical process that challenges and transforms 'the defining routines, resources and authority flows of beliefs of the broader social system in which it is introduced' (Westley, 2010).

Findings

Students worked in six mixed groups over an eight-week period using the Double Diamond research process to address the challenges of the brief. They were tasked with producing a group presentation of their final concept to deliver to the Executive Committee of ANS, Sutton Council Representatives and invited guests for feedback. In addition, they had to produce an individual journal providing critical reflection on the project process and their individual contribution to the team. They were given desk research to do in advance of the teaching sessions with access to relevant data and information about Sutton, ANS, suburbia and the Double Diamond research method. The term commenced with a critical review of notions of space, place and suburbia and the ways in which the latter was nuanced across different societies, geographies and cultures. Field work included a combination of class arranged events and small group studies, iterative work took place within the studio context and the final presentations were delivered to and evaluated by the selected stakeholders at a council-owned venue in Sutton.

The students developed a wide range of proposals drawing on their field work and secondary research and presented an edited selection to ANS based on what was achievable within the limited time and resources available. The following ideas were proposed:

1. New membership plan with two levels of membership - Basic and Wonder (the latter would receive the Wonder Box)
2. Pop Up Sutton by ANS - regular pop up events in different parts of the borough
3. ANS Nest – physical location for the organisation in an existing under-used site for events, activities and exhibitions
4. ANS Ambassadors – a way to encourage young people to support the arts and become members of the ANS Executive Committee
5. ANS Youth Programme – free arts mentoring for young people
6. Collaborations between young artists and experienced/established artists in the borough

The presentations were positively received by ANS who provided constructive feedback on all. Half of the proposals focused on engaging with younger people as a way to nurture talent, re-energise the network and make it sustainable in terms of succession planning. Key themes to emerge were that ANS had a low awareness among potential stakeholders and most individuals interviewed as part of the research had never heard of the charity. However, there was an interest in the arts and a desire for more local activities which were considered to be currently lacking. The Executive Committee favoured the proposals which were realistic in terms of labour, cost and sustainability and were keen to harness the potential for social good. ANS suggested that a further phase could be a broader focus on target audiences and a more in depth and quantitative overview of the potential for the arts in Sutton and what they could learn from competitors already tackling these issues. The timing of the presentations coincided with Council proposals for the development of a cultural hub in Sutton and inspired by the students' work, ANS drew on their ideas to inform thinking about ways of developing and leading on activities in relation to Council plans.

Recommendations

A second phase of the project is planned with further work to be undertaken from a pedagogic perspective around the following:

- To explore and interrogate the specificity of context and understand the multiplicity of factors impacting on the project and the tensions between local and global considerations
- To inculcate a critical, questioning approach to institutional policies and prevailing discourses
- To encourage a flexible approach to research methods seeing them not as rigid protocols but as frameworks to be adapted to the task in hand
- To align proposals more closely with a social agenda of promoting social and economic goals, improving health and wellbeing, contributing to community cohesion and reducing social exclusion and isolation
- To be reflexive and self aware applying a moral dimension to internal processes as well as external outcomes

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savoir faire and innovation: place-based design heritage in undergraduate education

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Abstract

At two European universities, undergraduate design students gain a complex understanding of design processes as a reflection of place as they study the ways that companies' operations and identity reflect the community's culture, people and heritage. Through collaboration, students experience centuries-old arts, skills, and design processes, while the companies' traditional *Savoir faire* (it. Saper fare: "knowing how to do things") benefits from students' innovations in manufacturing and marketing; this sustains the design businesses and their design heritage.

In Florence, students in a Product Design course collaborate in Joint Labs with advanced craftsmanship manufacturers in Tuscany production districts, experiencing and promoting connections between historical artisanal practices and innovative processes. Similarly, design students in Paris work with culturally significant "heritage" companies to bring them innovative marketing and branding insights.

International markets are becoming more attuned to the context of products' origin (Morace 2003), giving the "vocation" of a place greater significance and highlighting the place-specific processes that imbue the object's design. Collaborations with design students enable culturally significant companies to innovate in improving and promoting their place-based aspects, and sustaining their heritage.

Keywords: savoir faire, intangible cultural heritage, undergraduate design education, learning by doing

savoir faire and innovation: place-based design heritage in undergraduate education

Introduction: University of Florence Design Campus (DIDA)

Home furnishings in Italy are primarily manufactured by a group of small and medium enterprises (SMEs). These companies have undergone profound transformations in their manufacturing processes, particularly by the progressive juxtaposition of innovative technologies and traditional place-based craft processes. The result is “advanced craftsmanship”: the use of computer-controlled machinery to replicate manual processes derived from genius loci heritage.

In 2012 the DIDA design research team (PhD, post-doctoral and faculty researchers) created a program of Joint Labs to train undergraduate students in “advanced craftsmanship,” through educational paths that connect traditional craftsmanship knowhow with innovative manufacturing processes.

After students acquire theoretical preparation, the DIDA department connects new departments in the partner companies with teams of students who are able to interact with artisanal craftsmen as well as with innovation sectors of the supply-chain. These enclaves within the companies create a win-win situation: the company improves the advanced craftsmanship and R&D sectors, while the academia trains students through direct interactions with the production chain. In addition, connecting the University’s advanced research with the SMEs’ artisanal savoir-faire brings fresh energy into the manufacturing process, improving the companies’ time to market and preserving the craftsmanship knowhow through the generations.

Methodology: joint lab process at DIDA

1. Student selection and internship organisation – about one month

The DIDA research team selects students from the third year of the bachelor program in Industrial Design and from the second year of the master program in Design and Fashion Design System. The students receive a preliminary theoretical preparation, followed by an internship experience of 6 months in a partner manufacturing company. In the internship phase, the research team select appropriate technical equipment for each Joint Lab. All costs are shared between the University and the partner company. If possible, the University and the partner company apply jointly for a public grant promoting manufacturing innovation (i.e. Horizon 2020—SME Instrument/Smart Factory program: Executive Agency for SMEs, European Commission).

2. Theoretical preparation for student team at the university – about one week

The DIDA research team provides theoretical training for the Joint Lab students at the University, arranging lesson topics according to the needs and culture of the partner company.

3. Team preparation of students and tutors (PhD Students or Researchers) – about two weeks

After the theoretical preparation at DIDA, the selected student team and tutors begin training in the partner company, under the supervision of interested departments: these are usually design or other technical departments, or communication or logistics sectors. The first week of the training period is dedicated to introducing tutors (usually PhD or Post-doc researchers) to the company environments and to the basic practical Savoir Faire of the manufacturing chain. In the second week, students are introduced to the environment and manufacturing know-how. In this phase, the appropriate technical equipment is made available to the students.

4. Joint lab starting point – with the support of internal technical department

After these training phases, the technical departments of the company give assignments to the student teams and the work starts. The tutors work with the involved company departments to create a calendar of revisions and delivery of student works. The tutors also prepare a joint lab report, and present best-practice tutorials every two weeks.

Outcomes: joint labs at DIDA

Following this methodology, DIDA created several different Joint Labs. Some examples are:

- RED Joint lab with Baldi srl – bronze and crystal manufacturing (Florence/Empoli area – Italy)
From September 2011 to December 2014

- REM project with Savio Firmino srl – high-end craftsmanship for luxury furniture (Florence area-Italy)
From September 2013 to April 2015
This Joint Lab used reverse-engineering processes to create a digital archive of manufacturing components (about 10,000 items), to define new product shapes and to preserve the craftsmanship know-how.
This resulted in strong time-to-market improvement.
- E.craft with **Luisaviaroma.com** – global e-commerce website offering a selection of the best craftsmanship companies (Florence – Italy)
The Joint Lab team selected the best manufacturing companies of Made In Italy to be included in the exclusive **Luisaviaroma.com** website. The students provided the selection, the styling strategy, and photo post-production. Project tutor for was Ramona Aiello, PhD student at DIDA University of Florence.
- Italian Genius – Crystal and bronze company network in connection with an international luxury dealer.
From January 2014 to April 2015
The Joint Lab created a collection of vases inspired by famous renaissance palaces and historical personages. The student team—guided by tutors—provided historical research, design references and thematic scenarios to establish a product story. The Italian Genius Joint Lab created the “Experiencing Galleria Palatina” vases collection.

Introduction: undergraduate program in strategic design + management, Parsons Paris

In 2005 the Entreprise du Patrimoine Vivant (Living Heritage Company, or EPV) label was established as a mark of recognition of the State, to reward French firms for “the excellence of their traditional and industrial skills.”

The EPV website details these firms as having the following characteristics:

- “They own specific economic heritage resulting from their production experience.
- They put into practice rare skills that draw on a mastery of traditional or technically advanced techniques.
- They have ties with a particular region.”

In short, EPV-designated firms possess traditional and/or innovative Savoir Faire, and identify with a region: a sense of place. Parsons Paris works with several EPV companies, giving undergraduate students a context for and experience of place-based Savoir-Faire. After theoretical work to understand the importance of Savoir Faire and sense of place to the branding of the firms (and the branding of French cultural heritage), students in the Bachelor of Business Administration program work with partner firms to create innovative marketing/branding strategies.

Methodology: Parsons Paris Collab Course traditional making/innovative branding

In January 2016 students enrolled in a 15-week collaborative course titled “Collab: Traditional Making/Innovative Branding.” This design studio/symposium enables students to collaborate with site-specific companies, exploring and developing innovative positioning, branding and marketing possibilities for the partner companies.

Students observe the daily activities of merchandisers and designers, and research the historic and cultural factors that have informed the company’s processes, mission and image. External research visits enrich the research methodologies. Students then draw upon their research to explore and develop innovative positioning, branding and marketing possibilities for the partner companies.

1. Theoretical preparation of student teams at Parsons Paris – about three weeks

Within the classroom, the instructor leads students to explore the role of history and culture in the development of the companies’ positioning and branding. Students also gain a general understanding of

- Cultural heritage (including UNESCO’s safeguarding of intangible cultural heritage)
- Place-based heritage
- Transmission of savoir-faire

2. Visual research of partner firms by student teams – about four weeks

Students observe the daily activities of a merchandiser and designer, and research the historic and cultural factors that have informed the company’s processes, mission and image. Their research includes

- On-site visits to observe partner companies, recording with sketching, photography and notes
- On-site research into the partner companies
- Off-site research in museums and libraries

3. Proposals to partner firms by student teams – about two weeks

Working in teams on individual subject companies, students identify preliminary branding objectives and marketing strategies.

4. Implementation of strategies – about two weeks

Student teams create look books and written proposals, introducing culturally-relevant marketing and branding innovations. Each team develops a communication strategy designed to promote specific aspects of the Savoir-Faire of the partner company—its brand character, personality, and/or positioning—to a targeted audience. Proposals may be for a website, a brochure, or a campaign that highlights this communication strategy.

5. Presentations and assessment – about two weeks

The course continues until mid-May 2016, so no outcomes are yet available.

Conclusions

Intangible cultural heritage and place-specific Savoir Faire are complex entities, with multiple aspects for students to consider. The examples here of the Joint Labs the University of Florence and the collaborative course at Parsons Paris present multiple methodologies for understanding these entities. A combination of theoretical contextualisation, on-site observation and training, and introduction of innovations in manufacturing and marketing give students a richly layered experience. Also, partner firms benefit from the students' innovative and fresh approaches. Their combined efforts contribute to preserving and extending place-based savior faire and its culturally significant products.

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ya'an grit utensils welfare brand business model innovation and design practice

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Abstract

With 'MG V Tao' post-disaster reconstruction social Innovation as an example, this paper explores the 'MG V Tao' black grit brand industry situation existing problems development trend and proposes solutions through design thinking, with identifying local problems as the primary task and cultural heritage as the core, carry out innovative design and brand design strategy of commercial operations based on Online to Offline local distinctive resources. And combined with project practice, it discusses the business model innovation of non-profit brands based on emotional design. Then business model is built based on target users and market research and product iteration is achieved through the cooperation between design workshops of several schools and local enterprises, thereby establishing a new business model to promote the sustainable local economic development.

Keywords: social innovation, non profit brand, emotional design, business model innovation

ya'an grit utensils welfare brand business model innovation and design practice

Ever since 2012, global warning has triggered several geologic disasters, which has brought more crisis and problems. Therefore, sustainability-oriented social welfare innovation has got developed, extending from the field of theoretical study to practice field and has got certain achievements. EMUDE, the sixth framework of EU, puts forward the proposal of exploring the development potential of social welfare innovation from the perspective of sustainability to constantly renew social structure (Carla Cipolla; Roberto Bartholo; Yan Xiao, (2010.) China's CCSL comes up with the brand new way of thinking to transfer the focus of the problem from the centre of environment to the centre of sustainable living style and business model (Miaosen Gong; Chenchen Xie; Yumei Dong, 2011) such as Carpooling, Purchasing Group, Co-housing, Mutual Neighborhoods, Time Banks and Rediscovery of Bicycle. There are such cases emerging in endlessly, promoting the expansion and development of local cultures and industries by collaborating with local government, public service organisations, internal and external enterprises, local residents, interdisciplinary innovation teams as well as community network platforms.

Current status of business mode of social public innovation brand

In recent years, along with the rapid development of social economy, public welfare establishments have received widespread social concerns and have also been facing many opportunities as well as challenges. For instance, the majority of public service organisations have a defective development pattern. There exist numerous problems in the aspects such as design, operation, management, capital and activity norms etc. (Shaoming Fang; Lisha Zhang; Rong Wang, 2012) Therefore, how to seek a sustainable development mode of public welfare establishments is a problem worth studying. The paper has studied worldwide social welfare innovation projects looking at practice cases of business model innovation of the public welfare brand in recent years such as :Design and social innovation workshop of "New Passage • Huayao Flowers", Yangtze River public welfare project of "Good Fruit+Medlar", Deng Fei's e-agriculture plan. Design harvests of Tongji University, Zhao's Kiln in Taiwan, public welfare brand BR Link in Taiwan. Also US Airbnb, public welfare activities held by Japan's Osaka Gas and Panasonic, as well as social innovation plan of Suwon, South Korea. As for the above public welfare innovation projects combined with modern business model, they can basically be summarised by six procedures: social observation and case study; field visit and problem definition; design strategy and concept development; system construction and solutions; business model innovation; spread, release and promotion of the projects. In this paper, more prominent public brand and business model innovation practice cases are selected and summarised and concluded from operational independence, key business, development mode, value expression and integration five aspects as shown:

Figure 1: The research of existing public brand business model.

	Plan of Qiang embroidery	Design Bumper	BRLink	Airbnb	Track2000	SEE Ecological Association
Operational Independence	One foundation	The national natural science foundation of China	Enterprise	Physical Company A local photographer	Early accept foreign aid, later avoid funding	Cooperate with the government
Product & Service mode	Design, production and sales of local arts and crafts products. Building electric business platform (Production + platform)	Design, production and sales of local characteristics agricultural products. Experience of home stay facility (Production)	They donate a pair of shoes when they sale a pair of shoes to children in poverty-stricken areas (platform)	Continuous manage association. Excavate the user requirements. Develop new products (platform)	In the old and new, donors and consumers, builds the platform (platform)	Micro-credit
Development Model	Based on the local	Based on the local	Taiwan, India, Nepal etc.	Around the World	Based on the local. Extended to the whole world in the future	Inner Mongolia
Charging Mode	Sales arts and crafts products	Sales agricultural products. Provide a home stay facility experience	Sale shoes	charge to landlord and tenant	Sales refurbished products	Interest on credit
Innovative	the low participation of local women. Handicraft commodity market competitive is low.	Farmers' participation is low, the lack of commercial power, the low marketing integrations.	The low participation of sponsored child, the low marketing integrations.	High engagement of users, high marketing integrations.	High engagement of Community residents, high marketing integrations.	the low participation of local people, high marketing integrations.

It can be seen that non-government organisations after start-up period should reduce direct assistance from the government and achieve independent operation; under the premise of public service, combined with practical situation, the internal organisation can use innovation business model to achieve a sustainable development;

non-government organisations should carry out key business on the basis of helping social vulnerable groups and based on the local area, continuously seek for the opportunity to expand the field and space; non-government organisations should always take up the mission of public service and reasonably gain whatever profit accrues throughout the operation course. Non-government organisations should take into account the participation of recipients and the market reaction of provided products and services so as to promote the development of regional industry and improve people’s living standards. This shows that social welfare innovation has gradually transferred from simple material assistance to business level. The combination of public welfare + business can not only improve the market competition environment, but also further propel the development of local industries, ameliorate people’s livelihood and elevate the quality of infrastructure as well as production efficiency of natural resources.

‘MG V Tao’ is a social innovation teaching and practice project aimed at solving the various problems caused by Ya’an earthquake. Hunan University takes the lead in the design and production by allying with the design strengths of Faculty of Fine Arts of Tsinghua University and Sichuan Fine Arts Institute and cooperating with Ya’an Grit Utensil Workshop, which is aimed at carrying out an innovative study on design method, service system and business model of the local industries on the sustainability-oriented basis, and on how to realise brand spread by virtue of internet platform so as to gradually construct a grit utensil innovative design service platform of “design, collection, cooperative production and brand promotion”.

Business model analysis led by emotional design

Mr. John D. Rockefeller believes that the ultimate purpose of public welfare is to make recipients independent from any help; on the contrary, public welfare is also harmful. Therefore, public welfare brand needs its own unique business model to achieve sustainable benefits so as to realise a win-win between public welfare and business goals (Ge Xiaochun, 2009.) Emotion is the basis of maintaining every relationship between man and man, the

bridge built up between human need and action, and also the command of consumer purchase behaviour. The essence of the business model of public welfare brand lead by emotion is the innovation process of taking human emotional experience and emotional needs as precondition and primary condition. The paper has worked out a linear structure taking target customer (Customers include recipients and consumers) as starting point by semantically replacing the customer-related factor in business model with customer-centred design method as well as considering formation sequence and the degree importance of every factor on the basis of canvas concept of business model by Ostwald & Pinhel (2009), as shown:

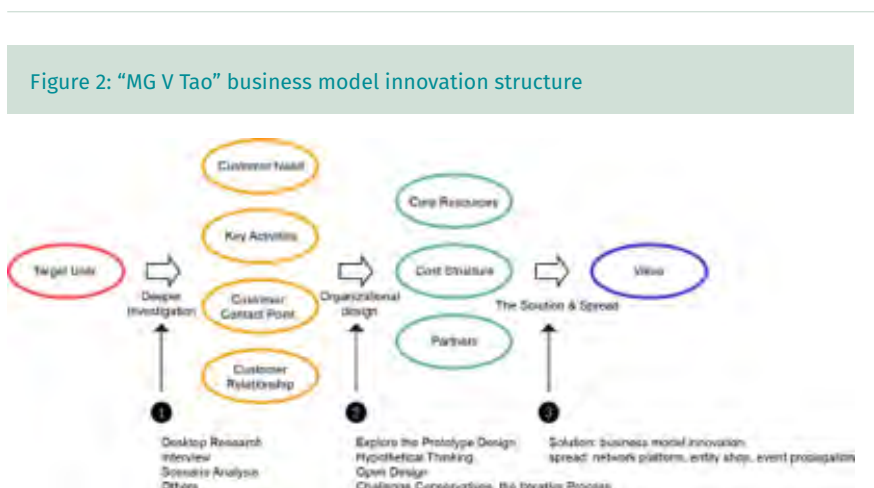


Figure 2: “MG V Tao” business model innovation structure

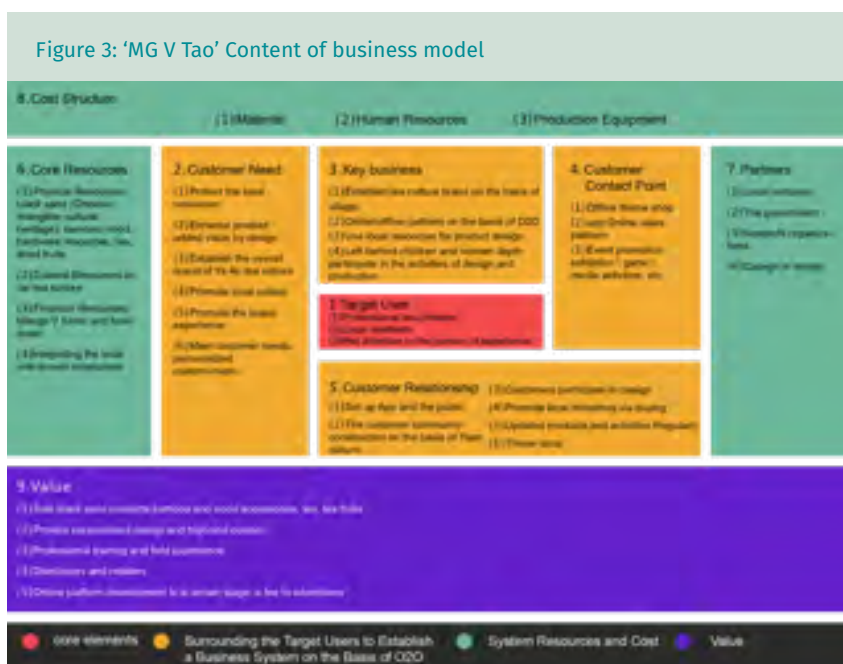


Figure 3: ‘MG V Tao’ Content of business model

Then, it has confirmed the contents of the business model according to the innovative business model structure. Wherein, the red module is the core factor of the entire business model innovation; the orange one is the O2O business system established around the target users; the green part is the core resource and prime cost of the business model; and the purple one is the value embodiment of the entire system, as shown:

Target customers

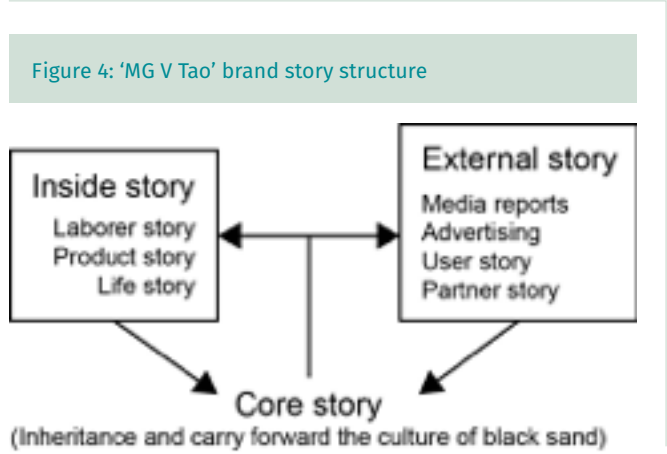
In the numerous customer groups, 'MG V Tao' project team through desk research, field trip and market research and analysis (network, local black sand plant, sand utensil shop, tea utensil shop in multi places, tea shop and tea production place), divides the target customer into user and recipient two groups, in which the user is the person who has a certain economic base and a certain understanding of tea culture. This group has a deeper emotional understanding on brands related to tea culture; recipients are local craftsmen and workers.

Establish business system around target customer

Campbell & Simpson-Bin have defined the brand story as all the ideas, experience and value embodiment of one brand. (Campbell, C. Simpson-Bint (2010.)) In the era of commercialised flooding, customers expect to obtain more satisfaction in addition to product function out of the consumption. Therefore, if public welfare brands want to enjoy popularity among customers, they can excavate brand stories with cultural connotation on the basis of having perfected product function. By deeply understanding the customer, the team designers ultimately search out the motivation and deep desire driving people's behaviour and decision-making through brainstorming, filtering and sorting, eventually arriving at the customer's requirement. Thereby key business is identified. First, in the era of product homogeneity, the user expects to enhance the emotional experience. Second, for the recipients, who chronically lack the communication, exchange and learning from the outside world, and are less involved in commercial activities. Therefore, 'MG V Tao' has presented the development mode based on O2O, excavates brand stories with cultural connotation on the basis of improving product functions and spreads and promotes through Internet platform, as shown:

Design thinking is used to integrate and design local resources so as to provide personalised customisation and field experiencing services.

O2O is Online-to-Offline and refers to combining the offline business opportunity with Internet to make the Internet as the offline transaction platform. It requires designers to fully understand the concept, meaning and necessity in any organisational ecosystem of the platform, and how to run the emotion throughout the internal organisation based on the platform, to bring value to customers and brands (Volkova T; Jakobsone I, 2013). 'MG V Tao' uses digital approaches to formulate finished production, community and sales promotion platforms for products and brands design with innovation black sand arte facts as carriers. This combined with tea, refreshment, special food, wood, bamboo and other local dominant resources, as shown:



Local various craftsmen and workers are introduced into the industry, to build the platform of communication, interaction and business, between people and people, people and village, village and village. While pushing the industry to upgrade, it can also provide more jobs.

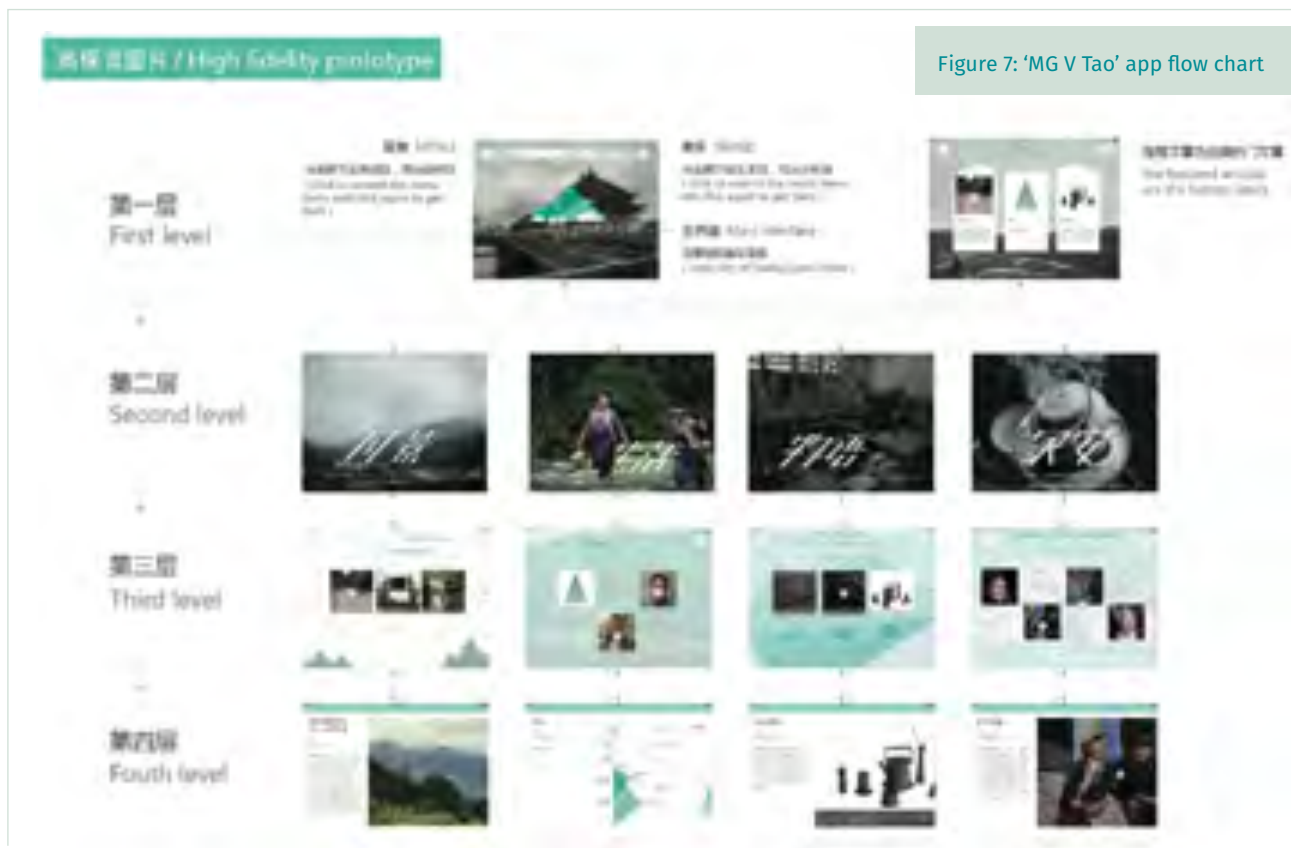
In addition, in business model, customer relationship directly determines the win-win form between enterprises and customers. Therefore, the designers should analyse how public welfare brands maintain and add to their connection with customers. That is to say, emotional experience brought by the design of creation due to people in the exchange process between humans and things, (Liu Sha, 2003) 'MG V Tao' business model has introduced the concept of emotional design in the process of design, that is to build up the bridge of emotional exchange and spread among local people in need, enterprises, consumers, designers and business people in the implementation process of the entire business through the design. As shown:

Figure 6: 'MG V Tao' product design



高保真图片 / High fidelity prototype

Figure 7: 'MG V Tao' app flow chart



Outside people, enterprises and organisations etc. can understand via app the status quo and have an understanding of the local handicraftsmen residents, as well as enterprises so as to conduct direct communication and offer aid. As shown:

After purchasing the products, consumers can also understand the manufacturing process of the products via product picture album, postcards and instructions, in which the local people have devoted full emotional sustenance to each and every step. Meanwhile, local big black sand enterprises will regularly provide customers with the opportunities of on-site experience, manufacturing and exchange. Launch the service of personalised customisation, and share application methods of tea wares, knowledge of tea cultures and customers' experience feedbacks via internet platforms. This is not only beneficial for improvement of products and service, but also makes enterprises and customers form a good and sustainable cooperative relationship.

Resources and cost

Feasibility is the foundation of designing business model of public welfare brands, so the designers of business model should integrate and take full advantage of obtainable resources via design to reduce the cost as low as possible and perfect business system. (Zhang Jian, 2013) 'MG V Tao' attaches great importance to environmental protection and resource sustainability. "MG V Tao" fully exploits local resources to produce products, packaging and promotion by integrating several local well-known enterprises lead by Zhu's Grit Utensils such as: Black Sand Manufacturer, Tashan Tea Plant, Ruinan Tibetan Tea. Also, Kongping Bamboo Weaving Processing Plant, Stone Processing Plant, Jinbu Leather Products and Root Carving. For example, we put bamboo shavings and wood flour in the packing boxes to absorb shock. We also carry out joint marketing, by working with several local but large specialty tea enterprises. Due to the characteristics of the textures, craft masters, workers and designers need to conduct joint discussion in the design process so as to constantly improve the products. Besides, 'MG V Tao' has co-hosted many black sand experiencing meetings with black sand enterprises so as to discover the problems, promote the product innovation as well as attract the latest outside resources. It is thus clear that the cost structure of Settling Down business model comprises fixed cost, labour cost as well as certain promotion and transportation costs.

Value embodiment

The most direct value embodiment of business model lies in how much revenue it has brought to the enterprises and their related beneficiaries. Stable revenue is the economic foundation for business model to have a sound progress and also the fundamental to any innovation system or business model. The revenue of Settling Down includes: (1) marketing black sand products, accessories, tea leaves and dried fruit; (2) providing customers with personalised design and high-end customisation; (3) collecting professional training and on-site experience fees; (4) charging distributors and retailers of certain service fees; and (5) charging advertising companies of certain fees when online platform has been developed to some extent.

Study on innovation system of black sand business model in Ya'an

A large number of surveys have shown that a reasonable business model design in terms of public welfare brand is beneficial for developing cross-regional and cross-cultural exchange, shaping identifiable regional characteristics, or creating employment opportunities and providing more investment climates. (Safullin L; Bagautdinova N; Safullin N, 2015) Future business model will transform from the profit perspective of marketing and value network of management to people-oriented experience and design, and from attaching importance to product design to service design. (Chen Xinghai; He Renke; Yang Huan, 2014)

Content innovation of business model driven by emotions

Business model of 'MG V Tao' brand driven by emotions is established on the basis of satisfying products with high utility function and innovation level, taking customers' different spiritual needs and expression of emotion as the core of brand marketing. By virtue of strategies such as brand packaging, sales promotion, advertising campaigns, credit and public praise as well as emotional design etc., we infuse our emotions in all factors of products and service as well as marketing process, endow the original things without life with sensibility via personification and trigger the resonance between customers and brands so as to achieve a spiritual communication. 'MG V Tao' business model is customer-centred, which confirms how emotional design runs through and functions in the entire process of business model by analysing the influence degree of customer factors of customer needs, customer relationship, marketing channels and key businesses in business model. Through the information on the package, users can get contact information for direct financing. For example, the project team regularly invites experts in related fields to provide aesthetic courses for local craftsmen and workers and teach relevant skills and innovative design thinking. Limited product packaging will also be custom-painted by local children for instance.

Business ecosystem based on community platform

The community platform of Settling Down brand refers to target customer groups conducting information and technology communication via internet. By virtue of this platform: (1) Product supply and demand parties as well as enterprises with varied fields, industries and cultural background can realise exchange, interaction and cross-boundary cooperation; (2) we have reduced the cost of information search; and (3) we have eliminated business barriers caused by information asymmetry. Moreover, manufacturers can also obtain consumers' deep needs more directly. In addition, the platform is beneficial for setting up corresponding management system, protecting the benefits of the participators, and preserving the stability as well as value creation of the entire business ecosystem. Therefore, the designers of Settling Down business model have launched several community platforms for customers and enterprises so they fully understand the concept and meaning of the platform, and its necessity in any organisation ecosystem and how to make emotions run through the entire internal organisation on the basis of the platform; 1. Information exchange platform: communicating with local people to obtain their deepest spiritual

needs and provide aid more directly. 2. Display platform: demonstrating Ya'an' unique regional cultural resources, handicraft, nature, historical and cultural heritage as well as survey process, after-quake business rebuilding proposals and activities conducted specific to left-behind people. 3. Sales platform: consumers can obtain the latest product updates and directly purchase corresponding products via the website. 4. Service platform: the platform provides corresponding information about the products, after-sale repair to some extent and related knowledge training. Moreover, it can offer personalised customisation and on-site experience service according to customers' needs. The establishment of the platforms urges the team to form a business ecosystem lead by emotional exchange internally, constantly innovate, perfect design and improve the products in the process of marketing so as to build up a sustainable and strategic business model structure.

Conclusion

The paper has briefly analysed the innovation design of 'MG V Tao' public welfare brand business model of story marketing, swift update, experience promotion, excavation of customers' deep needs etc. driven by emotional experience and design. It has also constructed the business ecosystem based on network platform as per target customers and market, which has further realised the sustainable development of business model by integrating local resources, enterprises, left-behind people in the way of low cost, high efficiency, cooperation and learning. To some extent, it has provided certain reference and basis for innovation design of business model of future public welfare brand.

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towards a common space for research in fashion

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Abstract

This paper aims to identify the characteristics of a future fashion space for research. Not so much future as an imminent space where various scholars and disciplines focusing on fashion can understand each other, and also come to new research ideas and projects. The binary distinctions between creative and non-creative have found their way into academic thinking: left and right brain, visual and textual reporting, quantitative and qualitative; these dichotomies tend to stereotype research approaches. However, the future spaces of fashion must demolish this world view to account for the convergence of designers and marketers, theory and practice, digital and physical. Within the converged space, access, process and content form the essential elements. The content will increasingly be drawn from existing and new disciplines, sub-disciplines or maybe trans-disciplines. The processes will be driven by methodologies and particularly the critical development of methodologies from different disciplines. These diverse scholars however should share a language; that is where we intend to contribute. To follow up on Lipovetsky's democratising power of fashion, in the future fashion space there are no boundaries. We propose a framework for methodological pluralism which foregrounds triangulation and hermeneutics. Triangulation provides the measurement instruments that must be formulated in an objective or neutral way for replicability that combine with the reflection on one's own influence on results. These quite fundamental heuristics can constitute the foundations of the new 'rules' for research and project formulation in fashion.

Keywords: fashion, methodology, epistemology, interpretivism

towards a common space for research in fashion

1. Introduction

During the past decade, the phenomenon of fashion has gained academic ground. This is evident not only from the proliferation of fashion events - fashion weeks, shows and new places of fashion - but also from the increasing number of conferences, academic journals and articles in mainstream journals dedicated to fashion. Publishers such as Berg and Intellect have been particularly active in this respect, providing outlets for academic studies of fashion in popular culture and through new titles, such as the 'International Journal of Fashion Studies' or 'Fashion, Industry and Education' that recognise the increasingly global dimension of fashion. These trends are not coincidental. The attention given to everything fashionable has combined with an indeterminacy as to what exactly is implied in the realm of fashion studies.

Attending academic fashion-related events can at times be an unusually mixed experience given the very diverse backgrounds of scholars – as witnessed in the journal titles – sharing their ideas and research. That frustration, or at least sense of unease is due to the fact that there seems to be little consensus regarding what is to be considered 'good' research, and what is not. More precisely these concerns arise for the following reasons:

- Ideology is presented as science. Sometimes there seems to be more focus and discussion on 'what should happen' rather than 'how does it work', issues. This tends to be evident for instance in discussions about sustainability and corporate responsibility.
- The problem of visualising, and research as 'showing' for the sake of showing or at worst showing off. Although research must have been undertaken, it is often unclear what exactly the question is, and the relevance. This kind of research is mostly ostentative, with no attempt to any theorising or any formulation of a nomological framework. A number of research approaches have contributed to this situation. They include the development of practice-based and practice-led research, the blurring of boundaries between researcher and participant in participative design research and the place of theory in generative and abductive accounts.

As a result one is more often than not left with the question 'so what?' Sometimes the relevance of the espoused results is limited to who has knowledge of the specific topic, or population, or part of the world, problems of defining its generalisability. This narrow, often contextual approach can be contrasted with one that is managerial, practical. In other cases, conceptual research can be too generally stated. Reference to issues or gaps in the literature has become more variable; indeed the review of literature to establish the state of knowledge in the problem area can be less than thorough leading to issues in accurately defining research questions, propositions or hypotheses. Often a methodological justification is lacking; an explicit account of the methods used is not enough. The epistemological underpinning – considerations about the knowledge claims arising from the research, its reliability and validity, tend to be weak or simply missing.

These observations do not take away from the fact that we have seen very interesting presentations of garments, fabrics, pictures and installations. Nevertheless, particularly in the face of a widening interest for the subject matter, as well as for innovative presentation forms, the question of what constitutes a sound methodological background becomes even more poignant.

Therefore there is a need to explore the boundaries of methodological space for fashion studies. To achieve that, first we give a definition of the phenomenon of fashion. Having done that we present an overview of different methodological approaches to studying fashion related phenomena; each approach stems from a different perspective, and each perspective is based on more or less different, sometimes conflicting, ontological and epistemological grounds. After having discussed these, we briefly comment on a sort of methodological fetishism – the scientific method – that has been permeating discussions on rigour and relevance in academic research, and afterwards we intend to present a more open, realistic and humble view on methodology. These lead to a conclusion about the boundaries of spaces for fashion research.

2. The object of enquiry: ontology in fashion.

As with all sound research reports and projects, first we need to define the very object of our enquiry, fashion, before justifying the different methodological approaches used to study the phenomenon. This brings us to one feature of many speculative accounts: the lack of an operational definition. Speculation however leads to a plethora of possible interpretations and perspectives; this at least encourages discussion and maybe brings about new issues the usefulness of which hopefully shows later in time. Abduction provided a more defined approach albeit one that

is relatively less explored. However once something needs to be looked at, it is of paramount importance to define it, at least operationally.

Given that fashion is a social construction itself, it can be understood from two different perspectives: as a product, and as a cultural, social-economic phenomenon. When the focus is the product, the approaches still are quite heterogeneous: technological and material at one end, for example what does it do to your temperature? And as a medium for the cultural and symbolic at the other end; in so many words, what does it do with your perception of self? At both extremes the focus is on the clothing and its performative properties. So already here we have quite different questions and methodological grounds. Whereas technical questions mostly include objectively measurable and observable phenomena (heath, resistance, abrasion etc.) The second type of approaches are more speculative in kind, as they refer to social constructs, like Identity or Authenticity¹ and media and cultural studies usually reside in the faculties of humanistics.

In the second perspective, the term Fashion refers to a social phenomenon, (cf. most notably Simmel 1904, and more recently Michel Maffesoli: "Dans le creuset des apparences"²). Social studies embraces sociology, anthropology and cultural studies. As with the product perspective, individual and social identity can be observed in fashion. Moreover, fashion can include subjects like general and business economics, and its concern with innovation, marketing, strategy and consumer behaviour. Here fashion is often defined as a system (Morand 2007) of innovation (Jacobs 2007) or of institutionalisation (Lipovsky 1994). According to this last perspective fashion, as seen in the diffusion of trends, can only be understood when looking at interactions between people. Fashion is an activity of continuous but marginal innovation in style. This approach to business is increasingly evident indeed also in the electronics and even in the food industry,³ where continuous innovation in packaging and taste combinations are often the only source of differentiation, hence understanding the business of fashion contributes to generating strategic marketing and branding knowledge.

The distinction between fashion as a product and as a –social– phenomenon helps us to clarify the object of study, but it does not yet help us to fully clarify the different methodological stances encountered in fashion conferences.

3. Different fields, different produce

Academic activity, first of all should challenge beliefs, ideologies and the 'taken for granted' conventions, too often embedded in teaching. It should be aimed at de-mystifying, clarifying and reducing demagogy. To challenge the ideological spaces that theories occupy, one must allow for multiple interpretations of observations, and continuously look for new and alternative explanations. This transcends multi-disciplinarity because it does not consider knowledge as consisting of separate disciplines, but suggests a more comprehensive and inclusive interdisciplinary view on knowledge. One might argue however that this stance is ideological in itself, since scholars should start doing research in a 'tabula rasa' mode (without preconceptions), which as the debates around Grounded Theory show, is problematic. It is here that opinions diverge: should a research project start with explicit knowledge to build on (assuming that is indeed knowledge) or should it be solely empirically driven, contextual and non-explicit? Here for instance we see that the first kind of assumptions, are often considered as scientific, whereas the second are not. In fashion studies these second kinds of research projects however are numerous.

Kuhn's paradigms as well as Popper's falsification have left us in a situation where we tend to consider scientific endeavour as continuous improvement, as a means – limitations notwithstanding – of progress. For one thing however, the fashion phenomenon teaches us that a new collection is never necessarily better than the old one. Progress means that previous findings should necessarily - although not sufficiently - support new ones. A critique to modernist projects comes during the 70ies and 80ies from critical scholars who later have been labelled as Postmodern, even if many scholars before have had a critical approach towards modernism, notably in Frankfurt after the Second World war. Postmodern thinkers have contributed to the reintroduction of a more pluralistic, contextual 'in the world' and generative way of thinking about scientific enquiry. These kinds of approaches are found in business studies typically in the context of consumer research, and do not always coexist peacefully (Goulding 1999, Solomon 2004).

4. The return of pre-modern science

It seems that positivistic and interpretive perspectives are mutually exclusive also because the implied ontological assumptions take contrasting positions, fundamentally about objective reality. That is however not necessarily

1 e.g. as in Smelik, A.M. (2011) *The Performance of Authenticity* Journal for Fashion Writing and Criticism, vol.1, iss.1, (2011), pp. 76-82

2 In occasion of the conference of the international federation of textiles and technology institutes, may 2015. See www.youtube.com/watch?v=SjBUahLQBMQ retrieved on February the 2nd 2016.

3 So for instance the brand Innocent Drinks has special guests, limited editions and 'difficult colours', as well as a new collection every season, with lighter colours in summer and darker ones in winter (Mossinkoff 2012).

so. As Brown (1994: 49) points out, methods imported from Humanistics, like discourse analysis, have their own set of rules as well, aimed at a hierarchical classification of knowledge, since a relation between theory and empirical results is agreed upon. Postmodernism on the other hand, in the words of Linstead (2004: 5) “questions the relation between the theoretical and the empirical” altogether and it “pursues its ends not through homology, the elevation of similarities in the form of unity, but through heterology – a disconnected logic of the fragment”. So discussions of methodology could be considered a modernistic endeavour altogether, since it implies a search for a-priori rules stating when a claim can be considered scientific.

A second problem is the relationship between theory and data: the theoretical and the empirical. In scientific enquiry, deduction and induction mostly account for the place of theory in a research design. A postmodern approach may use social constructivism, post-structuralism (Hackley 2003: 152-54) or relativism. This perspective assumes that reality in its totality is ‘made-up’ and implicitly agreed upon, even if it has ‘real’ consequences for people. Positivists are aware of that, as methods such as structural equation modeling (SEM) analysis through sophisticated statistical techniques are assumed to univocally measure these social constructions, as if these were really somewhere in our heads. The much used concept of bias, as the probability that one is deviating from an assumed real, is very telling in this respect.

These considerations pertain to ontology and differing assumptions about the nature of reality. Another question embraces epistemology and assumptions about our capabilities to actually perceive, describe and even explain a more or less real, reality.

Critical historic realism teaches us not only that the history and context of the phenomena should be accounted for, but also those of the researcher. As Feyerabend (1975:45) explains:

...the material which a scientist actually has at his disposal, his laws, his experimental results, his mathematical techniques, his epistemological prejudices, his attitude towards the absurd consequences of the theories which he accepts, is indeterminate in many ways, ambiguous and never fully separated from the historical background.

So, one more limitation of the positivistic, or means-end, modernistic approaches to science, is, the lack of historical consideration (see also Latour 1987). Indeed, longitudinal research is often advocated as a means to find causal relationships that hold for a longer period of time. A causal relationship that holds over different contexts concerns its external validity, a concept which still brings modernistic all-explaining theories, metatheory, to mind. It might however be more interesting to turn from the causality of why something works, to look at the processes, or how it works.

5. Fashion as algorithm

Evolution, the mother of all algorithms, clearly shows us that it is only by looking at patterns in history that we can understand the present context. That does however not automatically imply historical determinism. According to Saad for instance (2007:13) history does not guide human nature, but it is the other way around: human nature influences history. However, in defiance of the conventions of western dualism and polarisation, either or, both ways can co-exist. Genetic factors influence cultural preferences and at the same time cultural factors influence biological evolution; for example Asian people are not immediately attracted to dairy products. Genes and culture co-evolve, so culture also influences genes indirectly, as it where, by influencing natural selection, the ‘direct’ model is referred to as cultural selection, which finds its origins in social interaction (see also Dennett 1995). Hence we can conclude that fashion as a social phenomenon, or as a cultural product, should be explained using insights from evolutionary theory.

One important feature of evolution -as a paradigmatic approach- is that error and chance are allowed for as major features explaining phenomena, since that is how mutations and thus variation come about. This is opposed to positivistic approaches where error and bias have negative connotations. Moreover positivistic confirmatory statistical methods are aimed at either refuting or accepting an hypothesis; there is no possibility for a third way. Evolutionary explanations ‘only’ describe and explain, in the sense that they offer a plausible algorithm, a mechanism explaining the process of evolution and mutatis mutandis of a marketing strategy, or of the selection and replication, diffusion, of a style, without necessarily adhering to the search for an ultimate cause; there is no etiology. Positivistic approaches tend to force meaning where there is only contingency.

6. Broadening the space’s boundaries

So far we have based our disquisition on a distinction between positivism and interpretivism, and we have also said that interpretive approaches are not necessarily postmodern, in the sense that they are mainly pre-modern, and do not necessarily rule out issues regarding rigour and relevance in research. We have also seen how context and history should maybe be included in every analysis, and not ‘controlled-for’ as e.g. in experimental research

(i.e. there is no factor or variable that is exogenous to an explicatory model). Finally we found that evolutionary perspectives may be the most realistic ones in that they not only account for history and context, but also for chance and error. Now we only have to put it all together in a pluralist, or anarchistic but not rule-free approach.

We could reduce the positivist-interpretive diatribe to a difference in levels of analysis and focus. This view is most recently supported by the growing literature based on premises from complexity and chaos theory, or non-linear dynamics. Such approaches tend to look at the Whole, instead of at its parts. The interesting thing, from a methodological point of view, is that considerations about rigour in research (i.e. reliability and validity) do depend on the level of analysis: whether particular, reductionist, inferential approaches or general, synthetic, descriptive approaches. Statistics and 'hard', quantitative, or indeed 'scientific' considerations usually refer to the first kind of approaches.

Inferential statistics are the means to find and corroborate relations between distinct variables. That is what most of modern scientific enterprise consists of. This kind of research however adds knowledge on a very particular (proxy) level, since it always assumes the 'ceteris-paribus' condition. Interpretive approaches offer inclusive, domain-independent or multi, or better transdisciplinary and comprehensive explanations.

The output of interpretive research is mainly narratives. These kinds of explanations are thus often not considered as scientific because stories, descriptions, accounts are more adaptable, malleable, and allow for the necessary subjective interpretation that tested theories tend to eliminate, as we tried to show commenting on the concept of 'bias'. In what we can consider a multi-level approach, the idea of bias is conceivable on a level where consensus amongst researchers is possible (we all agree that there is some predictable effect like gravity). But on a more contextual, subjective and maybe explorative level one cannot really give an answer the question: bias against what? But that does not make these kinds of disquisition less scientific; the level of analysis is different, and these different views can happily coexist. This however does leave us with a problem concerning the nature of Theory.

In modern science a theory should accommodate for every observation, it should 'hold' when challenged by subsequent hypotheses to be tested. A hypothesis is by definition accepted or rejected, i.e. there is no option in-between. Nevertheless a 'slight' acceptance, a weak but 'significant' estimation, can have quite large consequences, since a paper gets published only once it confirms existing theory. That is the contribution of Popper: a theory should be eligible to be 'falsified' otherwise we are in the realm of ideology, which, from the illuminist period on, is not tantamount to science anymore. But when is a theory 'really' confirmed? As Feyerabend (1975: 45) notices "according to our present results, hardly any theory is consistent with the facts. The demand to admit only those theories which are consistent with available and accepted facts again leaves us without any theory". Feyerabend's only solution to this epistemological impasse is 'anything goes', although not in the sense of Heraclites' 'Panta Rhei' but in the sense that the more competing assumptions, explanations and data there are, the better. Methodological anarchism is the new mantra, and the only necessary assumption that does not inhibit progress (Feyerabend 1975: 7).

7. The Rules of methodological anarchism

Methodological anarchism does not imply a total absence of method. The main difference between the two consists of the fact that a methodological stance regards a-priori beliefs, whereas method merely refers to the process of doing research. Just like with evolution, a shift from methodology towards method implies a shift from defining ontological (and etiologic) assumptions to describing a process, akin to a shift from etiologic to algorithmic approaches. If we look at evolution, trial-and-error can be considered as the most natural of research methods. In this respect Beinhocker (2006) uses the term about 'deductive tinkering', which allows for both rationality and purpose. More precisely: "evolution is an iterative process of experimentation, selection, and then amplification of things that work" (Ibid: 249). That iterative process is the deductive tinkering process which simply means that generating knowledge happens through some deduction from mental models and at the same time experiments that may be totally arbitrary. Arbitrarily looking for empirical data is what Feyerabend also refers to as 'counterinduction' (Feyerabend 1975: 56), that is how "ideological ingredients of our knowledge and, more especially, of our observations are discovered with the help of theories which are refuted by them". That means that according to Feyerabend, advances in science do not occur by using data to confute theory (cfr Popper), but rather to use data to confute the ideological foundation on which theory rests.

The iterative, trial-and-error kind of approach (aimed at confuting ideological foundations!) is very much akin to what goes under Design Thinking in research (Johansson 2011). In the recent years, design thinking in research has gained a lot of attention, especially because of the emerging need for an academic, scientific justification (or better legitimisation) of an increasing body of research coming from professional universities, as are most universities of the arts where design and related fashion studies reside. The reflection phase in the experimental, or design, process should be tantamount to what we have named theoretical instead of statistical generalisation. In this sense it is very much similar to the approach that goes under the name of grounded. A grounded approach is characterised by: data-theory iterations, methods, samples and data sources change during the research process, intersubjectivity instead of objectivity (Goulding 2004).

In summary, the method as process that we propose for studying fashion – at its most generic – should in most cases be non-linear, iterative as well as arbitrary, but one that does not necessarily make more conservative claims about academic research obsolete.

8. Conclusions

In this paper we have tried to expand the boundaries of a common space for fashion research that both contain and enable methodologies within its spatial boundaries. First we concluded that, as Feyerabend (1975) observed, ‘everything goes...’, a principle resonating with the pragmatists, that all methods are welcome as long as they demonstrate their contribution to knowledge. Everything adds to a juicy stock. Knowledge generation (being in the first instance a biological, evolutionary phenomenon) is an inevitable human trait that goes through continuous iterations. Second, the role of ideology should be clarified, not least in prescribing the norm in contrast to prescribing assumptions (ex-ante versus ex-post norm). Third, prediction and control are the tenants of the modernistic scientific tradition. However in the realm of fashion these tenants do not hold, at all. The fashion research space welcomes approaches that allow for, and answer questions about complexity, evolution and chaos (chaordic structures) in social phenomena. Fourth, design thinking is basically a ‘grounded’ approach. Debates on the status of such an approach abound, and the fashion space should see their adaptation and development. However the researcher cannot be considered as a ‘tabula rasa’, as Glaser appears to imply, there are always some pre-conditions.

Two questions should inform academic rigour: What is the unit of analysis? And what is the aim during that particular phase of the research process? The unit of analysis can consist of consistently identifiable elements, like a garment, a fabric or more generally a technique, but also comprise continuous ever-changing interactions within a complex system of agents, as in the case of branding and marketing. These different levels of analysis imply different degrees of possible claims about the validity of the findings. Moreover, given objectivity is in itself a social construct, neutrality is maybe a better word. Triangulation and hermeneutics should provide a desirable level of neutrality.

These quite fundamental heuristics can constitute the foundations of the new ‘rules’ for research and project formulation in fashion studies to facilitate mutual understanding and fruitful collaborations. In considering the proliferation of places and spaces of fashion, we address an appropriate broadening of research boundaries, and the possibilities that these considerations can be extended to the more general realm of cultural – symbolic – production and consumption.

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in-situ 3D printed souvenirs and their affect on visitors' engagement with built heritage

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Abstract

In this study, visitors' perception and engagement with built heritage surroundings was investigated in relation to their interaction with 3d printed souvenirs which reflected architectural features of the site. A 3D printer was set up in Stirling Castle, Stirling, UK in collaboration with Historic Scotland. The visitors' were given the opportunity to interact with the 3D printing process in action and personalise their item. Short structured interviews and researcher observations recorded the visitors' impressions of the process and souvenirs. The participants expressed how their interaction with the souvenir artefacts enhanced their view of their surroundings. This paper concludes by exploring how participative making technologies and innovative souvenir objects, within heritage environments, can be used to enhance the authenticity of the visitors' experience of place.

Keywords: 3D printing, interaction, souvenir, built heritage

in-situ 3D printed souvenirs and their affect on visitors' engagement with built heritage

1. Introduction

Souvenir objects can be perceived as tacky, inauthentic, cheap consumer items. They can, however, act as reminders and representations of a particular place. They are also a tangible reminder of special moments, events and experiences, layered with individual meaning and significance. A souvenir is evidence that a visitor has been there; it can extend a temporary and transitory experience and bring permanence and remembrance of an extraordinary place or destination or feeling into the everyday environment. 'Authenticity' is an essential quality in contemporary tourism and this is defined as seeking a 'genuine experience'. (Pine and Gilmore, 2008) (Kolar and Zabkar, 2009)

This project, from which this research originates, funded by AHRC, explores not only the 3D printed souvenir objects which reflect the built heritage environment, but also particular aspects of the 3D printing and making technology. Visitors could see their object being made in real time and choose materials and scales. They could also experience the 'glitches' and imperfections of the 3D printing process. 3D printing offered a unique combination of controllability and the serendipity of 'craft' which provided a memorable experience for the visitor, in an environment where tourists were already experiencing the built environment in a more traditional way.

This paper investigates how the 'genuine', 'authentic' experience of interacting with 3D printing in-situ, within a heritage environment, and the potential to have an individualised 3D printed souvenir reflecting an aspect of the heritage site, in this case within Stirling Castle in Scotland, affects visitors perception and engagement with the heritage built environment. It confirms that 3D printing can be an experimental and experiential tool that brings a controllable technology, enabling interactive making, to initiate engagement with heritage.

2. Literature review

2.1. Souvenirs of place

The function of souvenirs of place can go beyond their being cheap visual keepsakes of landmarks, buildings or the features within. The 'importance' of the decorative, less 'highbrow' nature of souvenirs has been also been considered. Souvenirs of buildings or structural features may appear to bypass the educational aspects of a heritage experience but their creation, which reminds the visitor of the site's features is still of value. Pye (1968: 21) said, *'the only way in which design can make directly for happiness is by beautifying the environment and constantly enriching its visible quality – in short, by art. Subjective results of design are ultimately as important as any objective ones can usually be made and they are indeed necessary to anything worth calling life. Design is an art, not simply a problem solving activity and no more.'* In de Botton and Armstrong's research (2013 ; 72 -73), they go as far as to say that [craft and design] *'is a therapeutic medium that can help guide, exhort and console its viewers, enabling them to be better versions of themselves. It encapsulates remembering, hope, sorrow, rebalancing, self understanding, growth and appreciation'*. They go on to say that the purpose of souvenirs within gift shops *'ensure that the lessons of the museum, which concern beauty, meaning and the enlargement of the spirit, can endure in the visitor far beyond the actual tour of the premises and put into use in daily life.'* A souvenir can therefore convey many ideas beyond a reflection of a building's appearance including commentary, information, by leading the viewer towards a particular viewpoint and provoke us towards new thoughts.

The attributes that are depicted in souvenirs of place can carry more meaning than they cursorily suggest. Watson and Waterson (2010: 786) suggest that heritage is entirely intangible and the physical aspects of heritage such as buildings and objects are nothing without the meaning and memories ascribed to them by people. Smith (2003: 3) concurred by adding 'places are not inherently valuable, nor do they carry a freight of innate meaning'. This suggests that value lies not in the individual details that are depicted but the meaning they convey to the individual. The definition of heritage is not static and includes many experiential elements. Heritage is not so much about the objects or buildings that constitute it but their individual meaning and significance to people.

The meaning of the architectural elements and what they can convey are also looked at by de Botton and Armstrong (2013: 202). Heritage buildings can be 'quietly but profoundly eloquent about what is best and most attractive about the country that owns it.' 'A country achieves dignity and identity through small details. [Architecture] is the skill of incarnating an abstract idea in a material object, of finding a way to make an idea palpable and direct'.

Because the meaning of the features of the souvenir is individually interpreted rather than static, it can be that buildings or environments that are more 'negative', less nationalistic or traditional are depicted, without an overtly harmful intention. Goulding's research (1999) concludes that heritage should also include recognition of mistakes and negative events. The inclusion of negative aspects of history as important contributors to heritage distinguishes

the experience from simply seeking nostalgia – or an idealised version of the past – which has previously been found to be a significant driver of heritage engagement.

The way that we consume souvenirs of place as part of a leisure, tourist experience is also of importance in this study. Shen (2007) conveys that heritage is very strongly linked with leisure activity of the informed and constructive variety which merges the spheres of education and leisure. The function of souvenirs and their affect on visitors' relationship with the built environment they represent, have characteristics that differ from that of souvenirs for other purposes. Souvenirs of place are strongly linked with tourism, where particular, special locations, visited as a leisure activity are chosen. The souvenirs also have a particular purpose in extending the leisure experience.

Linked with souvenirs of place as leisure, is the concept that when a souvenir is brought home from its original environment, it extends the tourist experience. In Nunes, Greenberg and Neustaedter's research (2007), they looked at 'collectables' which are typically one off items chosen to represent a specific place or event. Families often thought of collectables as conversation pieces showing others around their home. Items would trigger memories of an event, experience or place, sometimes leading to storytelling or discussion. They also identified 'trip outputs' which were defined as 'items accumulated as a result of a trip. Typical examples include tickets, maps or pamphlets from various places that have been attended. They can be considered a variation of group collectables, although more for future reference and reminding than as a displayable souvenir. Owners take ownership of the heritage souvenirs and since it they have the potential to be permanently available, we keep looking at them and are 'ourselves' around them.

2.2. Interaction with making and engagement with place

In tourism theory, 'authentic experiences' are discussed as impactful in this success of heritage locations. McDonald's study (2009) found that heritage engagement will take place within that segment of personal daily schedule that is dedicated to non work activity and recreation, while still retaining social and cultural significance. Community engagement with heritage is more overtly linked with cultural distinctiveness, identity and nationalism or exists as an articulation of ancestral links with important places, traditions and narratives. It has also been found that younger participants focused more heavily on the experiential aspects of heritage. They were unlikely to read or watch but enjoyed 'doing'. In other studies, there was also a preference for things of the past to be 'functional' in the present. (Chronis, 2005) (Chronis and Hampton, 2008)

Also impactful to the concept of this research was the type of visitors who engage with built heritage. Rahaman and Tan(2010) found that the general public engaging with the heritage built environment are described as a large and diverse group where users bring a very wide range of interests, technical abilities and contextual and/or historical awareness to places and collections of cultural artefacts. Built heritage is not just about 'tangibility' or 'materiality', but also the cultural attributes related to the built environment. Demographic differences influence the visitors' values.

Tilden (1977) cited in Moscardo (1996: 377), described heritage interpretation as "an educational activity which aims to reveal meanings and relationships", as "an art", and as "revelation based upon information", and suggests that its aim is "not instruction but provocation". In Gillings (2000), and Affleck and Kvan's (2008) research, interpretation of heritage through digital technologies does not reflect the diversity of visitor backgrounds and interests. Both studies found that most digital heritage projects demonstrated that the technology and contents were often descriptive rather than interpretive of heritage. This interpretation was a linear process with a single and universal viewpoint about the past. (Thornton, 2007) In light of the varied heritage demographic, interpretation through digital technologies should reflect a wider range of methods and tools for communication with visitors including learning (conveying symbolic meaning); provocation (facilitating attitudinal or behavioural change) and satisfaction (enhancing enjoyment of place). (Rahaman and Tan, 2010)

This study responded to the individuality of heritage visitors by building on the more artisanal, responsive nature of 3D printing technology when making souvenirs of place. 3D printing has the ability to reflexively respond to individual interests in, for example, architectural features, and print out just enough to meet that demand. Lipson and Kurman (2013) explored this concept and stated that although mass production is efficient, increasing company profits and lowering consumer prices, economies of scale can affect product variety and customisation. In contrast, artisanal craft production handles variety and customisation better while confined to small batches. 3D printing technologies can offer a combination of both these approaches to production.

2.3. 3D printing and place

3D printing offers visitors with minimal craft skills the opportunity to 'make' a souvenir of their visit to a heritage site, thus further engaging them with the heritage environment through the nature of the 'spiritual' process. Lipson and Kurman (2013) call these sorts of 3D printed items 'transformation products' which can change a customer by producing a positive, compelling, memorable long term impact. They say that 3D printing

technologies enable a break away from commodity products and mundane experiences. The way that 'real people' can interact and create with 3D printing, who would perhaps be precluded from interacting with traditional crafts in this context, adds to the potential for them to 'engage'. 3D printing challenges craft as it can make things that could previously only be made by a skilled hand. Craft can involve nostalgia. DIY innovation offers a set of experiences of 'transformation' and the satisfaction of designing and manufacturing something'.

Part of the interest in 3D printing is the way that non experts can control their outcomes. Johnston highlights that the virtual world is easy to edit and revise. This control over the making process for the public, using the technology of 3D printing, further adds to the authenticity and uniqueness of their heritage experience. Charney (2011) states that this is facilitated through 3D printing technology as the tools and equipment are 'prosthetic' extensions of the body.

3. Methodology

The initial study took place in collaboration with Historic Scotland, in Stirling Castle, producing 3D printed souvenirs of their visit to the Castle in July and August 2014. The souvenirs were produced in a variety of materials and scales and were formed on an 'Ultimaker 2' prototyping portable 3D printer that was set up within the castle next to one of the halls that formed part of a tour. The researchers invited visitors to take part and then offered them a 3D printed item at the end of the short survey (a unicorn to reflect the castle's branding).

A pilot survey took place in-situ to demonstrate the technology and processes involved with 3D printing and to engage the public and staff with the design process of manufacturing a souvenir from start to finish using these technologies. In total, 139 short surveys were completed on location over the course of four days and responses were also audio-recorded to check for accuracy. The printer was set up so that participants could see and hear the items being printed whilst they were being interviewed. After the completion of the data collection process, the researchers also noted their observations of the visitors' engagement with the objects and their interactions with the printer in-situ.

The participant sample achieved consisted of 75 females and 64 males. Respondents came from the UK (31%), with the USA (19%), Spain, Canada, France and Australia (6%) being the most popular. 90% of the participants had heard of 3D printing before through public media. Some respondents had used 3D printers in their school or had a museum/festival science experience with the printers. Only two respondents owned a 3D printer and one was a prospective 3D printer buyer. A number of participants stressed that although they had heard of 3D printing, this was the first time they were seeing a 3D printer in action. The findings were synthesised to include respondents' comments and the researchers' personal reflections of the visitor engagement with 3D printing in-situ.

4. Findings and discussion

While the questions asked were not specifically about the visitors' relationship with the heritage space and the significance of the souvenir, several participants made reference to this.

Yeah, I was here where my sister was born in Stirling, [she would like] one of the statues or something printed to take back. (Female, Australia, age 46-60)

I would say they [the samples] are more simplistic. Whether it is 3D printed or not, I wouldn't buy a piece of plastic. I would like it if it was the style of the historic site. (Female, Canada, age 46-60)

Yes that's a good idea, so that you can remember when you were here. (Female, UK, age 31-45)

I can have anything I want? My moments of Stirling Castle today? Because when anyone comes here it means something different to them. (Female, UK, age 61-75)

For the castle, the Stirling Heads would be unique. (Male, UK, age 31-45)

Yes I would think so [if personalised souvenirs would be appealing]. Unicorns and armour, children would be particularly interested in it. Bring heritage to modern technology. (Male, UK, 61-75)

The majority of responses were positive and gave suggestions as to how the concept of the project could be developed. Other samples were shown, including prototype prints of other artefacts within the site and different printer materials, including one that utilised wood particles and another with stainless steel. Many participants felt that these materials were more desirable and reflected the traditional nature of the heritage environment more than the metallic-coloured polymer used for the unicorns.

3D printing in the context of this study appeared to offer a controllable designing and making technology, linked with the ability to 'mass produce'. In contrast and in addition to this, the public's ability to interact with the printers and to see the 'maker' working with it, experiencing the 'glitches' and imperfections, aligned the process with experiential craft making. This increased the personal and engaging nature of the visitors' built heritage experience. Pye (1968) discusses the idea of the 'risk' of craftsmanship with the workmanship of 'certainty' when using technologies.

Workmanship, using any kind of technique or apparatus in which quality of the result is not predetermined but depends on judgement, dexterity and care means that the quality of the result is continually at risk during the process. 3D printing shares both categories of risk and certainty.

Although the public's interaction with the 3D printer seemed to be minimal during the project, they were able to involve themselves in a making process that could add to the positive nature of their built heritage experience. Charney (2011) says that the role of making is to give life to things but also to show evidence of life within us at a 'spiritual level'. Producing things is a means of realisation for seeing our own capacity in the evidence of things we have our created. In making mind, body and imagination are integrated in the practice of thought through action.

3D printing technology and the controlled experience of interactive 'making' can add a new layer to heritage experiences and to the souvenir products that are produced. Johnston (2015) says that through the flexibility of digital fabrication, contemporary artisans are empowered to take the best of both worlds and create a new one, introducing a new kind of makers mark. What can be done exemplifies de Botton and Armstrong's ideal 'therapeutic' souvenirs saying where we can imagine a different range of products to sell in the gift shops – objects that are aligned with the values and ideals of artists rather than with their identities.

5. Conclusions

Souvenirs of place have the ability to go beyond decoration. They have the capability to carry memories and meaning and highlight aspects of the built environment they represent in fluid, personal ways that mediate connotations and value. As the significance and associations of heritage buildings and artefacts are flexible and change between participants, reflecting 'core values' rather than pristine realism, souvenirs that can be interactive and individualised reflect these characteristics. As architecture and architectural details hold iconic, not always positive 'symbols', interactive souvenirs of these buildings and environments can use the details to have different meanings to a variety of customers. Lipson and Kurman (2013) go as far as to say that programming a 3D printer with, for example, instructions to add some personal detail could replace shopping for generic products. This could indeed have implications not just for souvenir sales but how we engage and learn for souvenirs of place and then use, interact and preserve them.

Souvenirs of place, when taken from their original location and brought into the home or workplace have the ability to bring 'information' from the original site with them. This information can be straightforward, realistic details to allow the owner to learn more or stimulate further visits. It can also be 'remedial', bringing with it the best, nationalistic feelings from the site along with the notion of untroubled recreation, nostalgia and, potentially, an assenting connection with the original maker.

In tourism theory, making 'authentic experiences', is significant and interacting with a maker, or being involved in making, at a particular heritage site gives such an encounter. The relative ease of working successfully with a printer, rather than honed traditional craft expertise, reflects the diversity of visitors' backgrounds and skills, attracted to the built heritage environment, looking for tourist experiences.

Charney (2011) said that making is about participating in society as well as defining personal identity – ways of learning, defying conventions, enjoying life or solving its problems. This is a unique human experience that comes from being completely engrossed in creative activity. The mistakes, glitches, break-downs and de-romanticising of 3D printing when it is presented in-situ appears to add to the authenticity, experience and appeal of the concept rather than detract from it. It also appears to add to visitors' engagement and involvement in the heritage site itself, despite the juxtaposition of new technology and traditional historical artefacts. Interaction with the 'maker' was also shown to be a 'heritage experience' in itself.

With 3D printing technology, a non expert can makes successfully; can, to some extent, choose how they want their design to reflect what they value in the heritage environment then use their souvenir, personally and 'therapeutically' beyond their visit. This research proposes that 3D printing can be used experimentally and experientially in this context and can be a tool with use beyond its 'rapid prototyping' function.

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FUTURE CRAFT

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digitally making as an opportunity for skilling and empowerment

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Abstract

The current trend of digitally enabled self-production (i.e. digital DIY) is emblematic of the contemporary attitude to making and crafting. Although digital DIY has been seen as an opportunity for social and technological innovation, a major debate is taking place in research literature about its potential skilling or deskilling effect on practitioners.

For instance, on the one hand, focusing on the digital representation undermines the ability to experience materials qualities and manufacturability. The ultimate effect is the development of a creative process, which is led by a virtual idea disconnected from the material world. On the other hand, the machine itself is a manifestation of knowledge, skills and labour involved in its design, manufacture and maintenance.

The objective of this paper is to further unpack this debate and presenting our reflections from an ongoing research project on the potential of digital DIY as a skilling process through making collaboratively. We introduce a research model representing the dynamics enacting over three interdependent levels (i.e. social innovation, social practice and creative process) in which three factors of technology (e.g. digital fabrication), motivation (e.g. commitment) and collaboration (e.g. with peers) are envisaged as crucial for learning and skilling.

Keywords: digital Do-It-Yourself (DIY), making, skills, design

digitally making as an opportunity for skilling and empowerment

1. Introduction: the digital self-production trend

The current trend of self-production (i.e. Do-It-Yourself or DIY) is emblematic of the contemporary widespread interest to crafting and making, applied to a wide range of products, from knitwear and clothing (e.g. wearables), to furniture and electronic devices (e.g. Arduino), and even houses and more complex infrastructure items (e.g. solar panels). This contemporary DIY appears to embed a potential of technological and social innovation by many so that the envisaged impact is the initiation of “the new DIY age” (Hoftijzer 2009), a new industrial revolution (Anderson 2012) and even a “paradigm shift” (Fox 2013). The collaborative nature characterises the contemporary evolution of self-production moving away from the more individualistic conventional DIY of the past century. This collaborative evolution has been enabled especially by digital technologies connecting people on a global scale (e.g. Internet 2.0) and bringing production closer to consumption (e.g. digital fabrication and distributed systems), thus making this an ongoing social innovation phenomenon in which people reinvent their ways of living (Manzini 2015).

A recent research project by Nesta mapped major European organisations and activities for ‘digital social innovation’, intended as: “a type of social and collaborative innovation in which innovators, users and communities collaborate using digital technologies to co-create knowledge and solutions for a wide range of social needs and at a scale that was unimaginable before the rise of the Internet.” (Bria 2014, p.i) They consider social innovation “in relation to the initiatives that are based on ‘meaningful discontinuities’ in the way involved participants behave and interact collaboratively leveraging the power of collective intelligence through open digital technologies.” (Bria 2014, p. 5)

The potential of social innovation embedded in the new DIY age is related – at least in part – to these interactions between makers who will support each other for the accomplishment of goals, also known as ‘commons-based peer production’ (Benkler & Nissenbaum 2006). In the realm of crafting and making, significant outcomes of the digital DIY trend include platforms not only for designing (and sometimes producing) collaboratively parts and products but also for sharing knowledge and competences typically related to the use of digital fabrication technologies and infrastructures (e.g. 3D printers and laser cutters).

The debate: skilling or deskilling?

The current self-production trend represents therefore an opportunity for fostering social innovation especially by sharing and developing a new set of digitally-based skills. Furthermore, crafting and making involve the development of cognitive and manual skills, including creativity and the ability to produce ideas, problem-solving, critical thinking, and collaboration, which are considered key players for the next century citizens, students and workers (The European Parliament and the Council of the European Union 2006; Partnership for 21st Century Skills 2008).

However, the overall effect of the digital evolution of this making practice on individual skills and empowerment is still debated. In fact, the spreading of digital fabrication raises arguments on its potentially skilling or even deskilling effect on people (Hielscher & Smith 2014). “On the one hand, these technologies are said to encourage passive consumers to engage in creative making process in their spare time without having to pick up years of craft learning – reskilling, whilst on the other, they are said to automate making processes previously requiring craft skill – deskilling.” (Ree 2011, p. 34)

Further research is needed to shed light on the technical, cognitive and social skills mainly involved in this practice, which may contribute to fundamental questions such as how the digital-fabrication technology influences the acquisition of new skills. This debate is quite well-known in the STS field, with the emblematic Braverman’s theory of deskilling through technology advances and automation. More recently, Söderberg (2013) reconsiders this theory, in particular in relation to capitalistic system, in which automation could represent a means to weaken unions and workers’ strength. The argument is based on the dispute around such deskilling theory and related works in STS field. This is then related to the contemporary debate about the deskilling risk of 3D printers through the case of the RepRap and its comparison with the history of CNC machines.

This topic in literature has been more oriented to consider the effects on organisation of labour and ultimately on workers’ empowerment but the arguments on the consequences of automation may be relevant for a better understanding of the effects of digital means of production on skills development.

The history of major technological upheavals is characterised by different response to technology, as summarised by Dellot (2015) (see figure below), ranging from the Luddite proposal of machine destruction to safeguard workers to the intention of owning the means of production as a means of emancipation for the hacker movement. However, these movements somehow failed in their actions for different reasons, such as the absorption of

the hacker movement in the consumption realm (Dellot 2015). The awareness of these past failures could be the starting point for planning interventions in the current maker movement in order to catalyse its potential, especially in terms of skilling and self-reliance in this paper, thus avoiding to miss another opportunity for positive societal change. In fact, according to a recent investigation carried out by RSA (Dellot 2015) participating to makerspaces increases the potential for people to generate three main benefits, which are fulfilment, learning, and enterprise.

The debate is relevant for design research as well. Making is creating and as so it requires adequate skills for the development of creativity. The creative elements in DIY enhance people's notion of themselves as agents of design rather than merely passive consumers (Atkinson, 2006). It is plausible that the level of attitude, experience and skills in delivery creative ideas and managing the creative process affect the way in which the digital DIY practice is carried out and the output is generated.

From a design research perspective, it will be relevant to understand how the creative process may change when addressed collaboratively, or the difficulties encountered by digital DIYers when developing the creative process in order to identify potential areas of intervention for designers aiming at supporting them.

Objective of the paper

This paper draws on arguments from the debate on the skilling and deskilling potential of digital making, based on the preliminary reflections of the authors in an ongoing research project about design interventions fostering the acquisition and development of skills through digital DIY practice.

The debate is possibly nurtured by the challenges involved in the definition and measurement of skills, which vary according to discipline and purpose. For instance, Attewell (1990) groups these approaches in four sociological notions of skill (positivist, ethnomethodological, Weberian, and Marxist) and points out the criticism towards the attempts of quantifying variations of skills – over time or across people – as they risk to be too simplistic unreliable.

Delving into the discussion of definition is out of scope for this paper and, at least provisionally, we consider skill as the cognitive, physical and social ability of doing something, independently from the level of proficiency. However, unpacking definition and – whenever possible also measurement – of skills is already planned for the next steps of our research, with a focus on the key competences (The European Parliament and the Council of the European Union 2006).

In the next two sections of this paper, the arguments found in literature on the two extremes of skilling and deskilling potential in digital DIY is addressed with regard to two main groups of skills, which are cognitive and body, and social skills respectively. It is here anticipated that at this stage of the research, a higher potential for skilling, rather than risk for deskilling, results from literature. The paper concludes with the proposal of a model for mapping the dynamics of skills development.

2. Debate on cognitive and body skills development

Technological advances reshape the way people think, speak and perceive reality, thus implying transformations on culture and society. The use and development of digital devices requires the acquisition on at least fundamental knowledge in informatics and electronics. This also implies sometimes a more unstructured approach to tasks and daily life. The use of digital media has cognitive implication on the human brain and according to some theories this undermines the ability of reading deeply, the semantic comprehension of a piece of text or the deep emotional involvement, thus provoking a form of apathy (Cortoni 2015). On the other hand, digital media may foster the development of problem solving and information analysis skills. Furthermore, implications on the development of a creative process through a more 'agile thinking' enabled by the use of digital media are expected.

The main typologies of cognitive skills involved in this process of digitally enabled transformation identified in literature regard the balance between virtual and material worlds and the awareness and appropriation, summarised below.

Virtual representation vs material experience

One of the main arguments on the deskilling effect of digital DIY refers to the fundamentally virtual nature of the practice through production machines such as 3D printers, CNC mills and laser cutters. The digital DIYer is often involved in the use or development of a virtual object and eventually automated machines will produce this or its components to be assembled.

Figure 1: Four movements championing making. Source: Dellot, 2015

Movement	Response	Driver	Leaders	Trade
Hacker movement	Destroy the tech	Introduction of free software machines	Worriors	Relied on science and failed to recognise benefits of new tech
Art and crafts movement	Ignore the tech	Crave of over-production	Individuals	Focus on handmade by means and avoid mass-market appeal
Hacker movement	Own the tech	Introduction of computing and the internet	Tech enthusiasts	Less emphasis on making and championed consumption over production
Maker movement	Embrace the tech	Technological ubiquity	Leadership	?

Focusing on the virtual representation of the object undermines the ability for the practitioner to experience materials qualities (e.g. hardness) and manufacturability (e.g. lathing, melting), and to learn through hand making, thus flattening the three-dimensional knowledge of hand making to the bi-dimensional realm. The ultimate effect could be the development of a creative process, which is led by a virtual representation of reality disconnected from the material world. The potential consequences of such deskilling effect include inefficient and ineffective ways of producing due to a lack of knowledge of materials features.

Digital DIYers risk to overly on technology thus undermining the exploratory manual approach, which may turn out useful when attempting to repair or restore. Less repairing ability (maybe also due to lower manual skills in repairing machineries) and as a consequence disempowerment.

As a response to such arguments, Ree (2011) has claimed that although digital tools turn much of the in-situ effort of materialisation over to a machine, the machine itself is a manifestation of knowledge, skills and labour involved in its design, manufacture and maintenance. Moreover, he has tried to argue that there is an element of improvisation and experimentation within the digital fabrication making process. Once the object is created it can be held and studied and therefore altered (often there is the need to finish off the digitally fabricated objects through handwork) (Ree 2011).

Boza (2006) summarises the reflections from a hybrid making-based experience with students, in which manual tasks were integrated with CNC operations. The final goal is demonstrating the complementarity of these two different ways of working, especially when the innovation brought by technology may risk to obscure the quality of hand-crafting. The author refers to the work by Pye, in 1968, who called handcrafting as the “workmanship of risk” and machines as “workmanship of certainty”, the reason is self-explicatory.

Students were asked to create plywood panels, perforated with CNC milling machines and adjusted with manual tasks (such as preparing, sanding, carving). The author concludes pointing out that “for the student the result was a comprehensive understanding of their design proposal, of the materials employed, and of the methodologies/ techniques necessary for the two to coalesce into one”. The final reflection is that “while craft relies on a predefined yet intuitive process technology can become the catalyst for humanising opportunities to occur rather than an end to the means” (Boza 2006, p. 7).

Furthermore, digital fabrication technologies need to be set according to the materials used. Therefore, the use of such machines will require knowledge on material qualities which possibly were not so fundamental for non-digital DIYers. For instance, melting point – particularly relevant for plastics to be 3D printed – can be considered of secondary importance for common people, moving the level of knowledge from more a macro to micro level, from properties enacting on a more visible level to the ones determining micro-level properties.

Awareness, appropriation and learning

The digital DIY is subject to the risk of overemphasising the role of technology over human abilities, focusing on what technology can do and neglecting the potential for human involvement. For instance, many things can be made more easily or efficiently by hand rather than by machine.

Dellot (2015, p. 14) believes that “[t]he maker movement helps people gain mastery over technology in two senses [...] it is concerned with enabling people to use technology to produce something useful [...] This is important for self-reliance. But the movement is also about helping people to understand technology, by which we mean becoming aware of how it works and what it is capable of. Through novel acts of making we come to understand the workings of tools and the make-up of objects. This gives us a sense of agency but also a greater awareness of technology’s externalities, for example on sustainability and matters of privacy.”

This awareness allows for the transfer of competences from one field to another, typically with notions of informatics and electronics, which may be useful also for increasing the confidence in maintenance and repair of technologic devices.

According to Ackermann (2013, p. 4), contemporary DIYers “make do with what they have (bricolage) in order to make theirs what they care for (appropriation)!” as a reaction to increased level of commodification. The author defines ‘appropriation’ as “the process by which a person or group becomes acquainted with, and gains interest in, things by making them their own”, typically through a mere process of adoption of a given technology, reinterpretation of an artefact to fit individual needs or pushing its design capabilities.

Making also fosters knowledge acquisition and learning. In her book chapter, Schrlhowe (in Walter-Herrmann & Büching 2013) aims at highlighting the opportunity provided by FabLabs as learning environments, on the constructionism oriented basis that making is an effective means for constructing knowledge. This hypothesis is based on five factors identified in FabLabs, which are:

1. combining physical activity and abstract thinking, which is typical when using the fabrication technologies available in FabLabs
2. revealing the model behind the scene, i.e. an environment which displays how things are made thus facilitating the opportunity for better understanding production and customisation processes

3. initiating processes of reinventing and refining ideas and products, fostered by the plethora of tools available in FabLabs and namely through a trial and error approach which could encourage imagination and reinventing.
4. relating to post-modern society's conditions, closely related to the acquisition of key competences
5. social and community learning, embedded in a participatory culture.

As pointed out by Cortoni (2015) on the use of digital media from an educational perspective, the possibility to acquire or lose cognitive skills depends on frequency and intensity of their use and, referring to the work by Rheingold, the consolidation of possibly fleeting input from digital media can be regulated, taught and practiced.

3. Debate on social skills development

Literature on digital making tends to converge towards the positive impact of this practice in fostering social relationship. The digital making trend is fundamentally a phenomenon of social innovation (Manzini 2015) gathering people with different levels of skills and interest around a common project. Digital DIYers collaborate thanks to the development of tools and platforms, which facilitate dialogue and participatory work. The Web 2.0, wiki platforms, makerspaces, hackerspaces allow both digital and physical interaction between people committed to develop a project collaboratively. As pointed out by Dellot (2015, see figure 1) this is a leaderless movement in which participants are equally invited to join and contribute according to their possibilities and interest. The result is a resilient network of knowledge and competence, or also of 'Collective intelligence' which Nesta defines as: "[a] kind of ability to solve problems in distributed fashion so that the entire system is self-maintaining in the face of often unpredictable problems." (Bria 2014, p. 14)

The collaborative approach in digital making requires – or at least encourages – the ability of working in teams, dialoguing for reciprocal understanding. According to Mellis (2014, p. 28) "DIY electronic devices let individuals express many different skills and interests. These can complement each other, allowing for various forms of collaboration between people with different kinds or levels of expertise and interest in the process. Furthermore, these involvements offer different possible outcomes, whether production of useful devices, learning about technology, or social activities."

In the discussion of their analysis of the literature on the social nature of makerspaces, Hielscher and Smith (2014) also consider creativity as an opportunity for empowerment and democratised innovation. For them, open questions in this area include how material capabilities and skills are linked to the wider social and political ambitions, which level of skills are needed to be part of such a revolution, how far this making process can be framed as a political or social activism form.

Digital making is not necessarily an inclusive practice as yet. Although the movement and the trend encourages wide participation, members of makerspaces for instance – in which collaborative digitally enabled production takes place – are remarkably unbalanced in terms of age and gender (Hielscher & Smith 2014). Possibly, such a practice or place is not so appealing for everyone yet, especially older and female people. Considerable efforts are still required to make the movement an actually inclusive one, thus maximising the opportunity of developing collaborative skills with a wider variety of people and contexts.

4. Conclusions and future developments

These preliminary reflections on digital making sustain the hypothesis that the balance between the skilling and deskilling is not fixed but margins for developing cognitive, body and social abilities are evident if properly fostered. Digital fabrication technologies may be seen as an appealing opportunity of being involved in creative processes for less engaged DIYers who are let down by the often long lapses of time required to acquire manual skills of the traditional non-digital DIY. As Watson and Shove inferred from a study about craft consumption (2008, p. 80), such machines are "not instruments of de-skilling and dumbing down but as agents that rearrange the distribution of competence within the entire network of entities that must be integrated to accomplish the job in hand. By implication, efforts to understand the dynamics of what people do – for example how the boundary shifts between situations in which people employ a professional or in which they do the work themselves – should therefore focus on the co-evolution of these hybrid entities rather than on the human or non-human elements alone."

Although we are aware that the debate could benefit from an even wider framework including political context and power relations (Söderberg 2013), drawing on the arguments above we envisage the potential for digital DIY practice to foster the development of creative skills, as the material set (e.g. technologies) opens up the range of things still to be made thus stimulating the creativity of people, which may be amplified through a collaborative approach. Tools fostering creativity during the creative process may limit the deskilling chances for digital DIYers, namely supporting with the identification of the most effective material to be used.

The EU funded project 'Digital Do-It-Yourself (DiDIY)' (www.didiy.eu) aims at developing a human-centric and multi-perspective approach to the scientific study of current self-production trend enabled by digital fabrication, in order to better understand its impacts on all areas of society and to support both education and policy making on Digital DIY, through models and guidelines driven by social and cultural strategies.

In particular, we – as partners of the DiDIY project – are going to explore the dynamics facilitating the acquisition of skills and 21st competences in this practice. As design researchers, we aim at contributing by developing (co)design-driven tools facilitating the identification of the skilling dynamics in place where digital DIY practice takes place and explore models for including them in working and educational environments.

Understanding the dynamics for the acquisition and development of the above skills is our core intent. We hypothesise that skilling processes in digital DIY take place through the interplay of main factors enacting on different levels, which include digital DIY as a:

1. phenomenon of social innovation in which collaboration and sharing take place
2. practice carried out by the individual using tangible means, attributing meanings and enacting competences
3. creative process, developed through cognitive tasks.

Three are the factors, which we believe influence the skilling process across the three levels above, i.e.:

- a. digital technology, both facilitating collaboration and access to tools
- b. motivation, as commitment to participate and self-organisation
- c. collaboration, both with peers and with facilitators.

The resulting model will be verified through fieldwork activities over the following months, namely through direct observations and interviews in the places where digital DIY is carried out. The verification of such dynamics involving often-tacit skills appear challenging. To this purpose, we anticipate the potential of using tools eliciting the manifestation of skills borrowed from design thinking and co-design. These design approaches aim at investigating and clarifying processed of ideas generation and even facilitating them. Their tools enact on a deeper level, eliciting what people know, feel and dream (Sanders 2002).

Eventually, the model could be reinterpreted and adapted to identify similar skilling dynamics in different practices.

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maker movement -creating knowledge through basic intention

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Abstract

This article focuses on the knowledge making process in the maker movement following Finnish craft professor Kojonkoski-Rännäli's account of making by hand. Basing her theory on Martin Heidegger's philosophical analysis, Kojonkoski-Rännäli sees making by hand as an essential way of existing in the world. Making by hand is a bodily experience where knowledge is acquired by doing, by grasping and making, but it also requires knowledge of the material, process, etc. When immediate grasping-being in the world happens together with comprehension acquired through practice and intellectual knowledge, Kojonkoski-Rännäli calls the act of making a basic intention. This basic intention is crucial in making as it creates profound knowledge of the subject and also involvement and responsibility of the created object. Kojonkoski-Rännäli separates basic intention from instrumental intention, where the process of doing does not generate deep knowledge or responsibility. Kojonkoski-Rännäli describes industrial processes, including digital fabrication, through instrumental intention.

In this paper, I describe Kojonkoski-Rännäli's philosophy of doing by hand and then examine if and how maker movement brings basic intention into digital fabrication and why this is important.

maker movement -creating knowledge through basic intention

Introduction

The Maker movement (also often referred to as Maker culture) is a growing phenomenon having effects on manufacturing, culture and education. This paper focuses on the knowledge creation process in the maker movement. Building on Finnish craft professor Kojonkoski-Rännäli's philosophy of craft this article examines how knowledge is constructed in the era of digital making. Before delving more deeply into Kojonkoski-Rännäli's thoughts and the implications it may have on maker movement, I will take a short view on the maker movement in general.

The maker movement is often associated with the rekindled interest in hardware design and manufacturing accompanied by the proliferation of inexpensive production tools. (Anderson 2012) Internet has helped in expanding the maker movement into a global movement, often connecting people in ways that otherwise would have been unlikely. Chris Anderson, former editor-in-chief of Wired-magazine and the author of *Makers: The new industrial revolution* calls the maker movement a new industrial revolution which happens "when the web generation turns to the real world" (Anderson 2012). The movement is celebrated as a new way to create more ideas and products that otherwise wouldn't have been possible. (Anderson 2012; Buechley 2014; Hatch 2013; Martinez & Stager 2013; MacMillan 2012) But to think of the maker movement merely as an interest in affordable production, manufacturing platforms or creation of novel products is somewhat misleading. Dale Dougherty, the founder of Make-magazine, a magazine aimed at enthusiastic makers, and Maker Faire, "a celebration of tinkering and making", describes makers as enthusiasts who want to explore the possibilities of both new and old technology. (Dougherty 2012), On a similar upbeat note Martinez and Stager recognise the Maker movement as "Terribly exciting in the ways it celebrates the virtues of constructionism, even if the advocates of learning by making have no formal knowledge of theory underlying their passions" (Martinez & Stager 2013) Dougherty refers to John Dewey on his article on the maker movement (Dougherty 2012), emphasising Dewey's belief in learning by doing. (Dewey 1998) Martinez and Stager, in their book *Invent to Learn – making, tinkering and engineering in the classroom* (Martinez & Stager 2013) walk on the same lines and trace the roots of the maker movement to constructivist learning theory, to the Reggio Emilia approach as well as to the Piagetian idea that "to understand is to invent". (Martinez & Stager 2013) (location 159 of 5629) The maker movement is seen as a tool to gain necessary 21st century skills, giving new opportunities and new ways to explore digitalised culture. (Hatch 2013; Martinez & Stager 2013) (Dougherty 2012; Rushkoff 2012) Just as a pencil or brushes give opportunities to explore the visual world with lines and colours, the maker movement gives tools for the exploration of digital and electronic techniques.

The Maker movement can also be seen as a continuation or as a new version of the 20th-century Arts & Crafts movement. It does share similar goals, such as giving people the freedom to not be satisfied with monotonous industrial products and the possibility of breaking free from tedious corporal jobs to find more meaningful jobs in self-employment. (Morozov 2014; Patokorpi 2014; Kojonkoski-Rännäli 1998) But unlike the Art & Crafts movement which failed in producing anything of great usefulness or value to ordinary people (Morozov 2014), the maker movement might just have found suitable niches to serve in the global marketplace. (Hatch 2013) On the downside the commodification of the maker movement can already be seen everywhere. More and more products that might have very little to do with the maker ethos are marketed for budding makers to be. The danger being that the theory of learning by doing might be commercialised to products that fail to teach anything about making and working with your own hands. Moreover, at the same time the real products, the ones we use every day, are left to professionals and are further enclosed through hamper-free bolts and proprietary software. This is the exact opposite to the ideology of curiosity, openness and exploration inherent in maker movement. Furthermore, the maker movement is criticised as serving a relatively small percent of the maker population. Leah Buechley, a former professor at MIT has criticised the maker movement as being mostly targeted to wealthy white males (Buechley 2014). Even so, we can see that the movement has gained a somewhat widespread attention over the globe. From studies of China's maker spaces (Lindtner 2012) to the new emergence of DIY synthetic biology (Tochetti 2012) the movement has accelerated the more general DIY movement into a global force. (Hatch 2013) As I next delve more into the philosophies of craft and the maker movement I want to acknowledge the indirect connections that my article shares with these problematics of the maker movement.

Philosophy of making by hand

Kojonkoski-Rännäli first formulated her views on the philosophy of craft in her dissertation *The Thoughts in Our Hands* (Kojonkoski-Rännäli 1996). And has further continued it in her recent book *Käsin tekemisen filosofiaa* ("The philosophy of doing by hand") (Kojonkoski-Rännäli 2014). In these books she offers intriguing perspectives on making. For Kojonkoski-Rännäli making by hand is existing in the world: Humans have intention in their making.

As active bodily creatures, doing by hand is customary to our being, thus it is fundamental to our way of being in the world. Kojonkoski-Rännäli backs her theory with Martin Heidegger's philosophical analysis on being. According to Heidegger, the way in which we exist in the world is by dwelling (*wohnen*). This existing, living, is realised through making (*bauen*). In this way doing by hand is one of the core components of existing in the world. Kojonkoski-Rännäli further analyses the basic concepts of doing by hand with Heidegger's concept of *zuhandenheit* (ready-to-hand) which, according to Kojonkoski-Rännäli, is more direct and immediate than perceptual experience. Besides Heidegger's *zuhandenheit* Kojonkoski-Rännäli also refers to Merleau-Ponty's concept of grasping: We can already grasp something before we know it. In Finnish language grasping can be translated to a word *käsittää*, which basically means understanding through hands. (Kojonkoski-Rännäli 1998) This form of knowledge creation predates intellectual comprehension. Existing occurs primarily through bodily experience. In this way Kojonkoski-Rännäli sees that making by hand is essential to human existence. Relating making by hand to Heidegger's concept of *bauen* Kojonkoski-Rännäli notes that making is not only creating an artefact but that it also includes aspects of caretaking and belonging to the world the maker creates. According to Heidegger this kind of tending of the world, by doing, is in our nature. Kojonkoski-Rännäli calls this grasping of the world the original work of man. (Kojonkoski-Rännäli 1998) This ideology of making is also very much in line with Hannah Arendt's philosophy of being and existing in the world. Arendt also sees making as a one of the ways humans exist in the world. (Arendt 2006, 2013)

However, for Kojonkoski-Rännäli craft is not just a bodily experience, but also a skill to be mastered: Craft needs both practice and knowledge. When immediate grasping-being in the world happens together with comprehension acquired through practice and intellectual knowledge, Kojonkoski-Rännäli calls the act of making a basic intention.

"When the maker is both experientially and emotionally attached to her work as well as rationally, and intentionally, then the maker gains knowledge of her material and the world wherein she belongs to," writes Kojonkoski-Rännäli. She continues,

"she gets to know the possibilities of her work and her limits. She is engaged with her material and feels responsibility for her work. For these reasons, I entitle the intention of making as the basic intention." (p. 48 translation by article author) (Kojonkoski-Rännäli 1998)

To further illustrate her meaning of basic intention, Kojonkoski-Rännäli uses the term *techne* to describe further the process of doing. *Techne* originates from a Greek word *tekhniké* which has a dual meaning. It can be understood as making by hand, being able to do something and as art. On the other hand, it also means understanding and knowing in its widest possible meaning, surviving and accomplishing something. *Techne* is making that brings forth something that can't come out itself, but which has the possibility to arise. For example, building a house or a boat can be such making. (Heidegger 1952; Kojonkoski-Rännäli 1998) For Kojonkoski-Rännäli *techne* fuses knowing and doing into one: problem-solving, and moulding of the material, thinking and motor skills are closely combined. It also implies that basic intention demands that the maker is personally involved in the whole process of making, from planning to the finished product. When the act of making happens in this way, both the process and the resulting work are important. Concrete work conveys quality: It manifests different stages of making as different attributes. (Kojonkoski-Rännäli 1998) The work can be seen to present the skills and the qualities of the person. In this way it is easy to understand that the maker is often very attached to her work, says Kojonkoski-Rännäli (p. 55) (Kojonkoski-Rännäli 1998). When the finished product and the process of making are combined, it constructs and develops both the inner and outer qualities of makers. One of these qualities that Kojonkoski-Rännäli brings up is common sense, based on Aristotle's concept (Aristotle & Sachs 2009) Kojonkoski-Rännäli sees common sense as the ability to evaluate the relationship of distinct things between another and of the whole as well as the ability to see things in a context and to anticipate the consequences. In this way making increases not only the maker's skills but also the maker's ethical sense, a way of belonging in the world.

Along with the concepts of basic intention and *techne*, Kojonkoski-Rännäli uses the term complete craft (*kokonainen käsityö*), which can be seen to further illustrate the importance of *techne* in the act of making. For Kojonkoski-Rännäli complete craft happens when one person is accountable of and the maker of the whole process of making from thinking, designing to making the finished product. In such activity, Kojonkoski-Rännäli sees that the spiritual and intellectual abilities of the person are developed along with her physical and motorical skills and abilities. Complete craft also includes the crafts' character as an act that allows being-in-the-world in the sense that making by hand is a way of existing in the world that makes life possible and agreeable. Along with the real artifact, concrete craft creates inner qualities, physical and psychological capabilities and characteristics. (Kojonkoski-Rännäli 1998) Kojonkoski-Rännäli argues that making by hand, and basic intention is an important contemporary skill as well as in the future where creative skills to deal with open-ended and multi-faceted problems are required. Complete craft develops students multiliteracies; Along with technological and design literacies, the complete craft also develops other literacies such as using language, numbers, and symbols as well as embodied thinking and material knowledge. (De Vries 2006, Kojonkoski-Rännäli 1998, 2014)

In a recent debate¹ in Finland, Kojonkoski-Rännäli compressed her views on craft, citing Risatti that craft is something that is done by hand or with hand tools and it is done by moulding concrete materials, and it combines

theoretical, abstract knowledge into practical making. (Risatti 2009) She continues to stress that combining head, heart and hand is one of the more widely accepted characteristics of craft. (Fraylin 2011, Gauntlett 2012, Sennet 2008) In this way Kojonkoski-Rännäli approaches many craft researchers way of thinking. Kojonkoski-Rännäli also gets near to Dewey's philosophy when she includes growing as a human as part of the making process. (Dewey 1998) What is intriguing in Kojonkoski-Rännälis work is that by defining basic intention she clarifies the concepts and deepens the meaning of making by hand.

The problem for Kojonkoski-Rännäli is that modern making that includes automated machinery, pre-designed parts, instructions, etc. distances making from the original experience of doing by hand, and thus the connection that one has with the material happens only on an intellectual level. This further separates our rational thinking from the rest of our human experience, thus preventing the basic intention of making happening. Also, the differentiation between body and mind weakens our comprehension of nature, and the inherent connection we have had with nature. Then the act of making can be seen only as a vehicle for something. The work and the process have no value on their own. This kind of making Kojonkoski-Rännäli calls instrumental intention. For Kojonkoski-Rännäli most of the modern manufacturing and making are lacking the basic intention and along with it the ethical and aesthetical properties of products.

Kojonkoski-Rännäli does not directly address maker movement in her work, although, in her recent book and blog posts, she acknowledges that making is gaining traction and recognises for instance the Pro-AM (Pro-amateur) movement and craftivism (craft + activism) as ways in which making is both renewing as well as sustaining itself. (Kojonkoski-Rännäli 2012, 2014) Regardless, Kojonkoski-Rännäli doubts whether making that is done through modern technology is ever able to give its maker the same kind of feeling nor knowledge that one acquires through traditional making. For Kojonkoski-Rännäli craft that includes basic intention is always done either by hand or with a machine that is directly controlled by the hand. The result is then an artifact that manifests the different stages of the creation process. (Kojonkoski-Rännäli 1998) In fact, Kojonkoski-Rännäli separates craft from technology by saying that when making includes machinery that includes automated processes then it cannot be considered to be craft but rather a process of technology (Kojonkoski-Rännäli 2014). In other words, Kojonkoski-Rännäli sees that making done through modern technology lacks basic intention.

However, maker movement might offer some ways of working that may counterbalance the automation and distancing aspects of modern technology. In this way maker movement could be seen as a way to bring Kojonkoski-Rännälis basic intention into modern technological craft making processes. On a general level, the maker movements manifesto, coined by Mark Hatch (p. 11-31) (Hatch 2013) seems to share a lot of characteristics with Kojonkoski-Rännäli ideas on complete craft. They both see making as fundamental to our being and as a way of experiencing the world. They both stress the wholeness of the process of making: that it is embodied knowledge together with intellectual knowledge. Yet maker movement could also give a whole new perspective to making with digital technologies. The way maker movement approaches technology may provide modern maker with tools and skill sets that offer direct, graspable, knowledge on things Kojonkoski-Rännäli sees as automated and distancing. To make this clearer I examine two aspects or problems in digital manufacturing and digital technology in general and then look at how maker movement can be seen to approach these problems. Even through these examples do not eliminate the fact that many modern technologies used by modern makers include automatised processes (think 3D-printing) they can shed some light on how deep the maker's involvement can be in a seemingly automated processes.

The first problem when dealing with making in the digital era is the abstraction brought by technology. Electronics and software code might appear abstract to the point of seeming magical. Rapidly advancing technology can create products that may have been unthinkable few years ago. Mobile phones, smart watches, predictive algorithms (such as Google's search) and machine learning (intelligent assistants such as Apple's Siri or Google's Now) all have features that may fill us with wonder. Marketing and contemporary culture have further emphasised the wondrous and magical aspects of technology. Most of the modern technology is now digital, ranging from toys to personal computers and from dishwashers and other home appliances all the way to automated factories. Digital technology differs from other technologies in that it is programmed. Code is the heart of every digital technology and substantially shapes its behavior. We might have the knowledge how to use modern tools, be it a digital camera, a dishwasher or a software tool such as Adobe Photoshop, but we do not have the understanding of how they work. Software code shares only an indirect connection to the physical nature where we live in. Code is a structure constructed entirely by humans, differing it from other technologies which in some manner or another are connected to the world we live in either by a visible utility or through the fact of existing in physical space and thus being dependent on laws of physics. Code on other hand is only secondarily dependent on the laws of physics (through the

1 In 2013, The Craft Museum of Finland chose cake-artist Emma Iivanainen as a maker of the year, which draw intense discussion in the craft circles about what can be called craft and what cannot.

fact that microprocessors exist in the real world). This makes code and digital technology very abstract to people not familiar with code. There is little possibility to grasp how code works because it has no direct roots in our everyday experiences. Thus, the possibilities to form emotional, experiential connection, let alone bodily connection toward digital making seem impossible.

The second problem could also be seen as a other way of looking at the same problem. While the abstract nature of code is inherent in digital technology's nature, it is also affected by the politics governing it. Patent laws, copyrights and proprietary software create a wall between the user and the process. Proprietary software means software where the user has no possibility, or right, to see the way the software is built. (Stallman et al. 2009) When the user cannot see how the program is built he or she must rely on the outcomes of the software, making the software a black box without any access. Similar barriers are created by copyright and patent laws, disabling makers from creating their versions of the tools even if they figure out the way the tool is built. These kinds of restrictions can be understandable from the point of neoliberal economics, but they do restrict the makers to be fully engaged in the making process.

Maker movement, as a movement born of the digital age (Anderson 2012) has found some ways of addressing these problems. One way is by taking control of the black boxed processes. "If you cannot open it you do not own it" is a popular slogan in maker movement. In it is contained an idea of getting to know the insides of the machines. This results both in an activity where maker learns how programming or other technologies work, but also in a political stance against proprietary software and hardware. Maker movement has embraced modern technology by way of finding out how things work and then sharing those findings (Martinez & Stager 2013; Hatch 2013). Hacking, a term originating from the software world, meaning the unintended or clever use of the code or software can be seen to have spread into the physical world through maker movement, as suggested by Dougherty. (Espinoza 2014) As Levy describes in his book *Hackers, Heroes of the Computer Revolution*, hacking is closely related to maker movement's ethos:

"Hackers believe that essential lessons can be learned about the systems – about the world – from taking things apart, seeing how they work, and using this knowledge to create new and even more interesting things." (Levy 2010)

This hacking, opening of products, consists of both physical (machines) and abstract (software) tools, where a maker gets to know how the products or tools operate by way of doing by hand. If we look at Kojonkoski-Rännäli's thoughts on basic intention, where she sees making as tending, a way of taking care and belonging to the surrounding world we can draw a correlation to maker movements way of existing in the digitalised world. Making in the maker movement is seen as a way of looking at the world and suggesting new possibilities to exist in the world. (Martinez & Stager 2013) Even though the maker movement did not start the free software movement or open source movement – the movements which are working against proprietary software – it can be seen to embrace the ideologies of these movements. The maker movements emphasis on equal rights to access, on learning and sharing the code or digital technologies, could be seen as a way of tending the digital world. This can be seen clearly in the popularity of various online forums and real world gatherings, such as Maker faires. Lang further emphasises this, naming it DIT (Do-IT-Together) culture. (Lang 2013) In a way maker movement could be seen as way of creating belonging to a world that is vastly digitalised.

Kojonkoski-Rännäli's other requirement of basic intention, that making must happen by hand or with a tool directly worked by hand, can also be adapted to maker movement. Regular user of digital manufacturing tools might be satisfied with using the tool the way it was intended and instructed. However, maker movement encourages the maker to go further, by encouraging the maker to learn how the tool works. In this way a maker is able to code and hack the tool to work the way they want it to, or to just to fix some bugs or malfunctions themselves, instead of being dependent on the manufacturer. In the process, a maker gets to see inside the black box. Maybe even tinker with the source code of the tool, making it their own. Many makers feel a kind of pride and engagement over their machines. The artifacts produced by them are shaped by the code created by the maker him/herself. (Lang 2013) In other words, the difference between makers use versus normal use could be seen as the difference between using a program, for example Adobe Photoshop versus creating the program themselves. Even if the result is a tool that automates some processes, it can be seen to be in direct control of the maker. This can also result in a knowledge that is not only intellectual but embodied in the maker himself. Abstract code can become a graspable process, wherein the maker feels to be deeply involved in. For example, coding is seen as a craft by many developers and as such displays many of the characteristics of craft: Developers feel deep connection and responsibility of their code and even of the process and tools of writing that code. (Cox 2013; Feller et al. 2005) The fact that code is run on automatized machines and is digital, does not seem to hinder the way developers feel about their code. Seymour Papert planned already in 1970's that computers should become like modeling clay or paper maché, mouldable material that create connections between the maker and the digital world. (Martinez & Stager 2013; Papert 1993) It seems that maker movement has the potential to accomplish this plan.

Conclusion

As Kojonkoski-Rännäli proposes making by hand is fundamental to humans as a way of existing and comprehending the world. Doing by hand is an important skill that should not be ignored in the age of information technology. (Kojonkoski-Rännäli 2014) Kojonkoski-Rännäli does not oppose modern technology per se but does state that it might hinder the connection humans have with the making. Automatised and closed processes may take away the wholeness of the making process, lessening the connection maker has with the object and diminishing both the inner and outer skills and abilities maker gains in the process. (Kojonkoski-Rännäli 1998; Kojonkoski-Rännäli 2014) In this article I have suggested maker movement as a way of looking at the modern making process. Through maker movements ideology and way of looking at the modern making, it is possible to see how the basic intention, the complete craft, as coined by Kojonkoski-Rännäli could happen in the digital era. As this paper takes only a theoretical look at the making process, it does not claim that this is the case, but it does offer possible and far-reaching outcomes of maker movement that are often not considered when talking about maker movement. The research could be continued to include primary data from research projects.² Even if the maker movement is heralded as a new industrial revolution and criticised as a rich white's males free time, it could provide us with a set of tools and skills needed in the digital age.

² As a part of Artsequal research initiative (www.artsequal.fi/en) I will be conducting an intervention called: "Creative coding, visual arts & embodiment" at Martinlaakso school in Vantaa, Finland that aims to seek answers also to some of these questions.

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co-designing with sustainable practices in fashion teaching

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Abstract

The issue of sustainability is presented today as one of the main challenges facing modern society.

Educators and fashion designers have the opportunity to adopt a paradigm of humanised thinking, that gets away from the classical structures of fast fashion and which can guide them towards a new concept of ethical and sustainable fashion.

From this approach it is possible to work on criteria of design, manufacture and consumption; but also to reactivate the longevity of the garments, enhancing the user experience and the unfashionable character of the product. Our research is based on the concept of slow fashion and application of co-design methods, to encourage the development of sustainable practices in fashion design education, and which involve the process of design and product development, designers, researchers, craftspeople and several different social groups.

The qualitative methodological approach was tackled from the practice of participatory design, where workshops, hacking tactics, employing clothing decoding techniques, and design strategies were based on optimisation criteria by the garments.

The sample included 30 participants divided into 5 groups, whose members adopted different roles and actions within the groups.

Several data collection instruments that measured levels of awareness and sustainable positive impacts on the workshops participants were also used.

Keywords: co-design, sustainability, fashion, redesign

co-designing with sustainable practices in fashion teaching

Introduction

Sustainability has become one of the most important and popular topics in the last 10 years which is being researched deeply by the academy, and, with particular relevance, to the textile and fashion disciplines. A growing number of researchers have published interesting articles that provide a wealth of knowledge about sustainable practices for research and development, as well as the consequences and negative impacts arising from bad practices and the rapid consumer industry (e.g., Black, 2008; Chen and Burns 2006; Dickson 2011; Faud-Luke 2002; Fletcher, 2008; Fletcher, 2010; Fletcher, 2012; Fletcher and Grose, 2012; Howard, 2004; Pookulangara and Shephard, 2013).

Rapid industry dominated by “just in time” production and the distribution processes time to market have accelerated consumption growth driven by planned obsolescence (production of perishable products) and are driven by the changing trends in fashion. This system of throwaway fashion has caused a destructive need in the consumer where more often than not they buy more than they need. Consequently this has led to the accumulation of waste derived malpractice consumption, which in recent years has significantly increased waste textiles and apparel at landfills from 7% to 30% in the last five years (Pookulangara and Shephard, 2013).

Simultaneously, the slow fashion movement has emerged strongly to counter it, on the one hand, the devastating effects caused by the insatiable demand for fast fashion, and, secondly, to challenge the current system of mass production. Slow fashion seeks to improve the quality and transparency of the processes of production and consumption that addresses issues related to cultural diversity, identity, symbolic expression and durable product design and emotional involvement over time (Nakano, 2009; Fletcher, 2008). Slow fashion not only complies with ethical and ecological requirements (eco mode), but it is involved in processes and practices for reusing and recycling, outputting existing clothing to minimise waste. These practices challenge the obsession with the growth of the fashion industry of mass production, stopping the throwaway system and instead offers alternative solutions for durability and production systems based on life cycle management through upcycling and downcycling (Birtwistle and Moore 2007; Elsasser, 2011; Janigo and Wu, 2015; McDonald, Oates, Tyne, Alevizou and Mc Morland, 2009). The emergence of new businesses in the apparel industry, based on the creation of productive balance scenarios and finding solutions provide a new opportunity to slow down waste and increase sustainable growth (Janigo and Wu, 2015).

In particular, the practice of “do it yourself” (DIY) and the reuse of old materials, which are activities that have always been part of the fashion world are assuming, at present, a new co-creative social dimension by applying integrated participatory design practices in collaborative scenarios, using co-design strategies for its implementation (Janigo and Wu, 2015).

Hacking is the practice of “do it yourself” through actions of co-design and direct interventions on the technique or process. According to Galloway, Brucker, Gaye, Goodman and Hill (2004) acts of piracy can be made by gaining access to technology and information from it (by transparency) empowering users (through co-producer and prosumer), decentralising control (through processes involving breaking the hierarchies) and creating beauty, overcoming the limitations (through collaborative redesign of used clothing).

Hacking originated from the world of software programming providing valuable characteristics that are now beginning to assume essential values in the efforts of committed and sustainable fashion beyond the limits of conventional production (Von Bush, 2009). However these new paradigms of activist thinking and implementation practices for sustainable co-design processes are rare in academic practices and collaborations between design schools and public or private entities.

This point of our research focuses on the creation of co-design scenarios which involved researchers, students design, craftspeople and social groups that combined practical hacking in fashion with both of optimisation strategies of eco-design and end of product’s life cycle (upcycling) to redesign their clothes.

Theoretical framework

Less by more towards a new concept of wealth.

The origins of slow fashion lie in the slow food movement that began in Italy in the 1980’s as a reaction of a group of activists to the opening of a new McDonald’s restaurant.

According to Fletcher (2010, p. 260), the “slow food movement is a Gestalt switch” that assumes priorities and economic and business practices since the consecration of the values and behaviors, replacing the fast model and distorted current consumption and production by a new holistic model integrating the conventional from a broader

set of objectives, which are based on traditional values economies; ecological diversity, health, leisure, employment and security, and future security. Inside this system the slow fashion, in contrast to fast fashion, considers like its predecessor, slow food, slow culture and values as an essential part of the system.

Slow fashion represents a break with the current rapid system, despite the general industry's view which is somewhat distorted, and current approaches continue understanding it as a slowdown focused on marketing strategies that continue to expand and improve sales. The latest proposals from some of the major industries of mass production show this distorted and confused vision. For example, H & M with its line 'Conscious' and close the loop. Moreover, its Spanish counterpart Zara, with the development of its programme Inditex Green to Wear the line Eco War Ning and the label Join life which identifies different types of garments made with a sustainable setting such as Care for Water, Care for Fiber and Care for Climate. However, slow fashion means something higher than false metaphors, which need to be defined inside a real system change that challenges the economic and productivity growth, core values and worldview accelerated fashion to redefine itself within a system truly rich "less by more" against classical visions of fast fashion of "more by less".

The slow movement in fashion is not considered a descriptor speed slows production processes; but a different worldview that employs variable time to strengthen relations value and extend the boundaries of obsolescence to overcome it. The slow movement in fashion has a strong cultural and biophysical relationship between product and experiences, through diversity, durability, pleasure and quality. Slow fashion incorporates social responsibility processes which work, by sustainability and transparency (Fletcher, 2008).

Slow food and slow fashion are visions that are conceived within a slow macro-culture, that definitely change the economic and social practices by introducing them and incorporating them within their culture as part of the debate. These conflicting visions raise new questions, not on the ability to produce more, but on the socio-cultural and ecological consequences. Slow fashion is not seen as an obstacle or slowing any fast system of production and consumption but rather, as a change of the system, defying growth and globalisation to safeguard the durability and diversity of a new and standardised system. Slow fashion proposes new work systems based on co-creative experiences. These models are changes in the relations of consumption and production, brought about by the new consumer attitudes and new social policies, which are based on a new development system, extending the creative boundaries to the public and their real needs. In this new system, which promotes relations of trust and intensifies the states of consciousness, the following are connected: communities of manufacturers, artisans, designers and customers through a model of ecological, social and productive growth that sell less for more. This model invites reflection on the true value of things, considering the product at a higher rate of value to protect the ethical principles of respect and social awareness. Participatory design practices are at the core of this collaborative system from which the concept of co-design emerges and evolves.

Co-design as a methodology for work in the area of sustainable design

Since the first proposals suggested by Pine (1993) customisation practices have evolved to find fully integrated consumer processes and design practices. Several authors agree on the definition of co-design as a process of integrated value, which combines the consumer's customising choice from a list of options and predefined components (Fiore, Lee, Kunz and Campbell, 2001; Piller, Schubert, Koch and Möslin, 2005; Ulrich Anderson-Connell, and Wu, 2003). Co-design emerges strongly as a method of co-creative work that is revitalising new ways to understanding and working with design and research participation. Several studies show that over the past 10 years, research on participatory design (PD) has changed both the role of the participants and the ways of thinking, which currently addresses the new domains of collective creativity and design processing (e.g., Liem and Sanders, Sanders and Stappers, 2008). The belief in the resurgence of new roles for designers (Lee, 2008; Sanders, 2008; Sanders and Stappers, 2008) which promotes a new system of learning is now established at the centre of the debate. Various academic teaching designers defend educating designers from the base of co-design to avoid future possible rejection caused by the lack of co-creative culture, since not everyone thinks that everyone is creative (e.g., Pardo-Cuenca, 2014; Pardo-Cuenca and Prado-Gascó, 2015; Sanders and Stappers, 2008). Recently, several studies focusing on the teachings of fashion, have addressed new methodological approaches based on practical fashion using strategies to manage co-design projects (Pardo-Cuenca and Baldan, 2014; Pardo-Cuenca, Hernandis and Lupano, 2013).

Co-design is also addressed from the practices of sustainable fashion, for its ability to break the mould and hierarchies promoted by the fast fashion industry, giving a more egalitarian potential. Co-design breaks the barriers involving and engaging the consumer in the process of design, customising processes and adding value through the experience. According to Otto von Busch (2009) co-designed fashion is a free market where everybody can participate. Co-design proposes new roles as facilitators for designers, developers and generators, which allow the design to flow in all directions designing with people and not for people. The co-design unites the world experts (abstract space) with the world of people (concrete space). Co-design creates opportunities for participation working with design professionals, communities and the public within a collaborative framework. Consumers share responsibility and commitment to the other agents involved in all phases of design development.

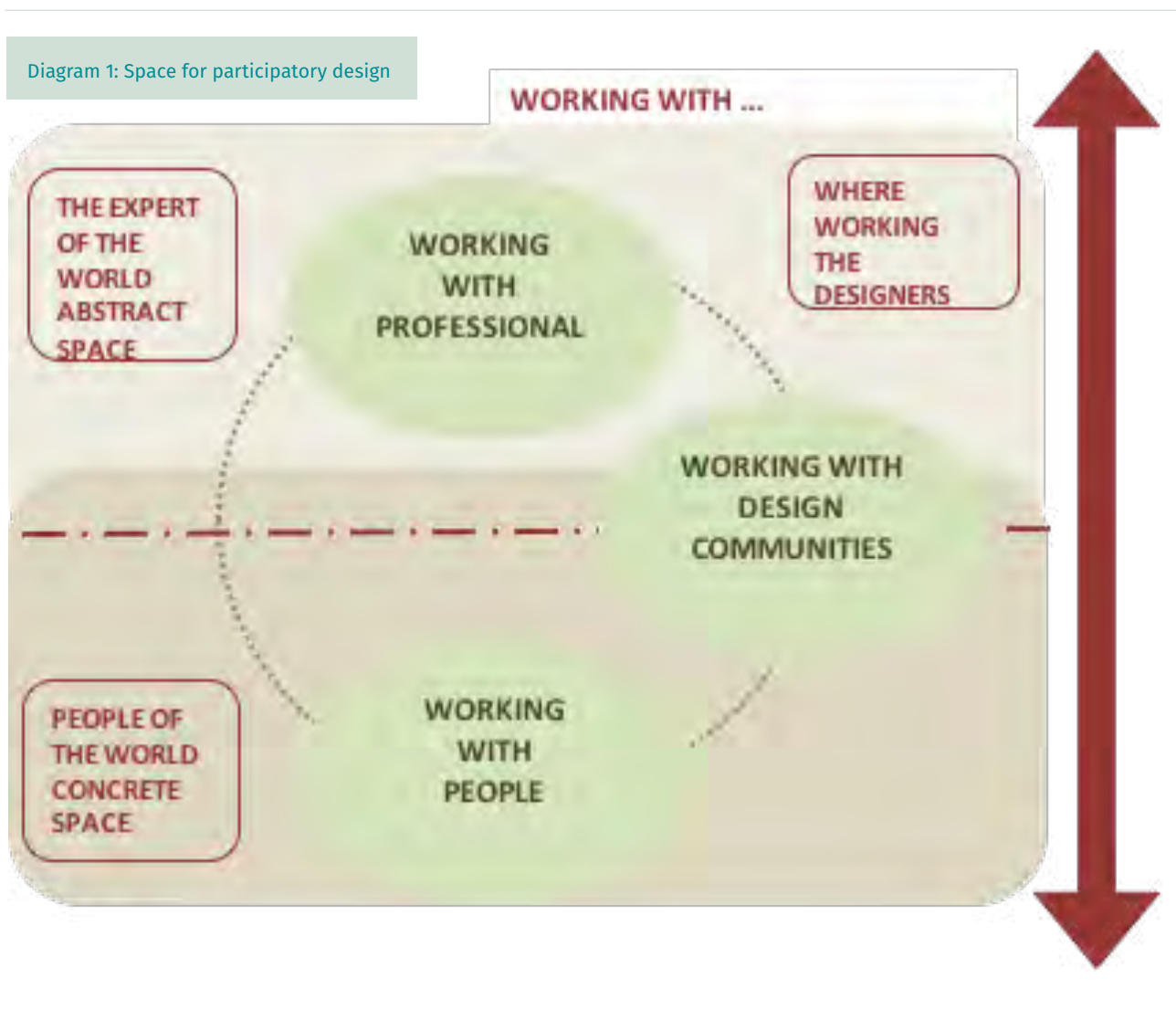
Consumer involvement can vary depending on the interests and needs of the practice or action. Diagram 1 shows a scheme in relation to this point.

DIY practices are considered as co-design approaches which involve consumers in a wide variety of customisation processes, which are operated from activism in crafts to activism as a practice of hacking fashion. Both approaches aim to emphasise the social commitment, both from the point of view of the quality of the garment (the amount above) and from the domination and conquest of a system and / or closed process that extends its codes to the public domain. Consumers share responsibility and commitment to the other agents involved in all phases of the design development.

Hacking is the practice of “do it yourself” through actions of co-design and direct interventions on the technique or process. Hacking originated from the world of software programming provides valuable characteristics that are beginning to assume as essential values the efforts of committed and sustainable fashion beyond the limits of conventional production (Galloway *et al.*, 2004; Von Bush, 2009).

From the field of design business, a recent study explored co-design processes involving consumers who redesigned their used clothes. On the one hand a sustainable alternative based on the redesign of secondhand clothing which was very well accepted by the study participants (Janigo and Wu, 2015). These new paradigms of thought are co-creative and lead to development on waste and process and propose a possible sustainable business model. Activists and sustainable practices in academic spaces (in collaboration with other public or private institutions) are not common in fashion teaching and literature does not provide concrete information about this. The main goal of this research is to promote from the base of fashion design teaching new methods of collaborative working that involve multidisciplinary teams made up of designers and non-designers (i.e., researchers, craftspeople and social groups) to extend the creative processes of design to the public domain and moreover adjust them, from the field of sustainable fashion design, to new emerging social needs.

The proposal was implemented through an action plan to raise sensitivity of fair trade, responsible consumption and the co-design of sustainable fashion. It was structured in various workshops and macro meetings.



The workshops which were held at the EASD and comprised of several aims:

- Working with a social community of individuals to conduct a co-design project, which promotes the environmental commitment and responsible consumption of the participants in the field of fashion.
- Working from the early stages of transformation design and new emerging social needs using innovative tactics co-design with sustainable design techniques of hacking and upcycling.

Our considerations raise compliance with the following hypothesis:

- That the use of collaborative methodologies involving multidisciplinary teams working in sustainable fashion teaching, provide positive effects on participants, stimulating the co-creative process and ethical and sustainable thinking from the first front of design education.
- That the use of innovation strategies in co-design through craft techniques of hacking and upcycling, increases the levels of involvement and understanding of the value of processes, work and materials, as well as the significant innovation of the results found.

Methodology

In our research we used the qualitative participatory design approach based on innovative strategies in co-design. This methodology integrates participatory action process with active subjects (non-designers) in the role of co-designers, who work collaboratively with researchers, designers and other stakeholders. Designers and researchers become facilitators of collaborative design and generators tactics that guide the research inciting the commitment and complicity (e.g., Lee, 2008; Pardo-Cuenca & Baldan, 2014; Sanders, 2006; Sanders & Stappers, 2008).

The use of this methodology and innovative work leads us to develop works of great cultural significance that increases the understanding of the value of activities and things, the uniqueness and difference of the processes and work items that are developed in the inside of new open community space. The central themes revolve around learning from co-creation and from the awareness of artisanal and sustainable processes as a source of cultural richness and creative potential of innovation in sustainable design. The focus of the action revolves around the exchange of roles among participants (i.e., artisans, designers, social groups as non-designers, researchers, social educator) to joint reflection and active participation of all its members.

The search for solutions in the project was based on the commitment and involvement of the participants to stimulate co-creative, ethical and sustainable thinking through crafts. Partaking in these practices and applying different tactics and design tools have aroused the curiosity and enthusiasm of the participants' knowledge of new forms of work and the appreciation of traditional processes driven from the use of techniques hacked into and upcycling.

Overview

This research is part of the project "Weaving Ethical Alternatives among Generations". The co-direction was directed by the principal investigators of this work and the NGO SETEM *País Valencià*, which also had the support of the Clean Clothes Campaign. The workspace was developed in the installations of the headquarters of Velluters of the *Escola Superior d'Art i Disseny de València* (EASD). The workshops were composed of students, social groups, researchers and craftspeople.

Participants and data collection

The extraction of the sample was divided into two selection processes.

The sample selection directed by SETEM was conducted by convenience sampling from social groups and artisans who came from workshops that had been developed outside the premises of the EASD, under the project "Weaving Ethical Alternatives among Generations"

The selection of the sample was extracted from the EASD of Valencia also for convenience from design students of the Masters course in Fashion Co-design and Sustainability, along with the principal investigator of this project, who took an active role also joined in the entire process.

The total sample consisted of 30 participants who were divided into 5 groups of 6 people each. Each group consisted of one student design as a facilitator, one artisan as a co-designer and a facilitator, 4 subject non-designers as co-designers (2 subjects <50; 2 subjects > 50 years) and one researcher as facilitator.

The working sessions were held at the (EASD) of Valencia and these were developed during the months of April and May.

Procedure

The procedure was carried out through three working sessions that were organised around a common design project where general issues of sustainability in fashion and responsible consumption were discussed.

1st session: preference, sensitivity and knowledge

The aim of the first session was to sensitise groups

1. The project was explained, the objectives of the workshop were raised and the subject was defined. The principal investigator presented the project, the objectives and theme. The proposed theme was “hacked into garments” in the fashion industry. The principal investigator gave a brief introduction of the concept of hacking and its use in design practice. The aim was to raise sensitivity and to convey to all participants (designers, craftspeople and social groups) basic knowledge about the concept of hacking in fashion and how these would work in the workshop through a design strategy.

Next the groups were defined, and the designers (facilitators/students) of each group explained the work’s phases, the techniques and strategies that were going to be worked on.

2. Focus group and idea generation from the analysis of the garments
 - o Assessment and analysis of all garments from a questionnaire ad hoc and the technique of thinking aloud.
 - o Joint debate groups and decision-making of an only garment from the basic strategy addressing “optimisation of the garment”.
 - o Assessment and analysis of the chosen garment and ideas generation for change and/or modification.

Once everyone understood the working methodology, the designers / facilitators of each group asked participants to speak of the garments, which had been requested from them weeks before the workshop. To do this from a focus group the participant had to answer a short questionnaire. The goal of this first part was to select a single item from each of the groups. The garments were chosen to maintain a link with the users; emotional, aesthetic or functional (See figure1)

To develop correctly the focus group two types of questionnaires were proposed. A first questionnaire was designed to address general issues of the garments and find out what reasons had prompted the participant to choose the garment for the workshop. Moreover, the think aloud technique was also employed, which allowed the extraction of more and better information on each of the garments. After selecting the item by consensus and considering a greater adjustment of the possibilities of this to the objectives of the research we moved onto a second questionnaire to decide what features were to be modified in the subsequent workshop and why. This process took into account the eco design strategy agreed by the designers and the principal investigator that was to enhance the optimisation of the garment. Table 1 shows the issues to be worked on in terms of dynamics.



Figure 1: Focus group participants.

Table 1: Comparison of users twitter account interactions

Items	Individual Questionnaire	Focus Group Questionnaire
1	Why did you choose this garment?	What possibilities does this garment have to improve?
2	How much time do you have it?	What is missing or is extra?
3	How did you get it?	What possibilities of change does it present?
4	What would you like it to become?	-----
5	What do you like most and least about the garment?	-----

2nd Session: planning and learning the technique

The second session was structured in the following way:

1. In the first part an artisan explained the technique of garments' decoding for about two hours, where she showed with different garments how to extract the patterns of these using them as reference (decoding parts) without pattern tables or previous knowledge (See figure 2, 3 and 4).

Figure 2: Two examples of original garments



Figures 3 and 4: Artisan working:



2. In the second part each group, guided by the facilitator, met together and they were shown the work kit (second-hand garment kit or left-overs of fabric pieces) to value it, which they were going to work a new pirated garment. The steps followed were:
 - o Valuation of kit and possibilities of remanufacturing.
 - o Decoding of the model garment from the pattern.
 - o Disassembly of kit

The model garment should be kept completely, as this is only used as a reference. The second-hand garment kit could be completely disassembled for reuse from the modified and removed from the model garment.

The resulting garment should respond to the consensual features in the focus group which should generally be liable to an improvement to levels of optimisation of material, use, shape etc (See figure 5).

Once explained the technique of garments' decoding by the craftswoman guide, the working groups began to work. The goal was to extract the pattern from the model garment applying the technique of garments' decoding to recover its original shape

- In the third session we developed a design strategy for optimising. The goal was to hack and recode the model garment from the new pattern extracted in the previous step. The groups alter the original pattern and recoded it according to agreements by the focus group considering the limitations of the work kit, which been chosen by the facilitator. Regarding the work kit the second-hand garment was the most commonly employed by each group but this one didn't always fit with the garment to which they aspired for its size, seams, shapes etc...The pattern resulting was optimised from the making-decisions reached by all participants, focused on optimising the new garment (See figure 6 and 7).

Figure 5: An example of modal garment and second hand garment kit to disassemble for reuse



Figures 6 and 7: Designer working with people



3rd session: construction, recoding and assemblage

The last session focused on the recoding, construction and assemblage of the new garment from the extracted codes of the pattern in the above process, that is, the new pattern optimised, where it was considered the limitations of the kit, the limitation of the decoding process itself and code setting.

The construction and the assemblage of the resulting new garment were worked with the support of a craftswoman and a designer guide who attended each of the groups organising, facilitating and leading the work.

Figures 8, 9 and 10: Designer and Co-designer constructing the garments with artisans



The principal investigator of this project attended and resolved any group doubts (See figure 8, 9 and 10).

Data analysis

Data analysis was carried out through participatory workshops and observation through a short questionnaire that was passed to designers who led each of the working groups.

Items	Ad hoc questionnaire
V.1	Difficulty of the task
V.2	Perceived Motivation
V.3	Involvement of participants
V.4	Group ability to cope with tasks.

Results

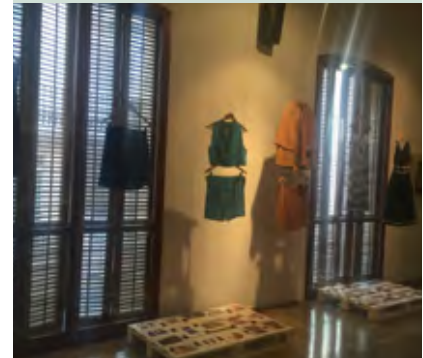
The quantitative results obtained from the questionnaires showed a high agreement coefficient Cohen Kappa. The values were as follows: Group 1 (kappa = 81-1); Group 2 (kappa = 81-1); Group 3 (kappa = 81-1); Group 4 (kappa = 81-1); Group 5 (kappa = 81-1).

According to the results obtained through participatory observation conducted by the designers (facilitators) we can say that the level of involvement and motivation of the participants at the workshop were high in all its phases. In addition, participants were very satisfied with the knowledge acquired and showed a high degree of sensitivity to social issues and environmental respect. Regarding the final prototypes results obtained from the recoding of the clothes, they were satisfactory and met expectations. All prototypes were exposed in a joint project supported by SETEM (PV) (See figure 11).

Figure 11: One example of garment transformation from the original garment a-b using second hand garment kit



Figure 12: Final result



Conclusion

This study develops a methodology of co-creative scope, which was conducted through several steps, aimed to promote from the base of the fashion design education practice new collaborative workspaces, involving in the process designers, non-designer and craftspeople. This proposal advances the theories of Sanders and Stappers (2008) on the importance of working in co-design from the base of education, and raises its application to the fields of fashion design with social and environmental focus. This study offers a collaborative view of work that goes beyond the creative boundaries of fashion design classrooms, working for the benefit of individuals and for building and strengthening ecological awareness and respect. Our research aims to provide answers to social, educational and environmental problems providing design solutions from the field of responsible and sustainable consumption, working with people and not for people.

Practical experience offered with pirating fashion advances in theory and practices described in studies of Von Busch (2009) on how pirating can change the way designers interact with other co-designers such as consumers, craftspeople etc. and how it is possible to intervene in the production process of fashion by emerging new competence in garments, affecting both consumer behavior as the production chain. In our study, designers facilitated thoughts and design processes of open code from hacker culture and their skills, which combined with eco-design strategies and techniques upcycling. We have built a social community of individuals with extensive interfaces between craftspeople, designers and non-designers who not only improved and created new bonds in their relationships, proving to be co-authors of the new designs, but also discovered new social, ethical and sustainable benefits.

On the other hand, participants have increased and improved relations with fashion and clothing competence because they understand their techniques and production processes. In addition conducted sustainable approaches have further enhanced the value of the products and have contributed to an integral thinking in all participants from slow fashion.

In our study, pirating and upcycling techniques oppose the paradigm throwaway system of fast fashion industry and the vision of a ready-to-wear product. With these practices we contribute to the theories of other scholars (e.g., Birtwistle and Moore 2007; Elsasser, 2011; Janigo and Wu, 2015; McDonald et al., 2009) sensitising participants on the incessant waste of consumption and offering alternative durable solutions to output existing clothing and waste reduction. Moreover we also strengthen the vision of other authors (e.g., Fletcher, 2008; Nakano 2009), directing the look of the participants, towards an approach that improves the understanding of the processes and quality criteria, and also building a social narrative that powers sensuousness of the product working from the cultural tradition, craftsmanship and durability of the products.

In summary, with this research we have built a community of people who have not only learned to work collaboratively to benefit from shared creative potential, but have also learned to increase the competences of the clothes, redesigning and hacking by use of various strategies of eco design and upcycling. Our achievements extend the boundaries of design and fashion consumption beyond the boundaries among classical relationships of designer, producer and consumer, opening the knowledge and traceability of products and their production processes, which are worked under collaborative, sustainable and ethical principles, but also enhancing the identity, longevity values and competences of fashion through craftsmanship.

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there is far too little handicraft going on at the university

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Abstract

Design educations have transformed and changed significantly in the last decades. While, visual expression and craft based workshops used to occupy a big part of the students' time, nowadays many subject matters compete for time in the curriculum. There is little time for reflection, playfulness or free experimentation. For students this development can be stressful and demanding. I do not believe this is optimal for someone trying to be creative.

From my experience, handicraft (or Swedish 'pyssel') is often ridiculed in the 'serious' design discourse. However, it is my hypothesis that this very activity can play a vital role in fostering strong designers. Handicraft can bridge the gap between the effective, purposeful work for fast result, and the more practical, analogue and thoughtful part craft can play by letting student's try practical work in a playful 'handicrafty' way.

This paper presents findings from my ongoing research exploring the possibility and potential of handicraft in a design context. The research is conducted through creative workshops and seminars with bachelor and masters students in the Department of design, Linnaeus University, Sweden.

Keywords: handicraft, practical based knowledge and learning, time, creativity

there is far too little handicraft going on at the university

Introduction

Design educations have transformed and changed significantly during the last decades, not at least the design educations at Linnaeus University. Just two decades ago visual expression and craft based practical workshop studies occupied a big part of the students' time. Nowadays many subjects compete for the education's and the student's time. Modern society has become more and more complex; the same goes for education. For the students this development can be stressful and demanding, both University and society want the students to be effective and high-performing in many different areas. There is very little time for reflection, playfulness, experimentation or relaxing. This is no optimal situation for someone trying to be creative, which a designer is supposed to be. Does it have to be this way? I do not think so and here I think handicraft (or Swedish 'pysssel') can play a role and maybe be a part of the solution.

Background

The design educations at Linnaeus University are so called New discipline educations, not specialised in the traditional design fields like product, industrial or textile design. The students form new disciplines for themselves based on other criteria than a material. Sustainability and social awareness is key words and meta design a new field (for us) in our new educations. The students try and explore many different disciplines and study many subjects during their education, not at least theoretical studies in an extended social design context. We almost always work project based. It is a complex education and maybe a contemporary design education has to be built like this, to get the students prepared for their profession as designers, a profession that has changed a lot during the last decades and become more complex. In Sweden we are one of the first university teaching New discipline education at bachelor level, but for example Goldsmiths University of London have a longer tradition in this field. Research has also been done in how design education has changed and broadened the design context during the last decades (Dunin-Woyseth, H, Nilsson, F 2014) and it is described as 'visual intelligence' (Findeli 2001, p. 11) to have a wider view of the design field and education, from focus on product design to design of systems that cares more about the wholeness of the society.

My background and education is in interior textile design, surface and print design. When I started teaching at Linnaeus University 2009 I was quite confused about the courses direction; that we did not teach deep knowledge in a limited amount of fields instead of, as I saw it, superficial knowledge in many fields. I was concerned that we did not give the students a proper education with enough knowledge. Now when I have worked at Linnaeus University for some years I realise that my worries were not founded; it was my traditional design background that limited my thinking. However, I can see that we put a lot of pressure on the students when we present so much different kind of knowledge to them in a short space of time. The students are focused, targeted and work hard, but it seems like they are stressed and don't have time for experimenting, reflection and having fun. Sometimes I think that the students do not even have time to understand how to apply their knowledge or to find out what design areas they are interested in. A danger with new disciplinary education can also be a larger focus on the theoretical parts of the curriculum compared to practical skills. The students read more and do less. At the same time several scholars have emphasised the importance of learning-by-doing as a pedagogical method. *"To know things you have to grow into them, and let them grow in you, so that they become a part of who you are,"* (Ingold 2013, p. 1). By practically doing something the student will be better at learning and understanding contexts (Ingold 2013, p. 6f).

Handicraft/ 'pysssel'

In my research I have explored handicraft to see if that activity, and the handcrafty way of thinking, can be part of contributing to the wholeness of an education, with the aim to get better educated design students.

In this text, and in my research, I use the Swedish word 'pysssel' for this handcrafty way of producing artefacts. There is no exact English translation for 'pysssel' but the word means doing a 'crafty' activity, like for example Christmas crafting. When you think of 'pysssel' you often think of a practical, uncomplicated activity, you make or build something. Often someone show you how to do, or you find a tutorial on internet, in a book or a magazine. It is uncomplicated, you just start. If it is fun you can continue and change what you make in an easy way to make it more personal, not a copy of someone else's work. Often you can put in as much or as little creativity as you like, depending on what kind of result you want to receive and the purpose you have with the 'pysssel' session, as well as your ability, and willingness to take risks. The material used is often cheap, such as paper or simple textiles. 'Pysssel' is often an activity for children in for example preschool, but can also be more complex like origami, crocheting or stamp carving. 'Pysssel' also have another, more commercial, side like scrapbooking or making perfect seasonal

decorations. You can buy kit from craft companies and put them together in a predetermined way. It is not the last mentioned, the more commercial way, of 'pyssel' I am using in my research.

The way I want to use 'pyssel' has been described in a good way *"To 'pyssla' alone is very meditative and to 'pyssla' together is a good way of socialising. You make and improve and help each other and find new ideas, talk and have fun. 'Pyssel' can also be political; to create something is to get your voice heard regardless of what you want to say. By choosing what material you use you can reduce the waste of resource"*. (Klüft Frimark et al 2012, p. 9, original in Swedish, English translation by the author).

In society the views on 'pyssel' have changed somewhat during the last years and it has become more accepted. What is called "pyssel" and where you find 'pyssel' have expanded. The maker-movement has been established and you find maker-spaces in many places (Anderson 2013). Craft bars with the aim to come together, learn from each other and make something have become common and a popular way to socialise. Craftivism is nowadays an established activity and movement (Corbett 2013; Arnqvist Engström 2014; Greer 2014). Commonly for those activities is not the quest for perfect technical skills, they are more driven by ideas, the love of making, learning from each other and sometimes to make a difference in society through material culture. Even though the maker movement sometimes is more focused on sharing technical equipment and 'pyssel' is more of a low tech activity, I think both activities are example of the same 'movement'.

'Pyssel' is both loved and hated. Because many of us remember it as a messy, childish activity it is often seen as an activity with low status for amateurs and sometimes described as a waste of time. Among the 'pyssel' lovers (and I am one of them), it is more seen as a creative, prestige less, relaxing and almost addictive activity filled with lots of joy. 'Pyssel' does not usually have a given place in the design context, if it is mentioned it is more likely described in a derogative way than something creative and useful.

Looking at 'pyssel' from a wider perspective, I think it is an activity with a lot of potential for design education. I want to explore if we can use it, and as a starting point I have defined 'pyssel'/ handicraft as: an immersive activity that enables creativity, playfulness, lack of prestige and gives the possibility of visual expression and improves practical and artistic skills.

I base my research on my hypothesis: I believe that design education, design students and the broad design field can learn a lot from the ease, unstrained and playfulness you find in handicraft. From there I have researched if my statement is viable by letting design students try and explore handicraft together. We research the possibility and potential handicraft has and what impact handicraft can have on the creative process. So far we have had 4 workshops where we have explored 3 different craft techniques.

I have choose to call my research subject 'pyssel', even though the status is low and some people can be provoked by using it in a university context, but it is the best way to explain this activity. It should not be mixed up with craft and the deep technical skills associated with that. This is a more easy going activity meant to awaken students' interest for the practical and playful field design can be.

The workshops

As a base for my research I have organised and facilitated 'pyssel' sessions for design students. So far I have completed two notebook making workshops, one stamp carving workshop and one garland making workshop.

Before I designed the content in the workshops I analysed the workshops I usually facilitate for students (for example in screen printing). I made several mind maps and the one that was most useful was one where I put up worst case scenarios and tried to solve the problems that can appear. Another mind map showed what good impact I hope 'pyssel' can have in a design education and the synergy effects that hopefully will emerge if the students engaged in more 'pyssel' and applied a more handicrafty way of thinking.

What differs most from ordinary workshops is that the 'pyssel' workshops are short in time, the instructions have to be quite precise and the subject or theme limited so that the students will be able to just sit down and start working with something they can finish two hours later. This is not the way we usually teach the students, but it is a part of the project, to try hands on working, where sketching and analyzing



Illustration of my desired outcome if students join 'pyssel' workshops

is done during and after the work, not before. 'Make it your own' is something often heard in the handicraft world and it means that you have an instruction as a base, but change it so you get something more unique and not just a copy of someone else work. 'Make it your own' have been one of my key words, when planning the workshops. When choosing themes it was important to let the students try techniques that they will have use for as designers, and that we do not teach at the Department of Design, Linnaeus University.

All of the workshops were optional for the students to participate in and took place in the evening. The students had to sign up in advance. Groups were small 6-12 students in each workshop, so everyone could have their voice heard during the conversations, yet there would be enough students for some diversity. I considered conversation about handicraft during the practical work would be important way to get to know the students opinions. Students also had to answer a survey in the end of each 'pyssel' session with questions about their handicraft habits, favorite handicraft techniques and projects, where they find inspiration etc. This has been valuable to analyse afterwards to know how to continue the work.

Conclusions from the workshops so far

The project is still on-going, but some preliminary conclusions can be made. It has been easy to get students to sign up for the workshops which filled up quickly. The students attending the workshops (a total of 35 students) wrote in the survey that they like to handicraft, but often were too tired or did not have time to engage in it, but wanted to handicraft more often. A group of students that I was a little bit surprised to meet was the ones who wish to be 'handy', but had not tried any practical activities before and have not found an entrance to the practical, material world. They were often used to work digitally. This group was often not of Swedish origin. It is not surprising that students of Swedish origin were familiar with handicraft, since in Sweden we have a long tradition of teaching craft in elementary school. I want to continue exploring the situation for the students of other origins.

It was nice to see that the students made much in a short time and the result was often of surprisingly high quality. The workshops was often a creative explosion, it seemed like the students had lots of held back energy. It was also easy for them to "make it your own" and most of them made original things to a high standard of making. The workshops also become a way to socialise. Usually our students work much in their cohort, now they got to know other students and the informal way handicraft workshops operate seemed to make socialising easy.

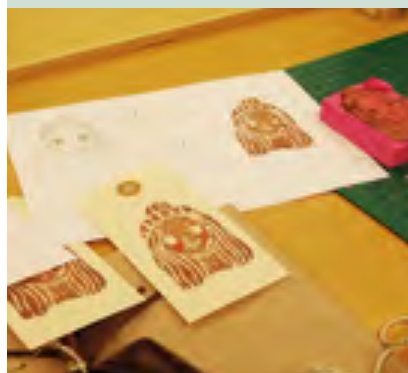
The key realisation so far is that students want to continue work practically and that they can easily see and communicate the benefits of being 'handy' and knowing more about materials, craft techniques and how to apply this knowledge in their studies in model building, sketching, design processes or presentations, for example several students mentioned "the more knowledge you have, the better design you do". They want to try new techniques and they want to attend new workshops. "Can't we do this every week?" was a recurrent statement. So the first step to overcome, taking the time to start, seems to be easy for these students and I now know from the survey and talking with students that at least half of all our students want to continue working with 'pyssel'. While I have yet to prove more long-term effects, and how 'pyssel' could be integrated in the design curriculum, I consider this a good basis for continuous explorations.

In the survey the students listed their favourite 'pyssel' activities and most of them where anticipated, like sewing, origami, paper cutting and crocheting. More unexpected was that students listed baking, digital handicrafting (illustrations was mentioned) and different art techniques like collage and painting as 'pyssel'. Some of the students seem to master one or more handicrafty techniques, and it may be a good idea that these students teach other. That would be something they really have use for as designers, to be used to lead groups and teach and make instructions easy to follow.

Note book workshop



Stamp carving workshop



Garland workshop



Can handicraft be a bridge between the digital and the analog, material worlds?

In a design education many subjects need to be taught; theoretical and practical, analog and digital, visual and textual. In the new disciplinary educations, both traditional and new knowledge is needed. The education is meant to work in many fields and basic knowledge in many areas is necessary. It is easy to see that for some students it will be tricky to learn and apply everything or know how to choose from everything offered. The more digital the society has become, the more we teach students different digital techniques of course. The students also have their own gate into the digital world; they have lived most of their life in it. Many things in the digital world are good and help us both as designers and as human beings. Often the digital route is faster than the analog. But as a designer you must know what's needed about the field you design in and if you design products you must know how they look, feel etc. in reality. It is important to know how different materials work, what size and scale really look like, how your designed product feels like in use, to become a really good, empathic designer. It is, for example, a big difference to test a 3D-printed cup in plastic compared with a handmade in clay. But for a student used to working digitally all their life it can be a little bit scary to make the leap to the analog, material world, especially if the student thinks it is a time consuming process, that he or she cannot see the advantages of or someone else can do that part. For that student I hope the step will be smaller if he or she through some handicraft sessions tries some different analog techniques in an easy way. If you, for example, see how easily you can carve some stamps and try pattern repeating or make interested looking surfaces for pattern design much faster through analog than digitally, hopefully the student becomes curious and wants to try other materials and use more professional equipment.

My hope is that the student can see the advantages with analog work, and experience the joy of it, if the entrance into practical work is uncomplicated and playful. To teach advanced craft skills in the field of new disciplinary educations is maybe not needed, but we need to give the students enough tools to work analog. If a designer does not know how the design works, looks and feels in reality, it is not design, it is just giving shape to products. But maybe it is better to think of other ways to teaching practical based knowledge in this kind of educations and find new gates for students to interest them in the practical field. I want to clarify that we of course teach craft in different ways at Linnaeus University's design educations and we have several workshop areas. If a student is interested he or she can get much more than basic knowledge from, for example, individual tutoring, by attending voluntary courses and not least by using our different workshops.

But time is a big issue. Practical work is often mentioned as something taking time to do and learn. We have to accept that some knowledge needs to be learnt by doing to be understandable, and that can take time (Wallin Weihe 2009, p. 35). I think all of us also have heard that learning something properly takes 10 000 hours (Sennett 2008, p. 20). The students have heard it and it is not helpful when trying to motivate them to learn new things. But to try something and learn enough to use it in, for example, the sketch process or building models does not take 10 000 hours, all those hours is if you want to reach master skills. The 10 000 needed hours practice is a discussed subject. Richard Sennett writes that society does not support or reward someone getting that specialist competence (Sennett 2008, p. 21). Josh Kaufman discusses the problem about putting in 10 000 hours and suggests instead of learning something deep, spending your time learning fast. In his description of ten principles of rapid skill acquisition, you first have to be really interested in learning a specific subject, analysing what you need to learn and then start practicing the skill intensively, but for a quite short time (Kaufman 2013, p. 14f). This is maybe not the whole solution for not having time to learn deep craft knowledge, but when a student's interest is awakened for a specific field it can work as inspiration and result in individual strategies for learning. I think that 'learning by yourself' and finding strategies for learning and understanding what needs to be learnt can be an important tool, not at least in the working life.

That something takes time is not always bad. Engaging in a slow and maybe repetitive activity offers time to reflect. It can be good for students to experience that both fast and slow methods are needed in creative processes and the outcome of the work often becomes better if you mix slow and fast processes, in the same way as both theoretical and practical skills are needed to make a project as good as possible. If we only rely on fast methods the creativity can become 'manic creativity' and the result of a project will be quite random (Gude 2013, p. 39). To always work effectively, purposefully and quickly without time for reflection is not a sustainable way to work or study. Richard Sennett says "*Making is thinking*" (Sennett 2008, p. ix) and I think it would be valuable for many people to try that way of thinking.

But is it a little bit of a prejudice that practical work always takes much more time to do and learn compared with other knowledges? Everything done properly takes time; to manage and use an advanced computer program takes a lot of time, reading and writing takes time, learning to sketch takes time. What does not take time is doing something carelessly, which is not what we want students to do in any area. To apply and use craft techniques often takes long time and to make extensive projects in this way is very seldom possible within a new disciplinary education. However, to learn enough skills for use, for example, in a sketch process, does not have to be very time consuming. The problem is perhaps that we have put in too much content in our educations?

Continuation

I will continue to research what kind of role handicraft should and can have in a design education, but I do not know exactly how. I want to make more workshops, preferably with a group of students that make workshops together and teach each other, and a seminar about making in a design context. I also want to study and work more with pedagogical methods for teaching practice based knowledge and analyse if teaching in different ways would give a better outcome. I would like to follow up the effect engaging with 'pyssel' has on students, during their studies and afterwards. What kind of designer does this foster?

If introducing 'pyssel' in this way, does have a positive impact on students' learning, it would be important to involve as many colleagues as possible in the discussion. I think we need to both discuss what subjects we teach and what kind of pedagogy we use. Can more subjects be taught in this playful way with the aim to get the students more deeply interested and get them to learn by curiosity and out of joy, instead of just putting a lot of pressure on them? I think that if we set aside our thoughts about status of different subjects and how they should be taught, and more focus on the students and what kind of knowledge they need, the outcome would be students with better self-confidence making better substantiated and more relevant work.

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connecting with local resource flows: flax fibre composites

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Abstract

The agricultural basis of many fibres means that textile and fibre-based materials and products are intimately connected, ecologically and culturally, with specific places; products that employ natural fibres often have a distinctiveness associated with their provenance. A concern in this area is the negative impact that the overuse of certain fibres, such as cotton, can have on the places in which they are cultivated. One approach to mitigating overuse is to engage in diversification of resources. Efforts have been made within industry to explore alternatives to cotton, such as flax.

The paper presents a practice-led project that creatively explored the use of flax fibres, cultivated locally in the Midlands UK, towards new material concepts. The aim was to encourage links between designers and fibre manufacturers, fostering a deeper connection with local resource flows. The project drew on craft-practice and materials science to develop composite materials that have both functional capability and an aesthetic connection with place. Motifs associated with textile manufacturing that is historically connected with the region, such as Nottinghamshire lace, were appropriated within the materials. The paper provides technical and theoretical background; gives an overview of methodology; and presents several new materials resulting from the work.

Keywords: sustainable design, textiles, fibre, materials, local

connecting with local resource flows: flax fibre composites

Introduction

Sustainability is now widely accepted as a central concern in regard to the design and manufacture of material goods. The production of textiles and fibre materials is no exception. Three out of the four broad categories of fibre have a natural basis: i) natural fibres processed from plant and animal sources, for example cotton, silk and wool; ii) artificial fibres made from regenerating natural plant cellulose such as viscose and bamboo; and iii) bio-synthetics made from synthesised natural polymers such as corn fibre and soya fibre. The agricultural basis of these resources means that textile and fibre-based products are intimately connected, ecologically and culturally, with specific places; products that employ natural fibres often have a distinctiveness associated with their provenance. It is proposed here that this association the place could provide a key to sustainable textile, and more broadly materials, design.

The paper presents a practice-led project that creatively explored the use of flax fibres, cultivated locally in the Midlands UK, towards new material concepts. The aim was to encourage links between designers and fibre manufacturers, fostering a deeper connection with local resource flows. The project drew on craft-practice and materials science to develop composite materials that have both functional capability and an aesthetic connection with place. Motifs associated with textile manufacturing that is historically connected with the region, such as Nottinghamshire lace, were appropriated within the materials.

The paper begins by providing some background on the challenges and problems regarding fibre use in textile and materials' design and goes on to discuss current thinking about design approaches that might be more sustainable. The practice-led work is then introduced and a specific case-study is documented. Finally the creative outcomes of the work to date are presented and the paper concludes with a discussion of future work.

Background

Fibre and place

A concern in this area of fibre production, and subsequent textile and materials manufacture, is the negative impact that the overuse of certain fibres can have on the places in which they are cultivated. A key example here is the over farming of cotton. Kate Fletcher describes that the land dedicated to growing cotton has not changed significantly for the last 80 years but that in the same time the output has tripled (2008). This is a result of increased consumer demand and has been facilitated by the introduction of large quantities of fertilizers and pesticides (Myers 1999: 8 in Fletcher 2008: 8). The consequences of such practices have resulted in well-documented environmental and social impacts including water pollution, loss of biodiversity and critical health problems for cotton workers due to exposure to toxic pesticides (Fletcher 2008: 9). One approach to mitigating the effects of such overuse is to engage in diversification of resources towards substitute or alternative fibres. Recent efforts have been made to advance and promote the use of alternative fibres such as bast-fibres, alleviating the demand for cotton and thus the agricultural and social stresses placed on certain geographic regions.

Bast-fibres, such as, nettle, hemp, flax, ramie, kenaf and jute are found in bundles within the outer bark of the stems of plants. These fibres can find application across a broad product spectrum including fashion, home furnishings and automotives. Their cultivation and use can offer a range of environmental benefits including: reduced water use, ability to absorb harmful excess fertilizers; replenishment of soil; reduced need for pesticides; and perhaps most pertinent here the possibility for cultivation across a broad range of geographic regions, including the UK.

The last five to ten years have seen a resurgence of nettle and flax farming in the UK, underpinned by research conducted by Textile Engineering and Materials (TEAM) research group at De Montfort University (DMU) in Leicester, through a Defra funded project called 'Sustainable Technology in Nettle Growing' (STING), which began in 2004. The project was a collaborative venture between TEAM, two further research partners and five full growing partners (Defra, 2004). Some of the objectives of the project were to investigate the characteristics of selected UK wild types and European high-fibre clones of *U. dioica*, to ascertain potential for UK fibre production and to evaluate the practical outcomes with independent industrial partners (ibid). One of the commercial results of the project was the development of a fabric called StingPLUS by Camira Fabrics, a UK based textile manufacturer, within their Second Nature collection (cms.esi.info/Media/documents/Camira_sting_ML.pdf, 2016). Blended with wool, the fabric provides unrivalled technical properties, such as flame retardancy alongside a design aesthetic that connects with the provenance of the raw materials employed in its construction. The aesthetic is intended to evoke a sense of the English countryside – “imagine dandelion clocks billowing on the wind, acid green acorns behind russet autumn leaves, granite stone walls, heavy laden elderberry and bilberry bushes” (cms.esi.info/Media/documents/Camira_sting_ML.pdf, 2016).

The project and resulting textile outcomes, suggest that the use of locally cultivated fibres presents opportunities for sustainable design. What is of interest in this paper is the significance of local fibre production within our current understanding of design for sustainability.

Design for sustainability: the significance of 'local'

Design for Sustainability can be understood as the intention to design products, the built environment and services in line with the widely accepted three pillars framework of sustainable development in which social, economic and environmental concerns are considered equally in addressing sustainability agendas. Recent discourse has, however, highlighted the need to consider 'culture' as a potential fourth pillar (Hawkes 2001). Understood as the means by which society forms and communicates its values, meaning and purpose, culture can be seen as fundamental to sustainability, being a determinant of patterns of human activity (ibid in Kane and Philpott 2015: 236). Tim Dant (1999) places the production and consumption of material goods, 'things' at the centre of cultural and social development. He presents the idea that consumption 'is the very arena in which culture is fought over' (Douglas and Isherwood in Dant 1999: 24) but notes that production is put before consumption in understanding 'the meanings of culture' (Dant 1999: 23). Such discussions point to the significance of how and what we design and manufacture in shaping cultural and social frameworks. It prompts a fuller understanding of how designed objects, as functional and signifying objects, communicate social and cultural values through their form, function and use. As such, design can be seen as critical to deep sustainable change.

Bill McKibben writes that, 'first world economies must become less interested in growth and more locally rooted' (2007: 196) and Fletcher writes that being locally rooted results in a society which 'reflects the ideas, skills and resource flows of a local place and an aesthetic agenda... that grows from the ground up' (2008: 140), resulting in deep benefits in terms of economic resilience, cultural and aesthetic distinctiveness and, connectedness (ibid 140 – 149). She suggests that a local focus develops 'creativity as we inventively respond to problems with the resources and expertise that is to hand' (ibid 40). Fletcher goes on to highlight McDonough and Braungart's (2002 in Fletcher 2008: 141) assertion that the 'best' products are those with a human and material engagement with place. Proposed in the practice presented later in the paper is the idea that the ability to achieve such a sense of engagement within a designed product, specifically textiles and materials, can perhaps be best realised through considering a 'craft approach' to design.

Notions of human and material engagement are central to articulations and discussions of craft. In exploring the distinctiveness of craft alongside industrial design, Helen Rees (1997: 120), suggests that the attractiveness of craft lies in its explicit identification with values of social continuity and personal creativity. This is perhaps facilitated in part, as Rees (1997 122-123) alludes, by the transparency of the craft object's origination. Resulting, she notes in products that 'we can both admire and understand'; essentially, that we can engage with. Similarly, Howard Risatti's (2007 60-69), discussion of nature and the origin of craft objects implies such engagement through locating this 'understanding' in the very roots of craft practice. These roots, he suggests, lie in human responses to physiological need that prompt a certain universality to the way in which material, form and technique come together to form a craft object. Whilst we recognise and understand craft objects universally in relation to their function in meeting a (physiological) need they are often, as Risatti points out, culturally distinctive in terms of place and time of origination. Thus suggesting that a craft approach to materials design may engender a sense of place in the object within which they are applied (Kane et al 2012).

To explore these ideas further, the author began to develop a practice-led project which aimed to connect with local flax cultivation towards the development of textile and material concepts that are environmentally sound and engender a sense of place. The following sections introduce the project and a specific study into Flax and Poly-lactic acid composites.

Case study: connecting with local resource flows through design practice flows

My recent and current practice-led research revolves around the exploration of new textile and materials construction and surface patterning techniques. Within this my interests include nonwoven construction processes including needle punching and thermal bonding, weaving, laser cutting, fabric etching techniques and digital manipulation of imagery. Over recent years, the need for sustainable textile processes and products has become a central concern within what I do and has expanded to considering materials more broadly. This is addressed through the use of resources, processes and the theoretical underpinning of my practice. Over the last five years, my work has begun to consider the idea of local production and the communication of a 'local narrative' within textiles and materials.

My approach to designing and making acknowledges the importance of a 'craft approach' to the investigation of new and industrial technologies. This approach emphasises: personal interaction with materials and processes; the recognition of making as a fundamental method within the work; valuing the intimate knowledge of materials, tools and processes gained through practical interaction; and considering end applications. Exploring the

significance of a 'craft approach' to production in shaping cultural and social frameworks is a developing strand within my work. And in particular, developing a fuller understanding of how textiles and materials as components of both functional and signifying products can communicate social and cultural values through their form, function and use. To achieve both functional potential and meaning, an interdisciplinary methodology which combines a craft approach with materials science and textile engineering is important within the work. The following section reports on a study from 2012 to provide a case study of the practice.

Flax fibre composites – an interdisciplinary study

The study aimed to use flax fibre, cultivated in Leicestershire, and poly-lactic acid (PLA), which is bio-degradable, to develop nonwovens and to explore their design potential through surface patterning techniques. In order to explore the potential of PLA as a binder fibre within a nonwoven matrix, a collaboration with the Department of Materials at Loughborough University was established. As a result, the project has expanded to include compression-moulded materials and bio-plastics. In moving into this area the project has become located within what has been termed 'materials design', an emerging field that marries functional requirements of materials and design sensibility (Ballard, Bell and Rand 2006, Brownell 2006).

The objectives of the work were to:

- establish nonwoven and compression-moulded sampling procedures for flax/PLA composites
- test the resulting samples mechanically to identify material properties (leading to application potential)
- test the suitability of the materials for digital surface patterning (laser cutting)
- explore digital surface design potential

As alluded to, the study was interdisciplinary and rooted in notions of practice-led research. Central to the methodology was a 'craft approach' to materials design in combination materials science. Within this framework the following methods were employed: process exploration via sampling; materials testing and analysis; surface design development and experimentation.

Articulated reflection on periods of practical work, predominantly through discussion helped to direct and develop the work. Further detail on the technical work conducted is reported upon in 'The significance of craft in the development of sustainable materials design: localisation, technology and emotional durability' (Kane et al. 2012).

The study resulted in several new material concepts including laser cut bio-plastics (Figures 1 and 2), flax reinforced bio-plastics (Figures 3 and 4) with enhanced mechanical properties and compression-moulded flax and PLA nonwovens (Figure 5).

Figure 1: Laser cut bio-plastic, Faith Kane (2013)

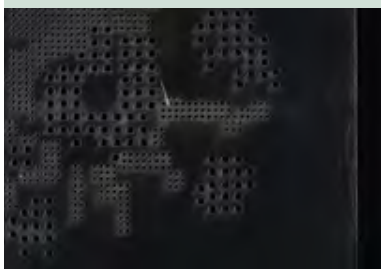


Figure 2: Laser cut bio-plastic, Faith Kane (2013)

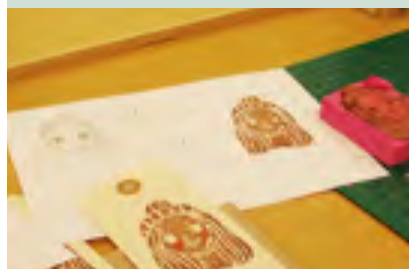


Figure 3: Flax reinforced bi-plastic, Faith Kane (2012)



Figure 4: Flax reinforced bi-plastic, Faith Kane (2012)



Figure 5: Compression moulded flax and PLA laser cut nonwoven, Faith Kane (2012)



Figure 6: Visual investigations into Nottingham lace, flax plants and digital processing

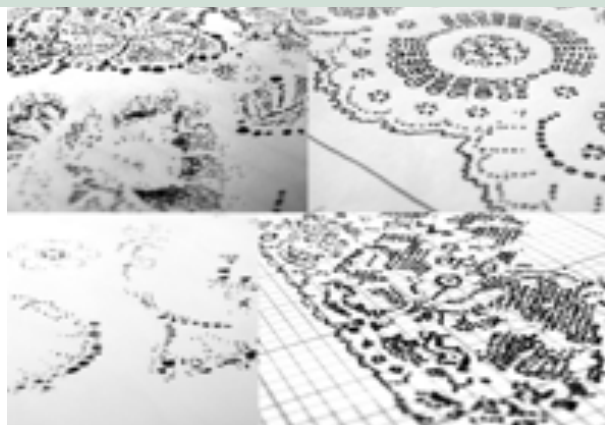


Figure 7: Visual investigations into Nottingham lace, flax plants and digital processing



In terms of surface design, the work has expanded to explore the notion of local motifs, intended to reflect aspects of local culture – resource flows, historical skill and manufacturing. To do this, visual investigations into flax plants and Nottinghamshire lace were undertaken (figure 6-7). The resulting surface designs are intended to reflect a visual convergence of these elements and also allude to the digital nature of the surface patterning techniques employed (i.e. laser cutting and marking). All the time trying to foster and capture a sense of engagement with the provenance of the materials – place, raw materials and production processes.

Practice outcomes

The practice discussed, encompassing the case-study presented, has resulted in creative practice leading to the realisation of several ‘works’ for exhibition over the last five years. These have included: ‘Local Narrative’ (Figure 8) exhibited in ‘Material Actions’ (Kane 2010); Esampleire exhibited in Ambience 11 (Kane 2011); ‘Notlace’ exhibited in ‘Textiles Research into Process/TRIP’ (Kane, 2011), ‘Sampler’ (Figure 9) exhibited in Talking Textiles (Kane 2013) and TRIP 2 (Kane 2015). The intention of the works again being to foster engagement with local culture – resource flows, historical skill and manufacturing.

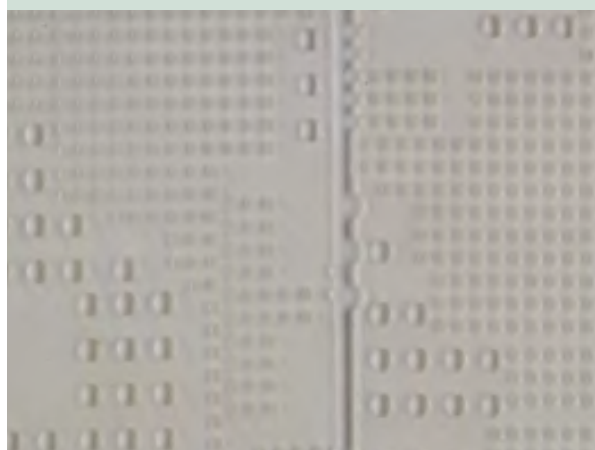
Conclusions and further work

The paper has presented a practice-led project that creatively explored the use of flax fibres, cultivated locally in the Midlands UK. The intention of the project, and the continuing practice, has been to encourage a deeper sense of connection with local resource flows towards the development of design for sustainability focusing on textile and materials design. Through the methods used the work has resulted, to date, in new material concepts and an emerging approach to fostering engagement with

Figure 8: ‘Local Narrative’ in Material Actions
Faith Kane (2010)



Figure 9. Detail of ‘Sampler’ in Talking Textiles,
Faith Kane (2013)



local resource flows, historical skill and manufacturing. Alongside this the underpinning aim was/is to encourage links between designers and fibre manufacturers, fostering a deeper connection with local resource flows. The project drew on craft-practice and materials science to develop composite materials that have both functional capability and an aesthetic connection with place. Motifs associated with textile manufacturing that is historically connected with the region, such as Nottinghamshire lace, were appropriated within the materials. The paper provides technical and theoretical background; gives an overview of methodology; and presents several new materials resulting from the work.

Further work is planned in regard to the development and application of the material concepts alongside the continuation of creative practice and theoretical development of the ideas presented. Essentially pursuing an engagement with place through materials design.

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the potential of rural crafts in promoting community empowerment through participatory design intervention. a case study of a project concerning huayao ethnic minority community

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Abstract

Finding solutions to the social issues in rural communities has aroused strong academic interest of varied disciplines, including the design field. This paper seeks to explore the potential of rural crafts in promoting community empowerment through participatory design intervention based on a case study of a project concerning Huayao Ethnic Minority community in China. Firstly, the research background was explained including the relevant theories of the prestigious scholars in both western countries and East Asia, and the research methodology. Then, the knowledge of local assets was gained mainly through field survey. Next, the technique tiaohua, one type of local cross-stitching, was chosen for participatory design experiment. The participatory design process based on the technique of tiaohua is a reiterative cycle and each cycle includes five stages: Knowledge Acquisition, Concept Generation, Preliminary Prototyping, Motif Design and Final Prototyping. The authors went further to explain the co-design process through an analysis of the design works. Finally, the authors summarised the paradigm of utilising rural crafts for promoting community empowerment through participatory design intervention. Moreover, the limitations of this paper were pointed out and future research plans were proposed.

Keywords: ethnic minority, rural crafts, community empowerment, participatory design

the potential of rural crafts in promoting community empowerment through participatory design intervention

a case study of a project concerning huayao ethnic minority community

1. Background

1.1. Theoretical framework

Owing to modernisation, traditional rural communities across the globe have been declining in varying periods and degrees, such as the withering agricultural industry, the outflow of rural populations to urban cities, the vanishing traditional customs, the weakened community ties, the separation of migrant peasant workers with their children, and the loss of pride in hometown. Generally, developed countries have seen this phenomenon earlier than developing countries. In Asia, Japan has encountered these rural problems since the 1970s, while China has seen them since the beginning of the 21st century during its fast pace of modernisation.

Finding the solutions to the social issues in rural communities has aroused strong academic interest of varied disciplines, including the design field. As Mulgan (2014) indicates, “some of the momentum [of the design world] originates in firms offering distinctive techniques: IDEO and Frog, Thinkpublic and Engine... alongside some public bodies, such as SITRA in Finland with its Helsinki Design Lab, the Design Council in the UK and Region 27 in France, or umbrella organisations like the Design Management Initiative and collaborative programmes like DESIS”.

Scholars in the design field have also long been paying attention to community issues. In the western world, after Papanek and other designers such as Packard and Bonsiepe first suggested the concept of design for sustainability in the 1960s, people like Manzini and Ryan urged to make radical changes in the 1990s. This trend has continued and gained momentum in our time as design for sustainability became more widespread. Especially recently, the relationship between participatory design (or co-design) and social innovation has been widely discussed. Transformation design was one of the early terms used to express the need for a new design practice to address social problems (Burns et al., 2006). Burns contends that in order to deliver long lasting changes, designers should apply participatory techniques and collaborate with other disciplines to build capacity and redefine what design outputs can be in that context. Manzini (2011, pp. 199-215) examines the need for ‘large-scale, sustainable changes’, and adopts participatory design as ‘an open participated process’. Examples of such design initiatives would include the development of support systems for sensitive groups (e.g. Vanstone & Winhall, 2006; Tan & Szebeko, 2009) or capacity building projects with local government to facilitate public service provision (e.g. Cottam & Leadbeater, 2004; McManus & Piet, 2011). Melonio (2013) also contends that participatory approach is beneficial for ‘the empowerment of marginalised groups’.

‘Community empowerment’ refers to the process of enabling community members to better their lives based on local resources with the help of outside organisations or individuals; it is imperative that local community get fully involved in this process and that they have predominant control over their lives. In Asia, community empowerment movements have been prospering in Japan since the 1970s when its rural communities gradually collapsed owing to modernisation, while similar movements in Taiwan have been launched since the 1990s swayed by Japan. Besides the efforts of those in other disciplines, scholars from the design world have contributed enormously to community empowerment movements in Japan. Prof. Miyazaki Kiyoshi from Chiba University Japan is the representative who has conducted several successful community empowerment projects through design intervention since the beginning of the 1980s. Miyazaki (1996, pp. 27-68) contends that community development should be based on an in-depth knowledge of local history, lifestyles and assets (he calls them ‘treasures’) and in this process designers should play the role of facilitator while local residents should be the main players. He insists that ‘there is no place that is endowed with nothing’, every place is full of unique ‘treasures’ (both tangible and intangible) of which local residents should be proud, and local crafts can be significant assets for community empowerment. Villari (2005) and Zurlo (2003) have also indicated similarly, that every place or territory itself is considered to have a peculiar value, on which design intervention strategically leverages; in literature this concept is defined as ‘territorial capital’.

1.2. Research objective

Following Japan and China's Taiwan, as previously mentioned, Mainland China has entered its rapid pace of urbanisation since the beginning of the 2000s, with its rural communities suffering from the aforementioned social issues. The targeted area of this research-Longhui, located in southwestern Hunan Province, China, is one of the main places of residence for Huayao Ethnic minority groups. Longhui typifies many Chinese rural areas that are undergoing drastic changes nowadays, used to be an isolated impoverished place and now has gradually been modernised and is open to the outside world. Chinese national governments have issued series of policies for the poverty alleviation in this region and Hunan University has been designated as the supporting partner of Longhui City to help combat poverty there.

This research is based on the outputs of New channel Design and Social Innovation Summer Workshop over the period from 14 July to 28 July 2015, which is part of the activity series of a national project named *Establishing the Platform for Cultural Product Design and Commercialisation based on Huayao Ethnic Minority Culture*, lasting from 2014-2016. This summer workshop aims to explore approaches to promoting local industries based on indigenous resources through design intervention. Given the short period of the 2-week-long summer workshop, this paper seeks to rediscover the contemporary value of rural crafts, which have gradually become divorced from human life, and explore the potential of rural crafts in promoting community empowerment through participatory design intervention. Participatory design, also called co-design, is a design approach attempting to actively involve all stakeholders in the design process to help ensure the result meets their needs and is usable. In this paper, co-design refers to the collaboration between designers and local craftspeople to create innovative marketable products based on local crafts.

1.3. Methodology

The workshop participants formed a multinational, multidisciplinary team with 38 members altogether, including teachers and students from Hunan University, The Hong Kong Polytechnic University and Queen Mary University of London (21), administration staff from China-Italy Innovative Design Centre (2), researchers and professional designers from Korea (3), professional designers from France and Italy working in Hermès (3), one designer from Iran (1) and local craftspeople (8). Most of the team members were designers from different fields: industrial or hand-made product design, visual communication design, architecture design, textile design, interactive design, and so forth. The team was divided into two groups: the design team and the ethnographic research (field survey) group. The two groups worked separately and exchanged their findings on a regular basis.

The prerequisite for this project to yield a desirable result is to have a good understanding of local lifestyle and resources. Although a few members had gained a preliminary understanding of local culture through literature review, Huayao culture had been totally new to most of the team members before the workshop. Generally, it would take years or even a life-long time for sociologists to gain a thorough knowledge of a certain culture through field survey. Given the limited time of the workshop, we managed to quickly grasp the essence of Huayao culture by interviewing typical individuals in different age groups. Eighteen individuals were interviewed within one week, including retired and incumbent governmental officials of different levels, local ladies skilled in *tiaohua* (cross-stitching), local craftsmen skilled in making bark paper, local residents skilled in singing folk songs, primary school and junior middle school teachers, local residents with entrepreneurial spirit, and so forth.

Field survey approaches included observation, interviews and symposiums. Two symposiums were held for the exchange of ideas concerning local development drawing on indigenous resources during the workshop, in which various stakeholders participated, including the aforementioned typical individuals. In the symposiums, our team presented the ethnographic findings of the field survey and the co-designed works; local residents gave comments on the presentation and expressed their thoughts on local development. Symposiums provided rare opportunities for all the stakeholders to communicate with each other; during the process, the awareness of regional identity among local residents and community ties were also enhanced. Meanwhile, effective as it was, our method of interviewing typical individuals for a quick acquaintance with local culture had obvious shortcomings: sometimes we got biased, even wrong knowledge, which could be revised by the locals in the symposiums.

2. Findings of the field survey

2.1. Local assets

Local 'assets' or 'treasures' indicate a whole set of lifestyles and resources, both tangible and intangible, including natural resources, crafts, buildings and landscapes, customs and festivals, food, traditional wisdoms, community cohesion, organisational structure and so forth. Our knowledge of local assets came from two sources: literature review and field survey. By interviewing local residents, we got to know their awareness of local identity;

by interviewing the team members, we could perceive the outsiders' recognition of local features. Despite minor differences, almost all the stakeholders had the same perception of local characteristics. The local assets could be summarised as follows:

Table 1: Major assets of Longhui

	Crafts					Natural Environment	Agricultural Outputs	Customs	Food
Intangible	Tiaohua (Local cross stitching)	Carpentry	Paper-making from the tree of Xuehuapi	Bamboo weaving	Making new year painting	Fresh air	The techniques of processing honeysuckle flower	Marriage ceremonies; folk songs	The technique of making smoked food
Tangible	Women's costumes	Wooden buildings, furniture	Bark Paper, the tree of Xuehuapi, paper-making tools	Daily items, e.g. baskets	New year painting, bamboo paper, wooden modir's for printing	Big rocks, canyons, terraces, timbers	Honeysuckle flower, healthy rice rich in selenium	Marriage costumes	Zhuxuewanu, Made from pig blood, bean curd, leaves and meat

2.2. Findings about local crafts

The ethnographic group recorded the survey data concerning local crafts by videos, photos and texts, including the technique of *tiaohua*, carpentry, making bark paper from the tree of *Xuehuapi*, bamboo weaving as well as making new-year painting. These first-hand materials are of great value in preserving local culture given the fact that the skills and ideas were mainly transmitted orally through generations. The original knowledge concerning local crafts obtained from field survey is summarised as follows:

Tiaohua

Huayao ethnic minority group is recognised for the flowery costumes of local females (Figure 1). Local skirts, mainly in black and white, are made by the technique of *tiaohua*, one type of cross-stitching, which is the most recognised crafts in this region.

Figure 1: The typical costume for Huayao females



In the past, *tiaohua* was fairly, if not the most, significant criterion to assess the ability and virtue of Huayao females. All of them would learn *tiaohua* when they reached the age of 7 or 8. They learnt the skill from mothers or other skilled females and it usually took a few years for them to master the skill. *Tiaohua* was a life long career for local females: besides agricultural labour, they spent almost all of their spare time in *tiaohua*. They preferred to do the work in groups so that they could communicate with each other about *tiaohua* skills. Those who were skilled in *tiaohua* would be treated as popular celebrities among local females. On average, it would take an individual one year to complete an exquisite *tiaohua* skirt and they had to prepare 5-6 skirts for their wedding. Local females would

also make *tiaohua* skirts for the marriage of their daughters. They were wholeheartedly dedicated to *tiaohua*; a local lady even told us that ‘she would reflect upon her *tiaohua* works lying in the bed before sleeping and could not fall into sleep if she was not satisfied with her works’. Local females store their *tiaohua* skirts into a big wooden case, called *nu er xiang*; even their families including husbands are not allowed to open the case.

The extraordinary part of *tiaohua* is that the females directly create motifs on fabrics using needle and thread without a preliminary sketch. The motifs generally have a symmetrical layout permeating the entire fabrics. There are four motif types: (1) animals, such as snakes, dragons, birds, tigers and lions; (2) plants commonly seen in this region, such as flowers, trees, and grass; (3) Huayao historical stories and figures; and (4) local customs, such as marriage ceremonies and youngsters singing folk songs in antiphonal style for wooing. The creative motifs are so impressive and unique that no students from modern art schools can even imitate them. For instance, an animal is often a combination of different animals (e.g. tiger and donkey); and inside the abdomen of the animal, there are other smaller animals (e.g. little tigers and birds) and flora (e.g. flowers, grass and leaves), which probably symbolises the wish for expecting a new life. Sometimes, grass will grow on human head. Meanwhile, it seems that their thoughts are sometimes swayed by outside experts. The interview shown in Table 2 demonstrates the ideation of local females.

Table 2: Interviews demonstrating the ideation of *tiaohua*

	Questions	Answers
1	Why do you put birds and plants in the abdomen of a tiger?	The tiger is pregnant. She is also hungry so she eats plants.
2	Within the same motif, why a bee is bigger than a frog?	A bee has wings. A bee with spreading wings is certainly bigger than a frog.
3	The bee is not depicted in a traditional way; It is just like a modern cartoon character. Why?	Yes, the inspiration comes from a bee in a TV cartoon. I stitch what I see.
4	Which do you prefer, the traditional exquisite motifs filling up fabrics, or modern simple motifs occupying only part of fabrics?	One expert told me that traditional motifs were much more valuable than modern motifs. So I also prefer the traditional ones.

Recently, local females have become increasingly reluctant to wear traditional costumes; those under the age of 40 prefer to wear modern clothes, which are stylish and convenient to wear. Young girls generally quit learning *tiaohua*. The Huayao elders are dissatisfied with current situation but can do nothing to change it. Meanwhile, precious traditional *tiaohua* works have been disappearing at a fast pace owing to the local custom that the *tiaohua* works of a deceased female will be put into her tomb together with her body. Fortunately, the value of *tiaohua* has been fully recognised and it was categorised as National Intangible Heritage in 2006. *Tiaohua* has even become a course in many of the primary schools in Longhui; local females skilled in *tiaohua* have been invited to teach in the schools.

Other crafts

We visited a local craftsman skilled in making bark paper from a widely planted tree in Luehui, called *xuehuapi*. The following points need to be noticed: (1) The tree at a height of less than 1 meter is of versatile uses: its bark can be used for paper making; the remaining stem without the bark can be used for propping fake flowers as a model due to its high elasticity. (2) The craftsman experimented to add leaves or flowers into the paper, making it more attractive. (3) Traditionally, the bark paper was used for recording genealogy, making lanterns, pasting wooden windows, and making firework fuses, while nowadays some artists and one noted museum in Beijing ordered this paper for painting and other high-end uses. (4) The paper is really durable and can last for more than 1000 years; it is also beautiful, especially when added with flora. Thus, it has great potential as a stylish material for contemporary products, such as lamps, and interior accessories. (5) The craftsman has a high requirement for product quality. For instance, when we wanted to buy a piece of paper with added leaves, which was a product of a failed experiment but still beautiful, he refused to sell in the excuse that it would destroy his reputation. (6) Although he received some orders from big organisations and famous artists, he had few other channels for selling his products.

We also visited two local factories manufacturing wooden products, one making furniture and the other making wooden bath tubes and barrels for foot bathing. The following points need special attention: (1) both of the two factories have a high level of mechanisation. (2) The factory for producing bathing products ranked No. 1 of its kind on the list of several online platforms, while the other factory making furniture had difficulty finding marketing channels. (3) Both of the two factories lacked innovation and they generally copied the products of other big companies.

(4) There were huge amounts of remaining wood materials during manufacturing. The two factories wanted to make full use of the materials to make small items, such as photo frames and toys. But they were lack of design talents as almost no one wanted to work in this remote place. (5) Most of their employees were local residents.

2.3. Crafts suitable for promoting community empowerment

In this paper, community empowerment means the process in which local craftspeople achieve economic survival and even prosperity through their cooperation with outside designers. Thus, through discussion, we summarise the criteria for choosing crafts suitable for promoting community empowerment: (1) the chosen crafts can be easily converted into products that meet contemporary needs. (2) The crafts must mainly be hand-made. (3) The craftspeople should be highly skilled and have plenty of time to ensure the high quality and adequate quantity of the new products; there should be enough skilled craftspeople to ensure an adequate production power.

Local industries for manufacturing wooden products had a high level of mechanisation. There were only a few craftsmen skilled in papermaking. New Year Painting could not easily be converted into modern products and also we had little knowledge about it given the limited time of the workshop. According to the criteria mentioned above, therefore, we finally chose *tiaohua* for the experiment of participatory design.

3. Participatory design based on *tiaohua*

3.1 The participatory design process

The participatory design process based on the technique of *tiaohua* is a reiterative cycle and each cycle includes five stages as shown in Figure 2. Within each cycle, the new results of each stage could influence the previous or next stages. The expertise of local craftspeople should be fully recognised and respected and they should play an integral role in the process of participatory design.

Phase I- knowledge acquisition

In the initial stage, the designers obtained knowledge of *tiaohua* through literature study and interviews with the craftswomen, concerning its techniques, motifs, uses and so forth. Meanwhile, the designers' knowledge about *tiaohua* in turn could influence the craftswomen. For instance, the designers' awareness of *tiaohua* features as outsiders could enable the local craftswomen to realise the uniqueness of *tiaohua* and thus apply these features to their designs. Both sides could benefit from this communication and a similar in-depth knowledge of *tiaohua* among the collaborators was the very foundation of the cooperation.

Phase II- concept generation

In this stage, the designers worked together to come up with as many ideas as possible through brainstorming without the craftswomen's participation. Those ideas that could give full play to the craftswomen's expertise were chosen for further development.

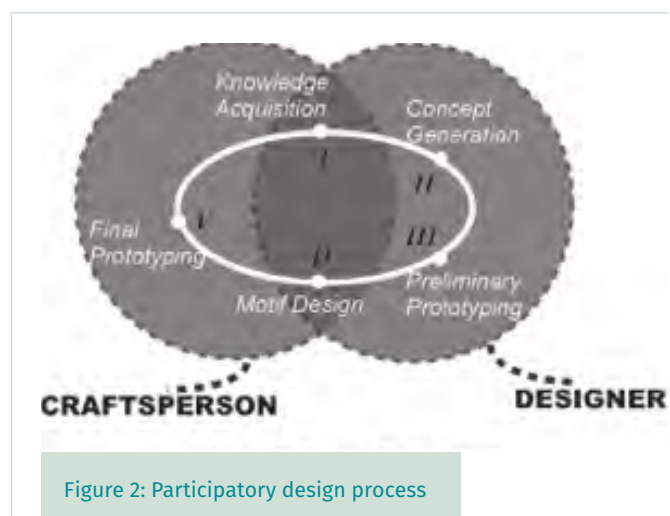


Figure 2: Participatory design process

Figure 3: Colour schemes



Phase III- preliminary prototyping

Since *tiaohua* is more about the creation of motifs, it was mainly the duty of the designers to complete the preliminary prototypes to which motifs were applied. The designers also determined the area where craftswomen should stitch motifs, and the colour schemes of the threads for *tiaohua* in the next phase (Figure 3).

Phase IV- motif design

In this phase, the craftswomen and designers communicated with each other repeatedly concerning the design of motifs. Sometimes, designers did not interfere with motif design, giving craftswomen full freedom to do it. Mostly, designers defined the motif types in a general way (e.g. floral or fauna motif) or a specific way (e.g. a specific animal or flower).

Practically, despite the extent of freedom they were given to motif creation, the craftswomen often had their own ideas in terms of the choice of thread colours, the motif contents and the place where the motifs were stitched.

The designers tried to use preliminary prototypes or sketches to facilitate the communication. The communication by prototypes is compatible with the craftswomen's way of operating, 'thinking with hands' (Richard, 2009). This type of low-tech prototyping provided a natural, convenient means of the communication between the designers and craftswomen.

Phase V- final prototyping

One cycle of design process was over when the craftswomen finished the final prototyping by adding *tiaohua* motifs. The most significant part of the design process was the creation of *tiaohua* motifs, which was mainly the contribution of local craftswomen.

3.2 Participatory design cases

There are huge market demands for digital product accessories today. It was the reason why we intended to design camera belts using *tiaohua* technique (Figure 4). In the stage of concept design, the designers came up with as many ideas as possible in the form of sketches and then chose a few ideas for preliminary prototyping. Next, preliminary prototypes and threads of various colours chosen by the designers were given to the local craftswomen for designing *tiaohua* motifs. The craftswomen were told the area of the belts where they should stitch motifs with the threads of determined colours; then they had full freedom to decide the motif design. Or sometimes we told them roughly what types of motifs we wanted (e.g. flora or fauna), the craftswomen had the freedom to decide the motif details (e.g. the specific types and styles of the flora or fauna). During this stage, the designers and local craftswomen communicated regularly and the craftswomen often made their own suggestions, such as the choice of the coloured threads, or the addition of more motifs. Admittedly, many designed motifs based on their own ideas were really bold, unique yet fascinating. Obviously, the expertise of local craftswomen was fully recognised and respected during the participatory design process.

Longhui is a mountainous region with fickle weather and large amounts of rain. Given the great potential of this region to become a recognised tourism spot, raincoat would be a popular product among future tourists. Thus, the designers and craftswomen cooperated to design a raincoat with *tiaohua* motifs (Figure 5). The concept was that the Terylene raincoat could be folded into a bag decorated with *tiaohua* motifs when not used. After completing the preliminary prototype of the Terylene raincoat, the designers provided the initial raincoat prototype, threads with chosen colours and a fabric bag to a craftswoman for further design. The craftswoman was asked to stitch the fabric bag with given coloured threads by *tiaohua* technique. The motifs were totally decided by her. She also decorated the zipper with a piece of fabric with *tiaohua* motifs in order to make the raincoat have a unified image. Next, we asked whether she could stitch on the shoulders of the raincoat and she replied that she had never stitched on Terylene material but intended to have a try. Finally she succeeded and it turned out the *tiaohua* motifs on Terylene were fascinating. The success of stitching motifs on Terylene inspired us to have more experiments on other materials afterwards, such as leather.

Figure 4: Co-designed camera straps

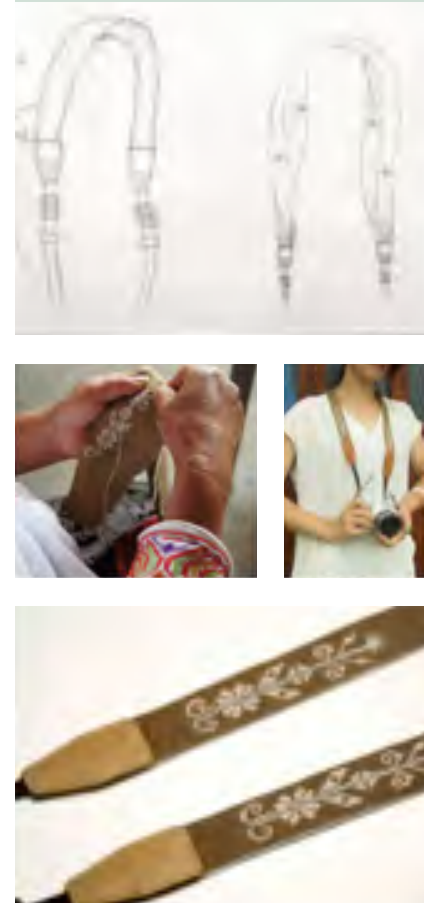


Figure 5: Co-designed raincoat (Designers: Luigi Boselli, Li Lingfang, Feng J.H., Feng T.M.)



Figure 6: A bamboo bag



Figure 7: Products made by braiding



The combination of different crafts could also generate innovative products. Designers from Hermès designed a bamboo bag with its surface covered by fabrics with the help of local craftsmen skilled in making bamboo works (Figure 6). In their design concept, they intended to invite local craftswomen to decorate the fabrics with *tiaohua* motifs. Although they failed to complete the work due to the tight schedule, this unfinished work showed the great potential of combining bamboo crafts and *tiaohua*. In this case, the *tiaohua* craftswomen could have played a very significant role in improving the design work if they had been involved in the participatory design process.

As mentioned earlier, almost every local female was skilled in braiding for costume decorations. Compared to *tiaohua*, which it usually takes years to master, braiding is much easier to learn. Out of curiosity, almost every designer mastered the skill of braiding under the instruction of local craftswomen. Thus, the designers spent a lot of time in Phase I (Knowledge Acquisition). Afterwards, the designers designed shoelaces by braiding (the middle picture in Figure 7). They also designed a product with a simple bamboo tool kit and coloured threads, which was aimed to teach customers to learn the braiding skill (the right picture in Figure 7). Customers could scan the QR code on the product package to get access to a video teaching this skill. In this case, designers completed the design work with low participation of local craftspeople; owing to the busy schedule, we seldom had time to experience a co-design process. In the future, however, design works made by braiding can be the outputs of a participatory design process, in which local craftswomen contribute their expertise in braiding and their unique sense of aesthetics in terms of colour schemes.

Follow-up activities after the workshop

Owing to the cooperation during the workshop, our designers have established deep bonds with local craftswomen, this lays a solid foundation for our future cooperation in promoting local industries based on indigenous crafts. When we left the village after the workshop, local residents, especially the craftswomen, sent us off dressed in the most formal local costumes with tears in eyes for the reluctance to separate, and firing fireworks.

After the workshop, our designers continued to co-work with local craftswomen, focusing on camera strap design. More categories have been developed, such as wrist straps, and wider straps that customers can wear around the neck like scarves. More experiments have been conducted concerning the possible medium for *tiaohua*, such as leather. Meanwhile, we have managed to sell our products through online platforms and offline places, such as the Start-up Space provided by our university. Despite the various difficulties, such as the inflexibility of craftswomen's working time and the time-consuming *tiaohua*, in a foreseeable future, it is estimated that profits will be made and local craftswomen will get a relatively decent income for their expertise in *tiaohua* during the participatory design process.

3 Conclusions

4.1 The paradigm

The paradigm of promoting community empowerment drawing on rural crafts through participatory design intervention can be summarised as follows (Figure 8): firstly, the knowledge of local assets or resources, especially crafts, should be gained through field survey and literature study. On the one hand, local culture is recorded and preserved in the form of videos, audios, photos or texts during this process. On the other, this knowledge is the very foundation for any efforts to promote community empowerment. Based on acquired knowledge, crafts can be chosen for developing new products through the cooperation between designers and craftspeople. Craftspeople can

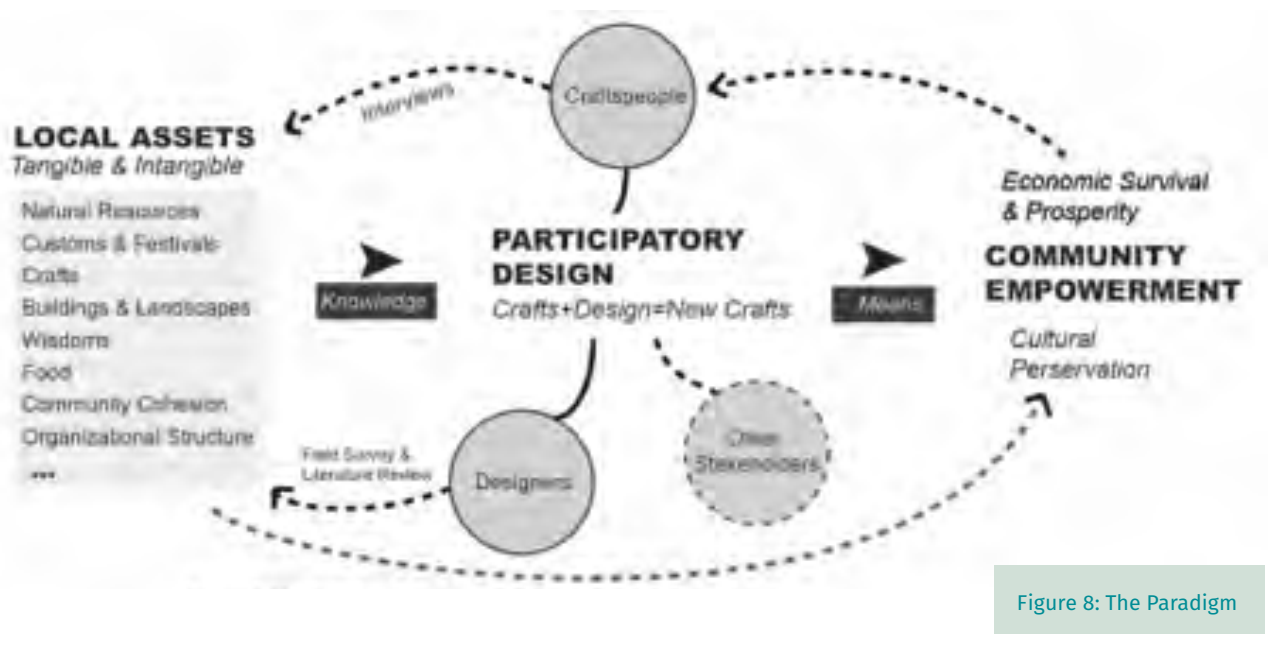


Figure 8: The Paradigm

be users, testers, informants and design partners, and thus the most crucial principle is that the expertise of local craftspeople should be fully respected during the cooperation, which ensures a healthy and sustainable relationship. Ideally, the co-designed products will satisfy contemporary needs and thus achieve commercial success; local craftsmen will finally achieve economic survival & prosperity. However, more stakeholders should join in the participatory design process for a more desirable result.

4.2 The limitations and future research

Admittedly, this paper has the following limitations: (1) the marketability of the co-designed products has not been fully validated in practice. It is the reason why the authors set the research objective as exploring the 'potential' of rural crafts in promoting community empowerment. (2) In a broad sense, 'participatory design' is not only about product design, but also about the branding and marketing of the products. Thus, more stakeholders with relevant

expertise should be invited to join the team. (3) As to the participatory design process, the authors have emphasised that it is a 'reiterative cycle', and the results of each cycle can be used as the raw material and inspiration in the next cycle. But in the workshop, the design process generally stopped in the varied stages of the first cycle. After the workshop, we have further improved the co-design process. For instance, the experiments of the new medium of *tiaohua* are inspired by the raincoat design case. (4) Moreover, our case study is only about *tiaohua*, and the co-design based on other crafts should also be studied as the design process varies with the change of crafts. In the future, more work has to be done to perfect the participatory design model.

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personal imagination and collective identification: chinese implication of handmade design

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Abstract

'Handmade' is one of the most salient concepts in contemporary China. This article will distinguish the philosophical implications of three ideas—handmade, handiwork, and handicrafts—and will discuss three key issues in handmade design: how to 1) deconstruct the raw materials and manufacturing process of traditional crafts and reconstruct it into the innovated product design 2) transform 'handmade' to 'design', and 3) explain the representation of global and national meanings of handmade design. This paper argues that handmade design in contemporary China has at least twofold implication by methods of case study and personal reflectively observation: handmade activity is practiced as a private religious belief, and portrays one's imagination of future lifestyles; and handmade things are a contemporary and cultural tag of Chinese national identity. I will argue these conclusions based on historical experience and today's handmade design cases, and will pursue a further inquiry: Is the current passion for handmade only a fad, or is it a hint of a forthcoming revival of Chinese design?

Keywords: handmade design, contemporary China, imagination, identification

personal imagination and collective identification: chinese implication of handmade design

Helsinki as an opening exhibition of the 2015 Helsinki Festival Focus China Program, successfully introduced Chinese design on a small scale. In September of this year, the China Academy of Art's Folk Art Museum in Hangzhou was launched; designed by the contemporary Japanese architect Kengo Kuma, the venue aims to collect local/ancient Chinese material culture and traditional design ideas, and is committed to the activation and regeneration of handicraft culture. One of the sections at Beijing Design Week 2015 named Beauty of Handmade was also highly popular. While these activities took place globally, what is significant about these examples is that they all sought a balance between handmade and design in contemporary China; in some ways, 'handmade' can be perceived as a keyword for understanding today's Chinese design.

The design research camp is primarily located in Europe and the United States, and includes two leading methodologies for studying design: the constructive, to build something new, and the theoretical, to articulate ideas (Koskinen et al. 2011). This paper explores these ideas and their impacts on contemporary Chinese design in the era of globalisation, including on handmade design, global imagination, and contemporary Chinese design. The overall thinking about these elements is beneficial for finding answers to questions such as, 'What is design in today's China?' and 'What types of design affect people's daily lives?'

Clearly, 'handmade' is a salient concept in contemporary China. This article will distinguish the philosophical implications of three ideas—handmade, handiwork, and handicrafts—and will discuss three key issues in handmade design:

1. how to balance tradition and innovation in handmade design
2. how to transform 'handmade' to 'design'
3. how to explain the representation of global and national meanings in handmade design.

This paper argues that handmade design in contemporary China has at least twofold significance: handmade activity as a private religious belief and an imagination of future lifestyles; and handmade design as a contemporary and cultural tag of Chinese national identity. I will argue these preliminary conclusions based on historical experience and today's handmade design cases, and will pursue a further inquiry: Is the current passion for handmade only a fad, or does it hint of a forthcoming revival of Chinese design?

2. Anatomy of the concepts: handmade, handiwork, and handicraft

The era of globalisation overlaps the culture of social networks, which provides a powerful open platform that has undoubtedly improved the lives of Chinese youth, especially the new generation of Internet users who were born following the 1980s. Popular social applications such as Instagram, Esty, Pinterest, and Twitter enable access to handmade contents and their makers. This has aesthetically transformed contemporary Chinese youth; it has inspired them to imagine the world beyond China and to live a poetic life within their everyday reality within China.

The literal meaning of something that is 'handmade' is that it is created by manual labour, or made by hand; the words 'hand' and 'manual' are important implications. Hands are also the most common body part for producing tactile impressions of artefacts. In a psychological way, the hands' haptic system is inextricably linked to the nature of the user's experience. Thus, manual labour is most likely to affect one's personal experience, and it brings the maker's self-consciousness to the forefront. According to the phenomenology of Edmund Husserl, the notion of consciousness is that we are always conscious of something. The understanding and emotion of the handmade are not based on the idea of the handmade, but rather from its making process and the material consequences.

People are often uncertain about the meanings of the three words handmade, handiwork, and handicraft, and they apply them haphazardly. Even the minimal difference between the terms merits attention, because it shows their essential value. The words 'make (made)', 'work', and 'craft' following the 'hand' display three meanings in one; each is attached to the intrinsic quality of contemporary Chinese design. The three words require further investigation in terms of their sociocultural meanings in order to highlight the double substance of handmade design, which will be elaborated upon later.

This paper chooses the idea of 'handmade' over 'handiwork' or 'handicraft' because the word 'make' ('-made') involves the sensation of mundaneness, which is close to the everyday practice of other basic necessities of life. The handmade work is not about being good or bad, or beautiful or ugly, but about the making behaviour itself, as well as how it is involved with our personal and daily lives. 'Work' is the key word in the word 'handiwork';

it emphasises the technical nature and the classification of industry, implying a certain threshold or higher standards. The concept of 'work' becomes a primary factor to separate amateurs from professionals. The 'craft' of the 'handicraft' also stresses exquisite skills and precise work; it underlines artistry and aesthetics, and refers to a professional creation that is relatively isolated from apprentices' or beginners' methods. As mentioned earlier, the 'handmade' notion contains both the technicality of handiwork and the mastery of handicraft.

Martin Heidegger (1971) contributed his thoughts on art and artefact in his existentialist philosophy, which confirmed the physical properties of art and the artistry of artefacts. That which combines art and artefact is also the indispensable attribute of the handmade: productivity. In other words, the handmade includes artefacts made by people's hands, productively expressing the perception and affection of the makers; this means that the process and its outcome are filled with artistic and substantial sense.

3. The personal significance of the handmade: a spiritual belief and imagination of future lifestyles

Handmade design is not only popular within the professorial design field; it has also become a fashionable hobby for the Chinese middle class. Handmade design has become a trendy part of Chinese culture, in large part due to ubiquitous social media and its large online presence. More and more of the middle-class younger generation who have no experience in design have begun to get involved in a variety of simple handmade designs, such as making leather, wood, and pottery, as well as with other available and easily processed materials. Why is this handmade practice so popular? From an individual perspective, the handmade has an almost magical ability to activate the 'flow' experience (Csikszentmihalyi 1990), both of the body and of the mind, after attaining full immersion in the laborious process of making things. In addition, the handmade returns subjectivity to city dwellers who have been deprived by consumerist culture, and it promotes its new purpose: the object is not the ultimate goal. Instead, the process of producing is the key linkage, where questions such as 'Who am I?' and 'What can I do?' can be answered. The handmade becomes the new spiritual belief of the middle class currently living in the 'urban jungle'.

3.1 The 'thingness' of the handmade: as redemptive power

The importance of a thing to people is often found not in the thing's usefulness, but in the fact that it can arouse the subject's participation, both physically and socially. To paraphrase the philosopher of technology Albert Borgmann, 'Thing, in the sense in which I want to use the word here, is inseparable from its context; namely, our experience of a thing is always a bodily and social engagement with the thing's world' (Borgmann 1984, p. 116). Objects that are made by hand are not usually meant for commercial purposes, since they're usually small, with little practical function, and are made with easy to use material. People learn the design skills and processes from celebrities of handmade design via social media websites such as Instagram, Etsy, Pinterest, Twitter, and Facebook; they buy raw materials from online suppliers, who also provide detailed, illustrated DIY tutorials.

A 'thing' and its world become inseparable with the involvement of the hands, which in turn shows the association of people and their world. Leaving behind material evidence is clearly the most convincing way to prove that you were once alive in this world. Handmade design is also a channel for proving one's value without words, principally for the younger generation of people in China, who for many years had no voice in mainstream society. As the sociologist Richard Sennett (2008, p. 21) notes, handmade activity brings twofold emotional rewards: 'people are anchored in tangible reality, and they can take pride in their work'. The 'thing' is the existentialist essence that cannot be denied, regardless of how it will be interpreted or whether it is recognised. The handmade practice affords young people substantive outputs, and confirms their contributions to society. The sensible validation offered by the handmade is reliable and necessary for young people in order to live during such an era of insecurity and anxiety.

As mentioned earlier, handmade design is inevitably the product of manual labour, and the manual labour is a variety of workable competence. Alternatively, precisely because of the emotional 'wake-up' that is experienced, a thing made with one's hands is more than a matter of mere functional necessity, or having access to technical supplies. People can enter into the everyday world in a more in-depth and sensitive way after immersing themselves in lengthy manual labour. Handmakers interact with real society in a more enriched manner, placed as they are in the imagined community of handmade design that has been created by the Internet age.

The depth and breadth of handmade techniques also determine the scale of the relationship between the individual and the real world. Handmakers seem to obtain the almost magical power to carry on a dialogue between the individual spirit and the physical world through a wordless language. Due to the natural limitations of the skills that they use, the handmade process requires much focussed attention, force, and behaviour; compared with the mechanical manufacturing process, the handmade produces a strong sense of presence in the subject. In addition, enduring the tedium of manual labour, with its often crude output, is an effective antidote to the ills of modern times: the constant need for overnight success and instant gratification. It is during the productive activity itself, which emphasises the process and is indifferent to the results, that handmakers draw close to the human condition described by Hannah Arendt (1958) as 'Homo faber'. Living in a world surrounded by noise, the sense of presence that comes with immersion in handmaking is crucial for individuals to reflect on how they are to get along in life.

3.2 The artistry of the handmade: as a poetic being

It is not an exaggeration to say that things made by hand are deemed artwork by their makers. Handmade artefacts are the best vehicle for the newly middle class to reflect on the social situation and the significance of life; Heidegger (1971) saw works of art as the focus and origin of the world's meaning. Artefacts produced by hand are more often than not simple items; they are tedious to create, and are hard on the human body. Precisely because of their seeming insignificance (and their origins in traditional lifestyles), handmade items cater to ordinary people who live within the margins of social discourse. As an unpretentious activity and 'focus practice', handmade design drives one's spiritual space to be fully occupied by such optimal experience. Effectively excluding external 'noise' from the focus practice, handmaking is designed to provide ordinary handmakers with the possibility of a poetic way of life. Becoming engaged is beneficial to one's concentration in our information society, with its scarcity of attention; this in itself will have a curative effect. The handmade, in this sense, is similar to popular 'light' religious forms such as yoga, meditation, and tai chi; when we are engaged in these activities, we avoid distraction by limiting our attention to what's happening in the moment, thus rediscovering the original energy of the mind.

If we say that high-tech devices were welcomed due to the relief from various social burdens, the affordance of anonymous participation, and the absence of the master/servant relationship that they represent, then the handmade tells a totally opposite story: it adds extra burdens, emphasising complete personal involvement, and highlights the relationship between subject and object. Distinct from modern technological experience, embodied participation and the degree of engagement play crucial roles in the unification of the body and soul; in addition, because standards are inconsequential during such manual labour, each handmade object is unique and impossible to replicate; even the same person cannot replicate two works. This irreplicability represents the timeliness and impartibility of handmade design, as well as the influence of phenomenological philosophy, focussing on fact itself.

From a historical perspective, manual labour was an old way of production and lifestyle that was gradually marginalised within industrialised society. From a contemporary cultural landscape, a stepwise recurrence of the value of the handmade is nevertheless taking shape, especially for those who are distracted by social networks in our current era of information overload. The artistry of the handmade helps them to imagine and experience a future-oriented and entirely poetic form of life. From an individual outlook, the value of the handmade is found in its existential implications. From a social perspective, the passion for the handmade describes the times. The handmade unveils the picture of sociocultural relations between the individual and the world, which is otherwise concealed by the anonymity of high technology.

4. The handmade nation: visual and material cultural identity

The new middle class demands more sustainable lifestyles and elegance, which has sparked a booming opportunity for handmade design. Buddhist tenets state that the thing itself contains an entire world; it is the process of handmaking—boring and inefficient—that requires makers to be quiet and to concentrate on the labour of their hands. The process shields one's inner self from outside noise, thus restoring peace and self-control. The consulting firm McKinsey predicts that by 2022, a new upper middle class (those earning US\$17,300 to \$37,000) will account for 54 percent of residents in China's cities (Davison, 2014). This new middle class is more sensitive to advanced aesthetics, and is more open to paying for re-encountering traditional culture by innovative handmade designers, who are also seen as a powerful force in the revival of a contemporary Chinese design aesthetic that is rooted in traditional material culture.

To paraphrase Chen Anying (2015), a professor of art history at the Academy of Arts and Design at Tsinghua University, 'For today's new literati, design is a revival of discerning tastes in China; they are inheriting the core values of Chinese civilisation'. The handmade for most of China that I discuss here is not exactly the same as that of the new literati's tastes, although they do share some common elements; in addition, it also fulfils the high quality found within the philosopher Yanagi Sōetsu's phrase 'unintentional beauty'. As such, the national and personal connotations have converged to contribute to the trend of handmade design in Chinese society.

A thousand years ago, during the flourishing Tang dynasty, the city of Chang'an (now known as Xi'an) was the global centre of the handicraft trade; around six hundred years ago, during the Ming dynasty, furniture design reached its peak due to its handmade manufacturing process, and became the pinnacle of Chinese design from ancient times to the present. The rise of the 'handmade' concept in the design world to some extent stands for the return of traditional Chinese material culture; it can also be regarded as rebellion against rampant growth by the contemporary Chinese design community.

While it is a cliché, history does indeed repeat itself. The Western world, Japan, Taiwan, and other countries and regions have all experienced the pangs of the separation of design and craft; only Chinese design has been absent from this trend, because of the particularities of China's history. Although modern Chinese design can be derived from the four Chinese words 'Gongyimeishu' ('arts and crafts'), perhaps it has been away from the centre of the world stage for too long. China has been eager to embrace modernism too much, and the nation's modernisation process

has also served to segregate craft from design. This disengagement became severe once economic globalisation and cultural homogenisation coincided, and became especially prevalent after the reform and opening up movement of the 1980s. Chinese designers neglected traditional material culture, and China was downgraded to its status as the world's factory. With the title of 'the nation of manufacturing', Chinese design was gradually stuck with the label of 'Shanzhai' (Chinese imitation and pirated brands and goods), thus departing ever further from the original intent of design.

The idea of 'contemporary Chinese design' began to take shape with the success of the 2008 Olympic Games, followed by a series of key issues of national identity and cultural consciousness. When we look at the concept of 'contemporary Chinese design', it is relatively easy to interpret the meaning of the word 'contemporary': the contemporary must have happened in recent years. When we take the word 'Chinese' into consideration in terms of design, however, diachronic issues become more complicated; what is most impossible to identify assertively is the 'Chineseness'. Modern industrial design, generally speaking, originated within the context of the Industrial Revolution and Western discourse. Chinese design, once it encountered the dominating cultural discourse steered by European and American design, inevitably neglected its own cultural identity and historical location by firmly following the steps of Western design without reflection.

Handmade design acted as a new visual representation of the inner cultural community and the external platform, thus accentuating positive cultural awareness and confidence. Aiming for commercial objectives and for the construction of public significance, handmade design coordinated the paradox of tradition and innovation with the design thinking and theory of social innovation, thus carefully deconstructing traditional materials, crafts, and patterns, and then creatively reconstructing them to a new mode; designers successfully transferred local handmade design to the global. Aiming for the era of universal value, which involves the 'process of the particularisation of the universal and the universalisation of the particular' (Robertson 1992, p. 178), handmade design provided the new middle class with the possibility of a poetic life, and also tried to resolve the nation's looming problems of ethnic and cultural identity.

Zhang Lei, who earned a master's degree in automotive design from Domus Academy in Italy in 2009, returned to China after graduation and launched a design studio with two other partners to create the 'Tasting Artifact' ('Pinwu') as a product design brand in the Yuhang area of Hangzhou, where the traditional craft of paper umbrellas has a unique and long history. The studio was created to explore the future shape of traditional culture. Pinwu's official website (translated) says 'Respecting tradition, but subverting it', which explains two routes for its design thinking with semiotics: deconstruction and reconstruction. Since the studio was founded, a wide range of innovative products have been designed, based on traditional handmade artefacts that are fitted into the context of contemporary life, including household products (such as lamps and furniture), daily necessities, and clothing. In particular, the designers researched and enquired into the traditional papermaking process (in particular the paper umbrella craft) and paid extra attention to bamboo-based crafts. Looking at Pinwu's works, it is easy to discern the traditional Chinese aesthetic, while it is not as easy to detect that they are prototypes of old crafts.

5. Handmade design: stylish fanaticism or rational revival?

The historic peak of Chinese design was during the Ming dynasty, when Ming-style furniture became legendary. The bumpy road of Chinese design was interrupted between the Ming dynasty and modern China. Due to missing two hundred or so years of development, from the pre-industrial 1700s to the post-industrial 1950s, China's contemporary design was considerably disadvantaged.

In the nearly two hundred years of history of Western industrial design, Western handicraft withstood the challenges of new production in its materials, crafts, and modelling; it got on well with machine production within industrial design. The West therefore retained the two aesthetic choices of the machinery style (representing the future) and the traditional arts and crafts. Between the old and the new, there is no compulsion to show any inclination; at the same time, due to the continuity and intactness of their history, Western consumers have the ability to combine the two aesthetics—the standard production of modern times, and the personal style of the traditional crafts—because the two modes of design are commensal; they are also self-correcting and conducive to each other for sustainable development. Thus, as we all see, modern and contemporary Western design has never had to solve the problem of preserving tradition or determining how to make it modern. The biggest challenge today is probably exclusive to China, which on one hand is missing parts of its history, and on the other is desperate to confirm its national identity in the age of globalisation in terms of the regeneration of its traditional material culture.

The mass media has recently noticed the prevalence of handmade design, and has pointed out that handmade design is only modern people's nostalgia that comes from living in a post-industrial society while yearning for a pre-industrial lifestyle (McGuirk, 2011). Handmade design as a global trend is a reasonable consequence of people growing weary of shoddy products, and instead desiring good quality.

While nostalgia for the handmade may be a global phenomenon, the healing medicine of handmade design likely has much more significance for people in China. Indeed, it could serve as the key to unlocking the puzzle of what contemporary Chinese design is in the context of globalisation. We will examine this question by looking into the definition of 'globalisation' in the first place. The literature professor Frederic Jameson (1998, p. 54) has asserted that globalisation is associated with postmodernism. According to the epistemological system of postmodernism, all knowledge is relative, and there is no universal value to verifying the truth beyond the traditional and the local. If we agree with the above theoretical framework of globalisation, then the idea of 'contemporary Chinese design' seems to be a pseudo-proposition. While defining the term 'contemporary' is an easy task, determining the connotation and denotation of the term 'China' is not so easy. Should it be characterised by its geographical aspects, or should it be judged by its inherent nature of being 'Chinese'?

The challenge, as mentioned above, appeared earlier in modern China, when Western cultures collided with Eastern cultures. For the Chinese intellectual elite, the most challenging inquiry was how to make the nation's goods distinct. Today, if we categorise the people into the value community, based on their consensus of the uniqueness of 'Chinese design', then where exactly does their common belief stem from? We will still face doubts about what, in the end, makes Chinese design Chinese if the beliefs, ideologies, and customs of the value community are all so Westernised and heterogeneous from the traditional or the local?

Fortunately, we may be able to solve the logical dilemma of this original 'Chineseness' by looking into the design research by Chinese scholars such as Xu Ping, Lou Yongqi, and He Renke. The Central Academy of Fine Arts, Tongji University, has investigated the Chineseness of design from the nation's rural areas and national minorities. These scholars place the possibility of the revival of Chinese design in the handmade cultures of the relatively remote and inaccessible terrain of rural China. In addition, these scholars' idealistic practice plans to develop a contemporary and sustainable lifestyle from the aboriginal handmade legacy, and hopes that rural society will be able to help rebuild future Chinese design.

The Academy of Art and Design at Hunan University launched a design and social innovation workshop called 'New Tongdao', aimed to develop (via preservation) the minority culture of Tongdao Dong Autonomous County, which is based in Hunan province but is also found in Guangxi and Guizhou provinces. The purpose of the project is to promote activation and transformation of the minority culture, to assist with the cultural self-awareness of local residents, and, most importantly, to set up an innovative design industry system to support the sustainable and interactive mutual development of local handmade culture. The project has been ongoing for nearly six years, offering a duplicable mode of design research into social innovation and handmade culture. The handmade culture of Tongdao Dong Autonomous County itself, since it is rooted in local knowledge and living traditions, represents one of the particularities of 'Chineseness'. Applying multidisciplinary, socially innovative theories and methodologies to achieve the path from the handmade (tradition) to the design (innovation), the case of New Tongdao may indeed inform a convincing operability in the age of globalisation that values differences and ensures the readable interpretation of meaning. At the same time, it provides a feasible solution for the revival of contemporary Chinese design supported by handmade design.

It is reasonable to view this as the revival of contemporary Chinese design, since the handmade design takes the shape of the dual historic value of the traditional and the contemporary. The traditional and the contemporary are two sets of relative value; the former corresponds to historical contexts, while the latter pertains to everyday life. To put it another way, the traditional requires deliberate preservation in museums to solidify historical memory, which stands for an authoritative and stereotyped national identity, with an abundance of symbolism. Contemporary values, in contrast, are much more robust, since they rely on the current meaning network of mundane life. The traditional handmade has to be transformed by the new context of production, consumption, and daily use in order to establish personal memories and emotional identity with costumers.

The transformation from the handmade to design is thus the only way to maintain the validity of the old material culture; it must be done in joint cooperation with the fashion-setters, media, brands, and other stakeholders in order to construct the possibility of the regeneration of traditional culture. The revival of Chinese design thus refers not to a return to the pinnacle of Ming-era design, but rather to acquire the best linkage of the old and the new that may attain just the right combination of traditional and innovative materials, processes, and patterns from the context of contemporary life; thus, designers will be able to rediscover their self-confidence in the era of globalisation.

To conclude, the concept of 'revival' in this paper refers mainly to the return of the core value of manual labour, because whether or not the national identity can be recognised, it is a reasonable result of the renaissance of Chinese design.

6. Discussion

The following three aspects of handmade design must be comprehensively assessed for the probability of the revival of contemporary Chinese design: how to 1) create a workable representation system of 'form language' by means of

material and crafts innovation, 2) protect handmade design against erosion by devastating consumer culture and its related alienation issues, and 3) reflect on the instrumental rationality of design.

Handmade design is not exclusive to contemporary Chinese design. On the contrary, it has been hailed the world over as the future of traditional material culture. Even within Asian design, Chinese design now occupies a highpoint beyond the common Asian cultural language; it approaches the spiritual core of Chinese philosophy. Japanese handmade design, meanwhile, has contributed the benchmark for success. This question is premature, since it is asking for a solution ahead of the revival of contemporary Chinese design related to the handmade. Due to the length limitations of this article, we unfortunately don't have room to go into the topic in depth here.

Consumer society is considered to be an out-of-focus lifestyle that is shaped by technology. Trade and consumption, however, have already become unavoidable facts in contemporary society: people cannot get rid of or deny it, despite its obvious disadvantages. People cannot live separately from their consumption. Will this lead to a sort of technological pessimism? Perhaps. Handmade design may ease the contradiction between consumption and the aforementioned 'focus practice', which could be seen as its historical mission as well as the source of its social significance.

Design should not simply be a technological carrier to achieve complete functionality. Rather, it should be a bonding agent between people and their world. Idealistically speaking, each design can be used as the 'focus' to go beyond the technological device, and to connect people with immaterial factors such as personal sense of history, cultural origins, social networks, and meaning continuity. Conventional design ideology as the by-product of the Industrial Revolution of the 1800s believes that good design is function-oriented; its core value was to find the lowest cost and the most effective method to attain the established functions. The subjectivity and sense of tedium and 'uselessness' that is accentuated by the handmade is also a challenge or rectification to the functionalist epistemology of modern industrial design, which presumably visualises the possible counter-ideal of contemporary Chinese design.

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strategic design: innovation tool for social entrepreneurship

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Abstract

Chile is working to become a developed country, leading to changes in the way not only government agencies but also education entities and NGOs manage resources, giving our country the opportunity to size innovation as a tool for growth.

Innovation has started to grow from young and educated people (also known as entrepreneurs) who are creating fresh and new value propositions that could become big employment providers, grow Gross Domestic Product and so forth. Big and Medium Enterprises have also jumped into the trend. However, this innovation trend has somehow left microenterprises aside. Government efforts still target subsidies to provide them with mostly technical skills, raising the question: How to burst innovation into these companies?

Latin-American artisan richness is invaluable and unfortunately decreasing at a fast pace on a trend that is challenging to revert. Chile has been working on several initiatives to not only preserve its intangible crafts heritage, but also to give incentives so that techniques are preserved and new generations will follow their ancestors knowledge.

This is where Design comes into place. In Chile a new way to understand design has arrived and it is called Strategic Design, which can be applied to unveil value that microenterprises can bring to the market, society and environment.

This paper will show cases that illustrate the impact that Strategic Design education programs can have on handicraft microenterprises led by women on an urban context, analyzing different design metrics to effectively measure business profitability, female empowerment and innovation.

Keywords: strategic design, social entrepreneurship, artisans, micro enterprises

strategic design: innovation tool for social entrepreneurship

Innovation in Chile

The Innovation Division within the Ministry of Economy, Development and Tourism is in charge of building the innovation planning for Chile. The current challenges, that have been agreed on to tackle before 2018, are divided on 4 lines of action: democratising innovation, diversifying the production matrix, increasing production of new knowledge and strengthening institution to impact public action. These respond to the new phase Chile is entering in the development of its economy, which objective now is to move from an economy based on natural resources to one based on knowledge, therefore it generate opportunities for new sectors to be able to produce new goods and services.

Innovation in Chile is for everyone and could range from highly competitive to small incremental interventions, however it should allow businesses solve their problems and needs through the generation of permanent routines that promote bringing new processes, products, services and practices into their operations. Government support has been stronger on Small and Medium Enterprises who, according to the innovation survey conducted by the National Statistics Institute in Chile on 2012, show a 20.7% rate of innovation (almost half of what large companies show) and it excludes micro enterprises since the survey only takes companies with at least 10 workers. In fact, it is very difficult to collect micro enterprises accurate information since almost half of them are informal. On the same innovation survey companies stated that one of the most important obstacles that they face is that innovation cost is too high and also that is difficult to find cooperation to execute it.

With the purpose of expanding innovation routines especially small and medium enterprises, there is a government Development Corporation (Corfo). Corfo's mission is to improve the competitiveness and the productive diversification of the country by encouraging investment, innovation and entrepreneurship, strengthening in addition the human capital and technological capabilities to achieve a sustainable and territorially balanced development, and the group that has had a better reception of this is young and educated people (also known as entrepreneurs) who are creating fresh and new value propositions that could become big employment providers and the key players can be found only on big and medium size enterprises (Amorós and Abarca, 2014: p. 47).

When looking into how innovation is measured (fig 1), design is included as one of the innovative activities within marketing innovation, which is the implementation of a new marketing methods involving significant changes in the design or packaging of a product, positioning, promotion or pricing. However, when entering public policies within its institutions, the ambition of improving its relationship with citizens and operation has led to create the first GobLab in Latin America on 2014, to approach public issues on a citizen centred style, and creating systematic innovation processes.



Even though the ultimate goal of the traditional model of innovation in Chile has been principally associated with increased productivity and generating economic value in the private sector, it doesn't consider the most vulnerable people among its goals, and cannot address social needs and environmental issues. Solving social challenges provides a new space for social innovation.

We can point various cutting edge social innovations, and observe that behind nearly every one of them usually stand visionary individuals whose passion, commitment, innovativeness, and entrepreneurial spirit lead them to devise and spread solutions to seemingly insurmountable social problems (Bornstein, 2004). These individuals are considered as social entrepreneurs and could help micro enterprises jump into the national innovation agenda.

Entrepreneurs can change the face of business; while social entrepreneurs act as change leaders for society, seizing opportunities others miss. On a worldwide level, and with a 30 years history, Ashoka is one of the foremost organisations on social innovation promotion and their dream is that everyone can become a changemaker to solve complex social problems. Not far behind, The National Social Innovation Program in Chile seeks to promote

initiatives that generate high social, labour and environmental impact, among others. The major objective sought is to create social value and one of the most successful entities in doing so is Socialab, the Innovation Centre of Techo, Latin America's fastest growing non-profit organisation. It is a social entrepreneur platform, which aims to develop solutions for the problems of people living at the base of the economic pyramid through co-creation.

Innovation on micro enterprises led by women

According to Corfo there are a total of 1.400.000 micro-enterprises in Chile, but 40% of them have not initiated activities in the Internal Tax Service (Informal). This is a very important fact because collecting accurate data of these enterprises segment is a complex task, no records can be easily found of their commercial activities.

Micro enterprises generate approximately 40% of the employed population and they represent 80% of companies in Chile. Even though in Chile only 1 out 3 entrepreneurs is women, in the micro enterprise segment there is a high female participation (Corfo, 2009). According to the National Micro Entrepreneurship Survey in Chile on 2013 there were 665,535 women entrepreneurs and 40% of them located in Región Metropolitana. Most women entrepreneurs in Chile are concentrated in the lower socioeconomic groups of the population and their businesses are more associated with techniques than to a profession. This applies to activities such as catering, crafts, textiles (sewing, dressmaking), commerce, decoration, hairdressing and beauty, arts and crafts, among others according to the 2012 Female Global Entrepreneurship Monitor (Amorós et al, 2012: p. 66)

The main obstacles for female entrepreneurship are the social and cultural norms. Usually, gender relations place these women in a secondary and subordinate place, which exacerbates their feelings of worthlessness, either by homebound and/or their dedication to low skilled and poorly paid jobs (Pereira, 2001). Their working environment is poor and offers few opportunities to escape poverty; therefore, psychosocial traits that identify the poverty condition, are strongly entrenched in these women and are limiting for entrepreneurship. The principal reason to start a business in this segment is to "supplement family income", probably because 40.8% of women entrepreneurs is also head of household (Amorós et al, 2012: p. 73). In addition, a significant group of the micro entrepreneurs of the analysed segment start up mostly because of necessity, which puts the focus on the survival of the business and diminishes the development expectations of business projects. They also declare they lack financial support and the access to training for entrepreneurship.

Entrepreneurship support for women on this segment is poor; nevertheless this should not reduce their chances to innovate. When looking into handmade-based businesses, some highlights can be found on how to innovate within this context with design.

Artisans micro entrepreneurs

Latin-American artisan richness is invaluable and unfortunately decreasing at a fast pace on a trend that is challenging to revert. Chile has been working on several initiatives to not only preserve its intangible crafts heritage, but also to give incentives so that techniques are preserved and new generations will follow their ancestor's knowledge.

There are important initiatives that are looking to promote artisan's techniques and heritage, and using design a strategic tool to generate the incentives for micro entrepreneurs not to leave their handmade traditions. One of the best examples is Artesanías de Colombia, an organisation under the Ministry of Commerce, Industry and Tourism, which contributes to the progress of the craft sector through technological upgrading, research, product development and training of human resources, boosting marketing Colombian crafts. The institution leads the overall improvement of crafts by the rescue and preservation of tradition in a context of decentralisation and development of local and regional capacity, so as to ensure the sustainability of the craft and the welfare of artisans. Their consultancies in design and product development seek to transfer design tools to artisans, which will help them carry out their products in order to obtain results that are competitive in the market without losing the artisan tradition.

Design elements involved in the development of a handmade product according to Colombia Handicrafts are: Identity, Proper use and combination of materials, Colour management and Communication.

In Chile, The School of Design at UC has a Program for Crafts Development, which encourages the promotion and enhancement of craftsmanship. Through research and consulting, projects are expected to document practices and heritage to explore opportunities for collaboration between artisans and designers. They also organise the biggest Crafts Fair in Chile which convenes more than 5.000 people every year and this proves there is a niche market that demands exclusive products related to crafts, but women entrepreneurs do not have the means to reach these customers. Where can they find support to enter new markets?

Fondo de la Solidaridad y la Inversión Social (FOSIS) is a solidarity and social investment fund, which is part of the Ministry of Social Development. FOSIS supports poor and extremely vulnerable people, helping them to improve

their quality of life, designing and implementing programs that contribute to build a society with greater security and opportunities. Its work is focused on attaining greater social protection and economic inclusion of the most vulnerable people in Chile. Families and people interested in becoming beneficiaries have the possibility of applying to programs according to their ranking in the Social Protection Scorecard. This scorecard is the tool used by the Ministry of Social Development in Chile to assess the degree of vulnerability of Chilean households.

Based on the needs of the individuals and families who seek FOSIS support, programs are offered in three areas: Entrepreneurship, Work, and Social Development. FOSIS promotes micro entrepreneurship with programs to help start either dependently or independently a business initiative. This is channeled mostly with seed capital to be invested on very specific machines, equipment, training or technical assistance with a clear focus on short-term return on investment. However, design has been used on some of FOSIS programs, but it can only be used when the entrepreneur already has the required technical skills to start a business, basically they need to be clear on what they do and how that can be transformed into a product or service.

It has been shown that from an institutional point of view, Chile is offering a vast array of mechanisms to boost innovation on various levels. Nonetheless a need has been detected to effectively use those resources on micro entrepreneurs. This is opening a wide range of opportunities for design to come in, but on a different manner, a strategic one.

Strategic design

Is a designer capable of taking care of the innovation paradigm shift from increasing productivity to creating social good? The answer is yes only if designers are considered as social actors in a society, which, as contemporary sociology points out, everybody designs (Manzini, 2007). Designers need to tackle the whole social system involved in boosting innovation into artisan's micro enterprises, a deeper look should be taken into what specific role the designer must have on this multifaceted scenario to have an effective positive impact.

Having reached this point, it is time to make a detailed analysis of the role that could be played by design, and with this term we want to encompass the entire design community, i.e. the group of professional, economic and cultural entities that make up the community, with special reference to the schools of design (Meroni, 2007: p. 14). Surely design should use design-specific skills to be actively involved in the social and economic tissue.

The designer's role involves now a larger scope of complexity, and his or her work changes from a reactive perspective, where the client defines the designer's requirements, to a coordinator's proactive role that can integrate users, clients, providers to co-design and co-create better solutions to specific problems that can be discovered by observation, anthropology, ethnography and creatively searching for insights that help us better understand how to make business, social and ecological sense.

The designer increasingly takes the role of facilitator in the learning process when exposed to vulnerable entrepreneurs survival business needs. His field of action moves further and further away from the figure of a traditional designer towards that of an actor making events happen and also making interested subjects participate, and do so creatively.

Design therefore has to be understood as a cooperative endeavor, because it actually has the ability to put together various perspectives and knowledge sets to help move a good idea to a successful implementation (Margaret Bruce, 2002). Consequently, to do this, designers require a series of relatively new skills: generating collaborations among diverse social actors (local communities, companies, institutions and research centres); participating in the construction of shared visions and scenarios; codesigning articulated systems of products, services and information.

According to the technological innovation development program 2001-2006 in Santiago, if this new role to channel innovation to the base of the pyramid is taken by designers, then they should be skilled for it. Education and training of the population in the new technological codes are key tools to advance to greater equity, both within Chilean society, considering Chile as compared to more developed countries. It is mandatory then, to create a body of knowledge that can be transformed and packaged for designers as an input for them to give artisans solutions that will be feasible, executable and sustainable in time. These could be small scale interventions at first, but aggregated could increase competitiveness of one of the most important drivers of growth in Chile; micro enterprises and Strategic Design can unveil the value that they can bring to the market, society and environment. This will happen when designers give much more than end products or services and transfer design methodologies to better micro businesses, which can apply them in the long run and help sustain innovation.

UC taking the lead

The School of Design at UC understands the discipline of design as a creative, projective and strategic for serving people, focusing on the interaction between humans and their environment activity. Thus, the School of Design UC wants its graduates to detect opportunities from a strategic design vision on innovative projects that create value for

the market and society. The graduate profile expects graduates to address the complexities of the strategic design process on an interdisciplinary way identifying opportunities for innovation and entrepreneurship in the economic and productive society.

UC is taking the design discipline from problem solving (by creatively finding a solution) to problem finding, which means digging deeper into user needs and also taking care of what impact design can have in society. Entrepreneurship has helped reshape the way design is thought, the Bauhaus form follows function command needs to be revised. A new way to understand design has arrived and it's called Strategic Design which has given the discipline the opportunity to question both form and function with the purpose of discovering which insights are underneath the scenario that requires design and find the specific problem that requires to be attended, if so. Design is now considered from a holistic point of view. There are several initiatives that The School of Design has implemented aligned with the new strategic design profile for their students:

Programa aprendizaje y servicio (A+S)

A+S is a Service Learning Program that was created in late 2004 in response to the explicit will of UC put at the service of the country an academic activity to form integral professionals, entrepreneurs and solidarity, and to generate knowledge that contributes to the solution of social problems in Chile. A+S promote the development of a teaching that generates significant learning based on the relationship with the communities that will contribute to their development and enhance the training of students in social responsibility.

Laboratorio de innovación pública (LIP)

This Public Innovation Laboratory it is a UC initiative to collaborate with public organisations to improve the quality of services they offer. Based on a methodology focused on users, it promotes the design of public services with the active participation of citizens, managers and officials responsible for them. This laboratory is under the auspices of the "Prosperity Fund" of the British Embassy. It is led by UC centre for Public Policy and the School of Design, with the participation of the Institute of Sociology, School of Engineering and Innovation Centre Anacleto Angelini. LIP develops student projects and professional product and service design consultancy for the public sector. It should be noted that products, services and learning methodologies developed by LIP are made available to public organisations are offered for free implementation, thus forming an open bank of resources to use for public organisations.

These products were designed and developed on 2013 by students in collaboration with Puento Alto's prison inmates to be sold at UC's souvenir store.



Applying strategic design on artisan's micro enterprises development programs

Design alone is not a business strategy, but it can be used to enable one, especially in a competitive market where differentiation is mandatory. Within this context, the designer can give raw material for decision-making and offer practical skills, creativity techniques, commercial skills and also communication skills, all of which can be crystallised with visualisation, research, analysis, scenario building, adapting, inventing and much more. If all of the above mentioned is organised, then the strategic designers methods can start to be identified.

Strategic design methodologies are academic assets, those need to be translated, adapted and transferred to micro entrepreneurs for them to integrate design to their businesses, and this might be looked as design for non-designers. Design Management might serve in this sense, comprehended as a way to identify and allocate creative assets to build sustainable advantage and it delves into design considered as a process that needs to be comprehensive to all of the stakeholders involved.

When the strategy has been put in place, goals set and methodologies to execute them, then how to measure its design impact?

In order to measure, one needs to record the present situation and here is where design audits can be applied. A design audit suffer from the same problems as any other audit; that is how does one define the boundaries of the design audit, what are the criteria for assessment, how should be implemented and by whom? (Cooper and Press, 1998: p. 198).

Peter Zec and Bukhard Jacob presented on 2010 an equation to estimate design's value as a combination of design revenue, design strength, design continuity and design assets. From a different perspective, the Design Council also has developed auditing tools such as the Design Atlas, which refers to areas of activities that are related or integrate design. Nevertheless their differences, these two approaches consider design as part of the subject of analysis, a product or a company. Unfortunately, when looking into artisan's products there is no acknowledgement of what design actually is or can do for them. So a new framework has to be built to target the study group of female lead micro enterprises.

Taking a look into Toplian's (1983) checklist for corporate design audits, it gives some perspective of the various design issues that should be audited. As it applies to medium or large enterprises, it was applied to study past cases at UC and at Remade in Chile. 4 aspects were agreed on to examine artisan's micro enterprises design capabilities as a tool for innovation. Those aspects are: Characterisation and Competiveness, Design and Craft ability, Entrepreneurial attitude and Product Design Assessment.

Design diagnosis instrument

The following section of this paper aims to describe the results of the diagnostic phase of The Competitiveness Node Program (financed by Corfo); Design, Women and Market, executed by the non profit organisation called Remade in Chile in collaboration with design students of UC. This project aim was to strengthen the link between micro entrepreneurs who work in the fashion business, to new markets through product innovation processes and based on the value-added by design. In this context, the first phase of the project involved conducting a diagnosis that seek to characterise potential participants to ensure that they have the personal skills and techniques and sufficient infrastructure capacity to get into and experience a design process.

The results here presented are based on the application of a work in progress tool developed by Remade in Chile and School of Design at UC. This tool has been created by a team of professionals in the fields of psychology, sociology and strategic design to analyse the potential of entrepreneurs and their businesses to innovate through the use of design. 42 female artisans micro entrepreneurs were diagnosed in January 2015.

The evaluation methodology consists on the successive application of five instruments of data collection. To summarise, the objectives and approaches of each are described in table 1.

Characterization Questionnaire	Quantitative
Design and Craft Questionnaire	Quantitative
Entrepreneurial Attitude Interview	Interpretive and quantitative
Product Design Assessment	Interpretive and quantitative

Table 1

The Design Diagnosis instrument application was in charge of the execution team further supported by a group of 5-interviewers pollsters on 3 working sessions. The participation itinerary was:

1. Complete the online questionnaire based on a common computer room under expert's supervision.
2. Answer, in a face to face guided application, the design and crafts questionnaire.
3. Participate in a face-to-face guided interview for entrepreneurship attitude.
4. Participate in the brainstorming session in groups between 6 and 7 people.
5. Hand in a product for evaluation by design experts.

4 Dimensions analysed

Micro enterprise characterisation and competitiveness

To evaluate microenterprises competitiveness the most important reference used was the "Instrumento de Diagnóstico para la Selección" created by FOSIS to feed the Social Protection Scorecard.

The emphasis was here to decipher the working time cost of the entrepreneurs. Unfortunately it is very difficult to obtain such information because women are unaware of the actual production times because they work while doing other activities related to home maintenance. Prices are set by many intuitive or so just taking into account the costs of material, in several cases is that virtually give away the hours. The average hour cost obtained for the group was less than \$4 USD.

Design and craft

The tool corresponds to an individual interview that collects information about the general characteristics related to design in the micro enterprise.

Some of the key findings are the lack of an exclusive space to develop their business, the multiplicity of roles that they play (mothers, housewives, entrepreneurs, etc.), and also lack of machinery and tools. On the other hand, the respondents do not have a method of quality control beyond its own discretion. As for the creative process, many entrepreneurs designed from their know-how and tend to replicate their products, but few take into account the demand or the needs of customers to innovate.

Exogenous Competences	Endogenous Competences
Management Ability	Responsibility
Business vision	Openness to learning
Teamwork	Initiative
Self-esteem and self-confidence	Perseverance and adaptability to change
Creativity and innovation	Professionalism

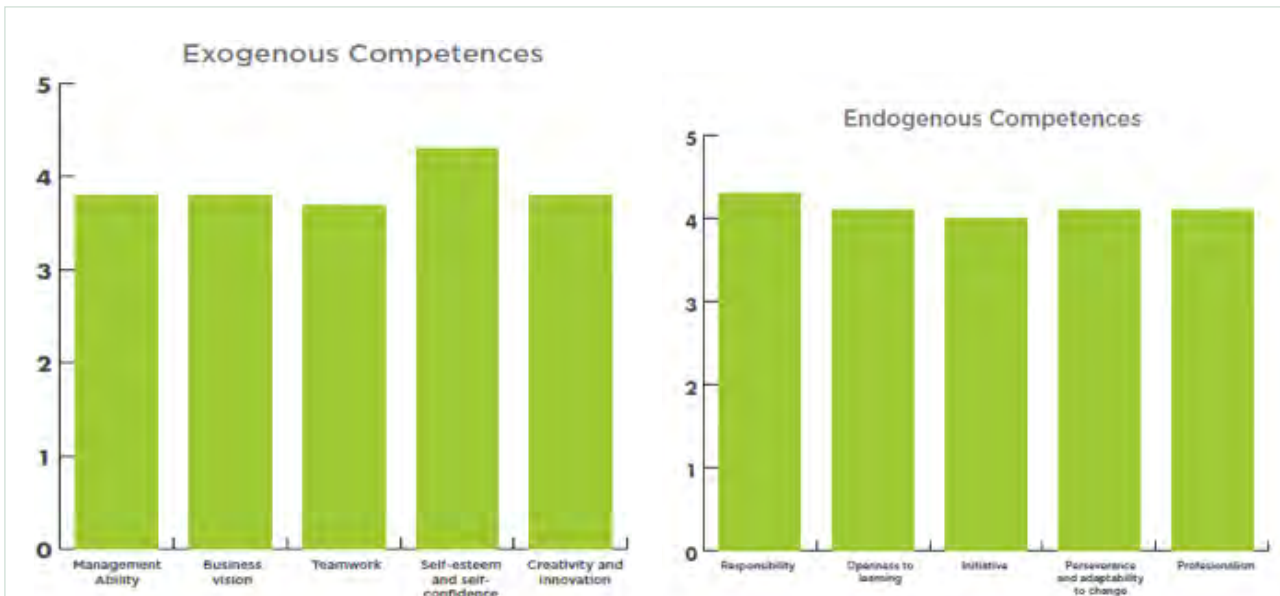
Exogenous Competences	Average (maximum scores is 5)
Management Ability	3,8
Business vision	3,8
Teamwork	3,7
Self-esteem and self-confidence	4,3
Creativity and innovation	3,8

Endogenous Competences	Average (maximum scores is 5)
Responsibility	4,3
Openness to learning	4,1
Initiative	4,0
Perseverance and adaptability to change	4,1
Professionalism	4,1

FIGURA 5

Entrepreneurial attitude

There are competences associated to entrepreneurship that literature has pointed; however when looking into the group of study, 2 different types of competences could be found, ones that are rooted on the entrepreneur personality and others that can be modified. The first were called Endogenous Competences and the second Exogenous Competences.



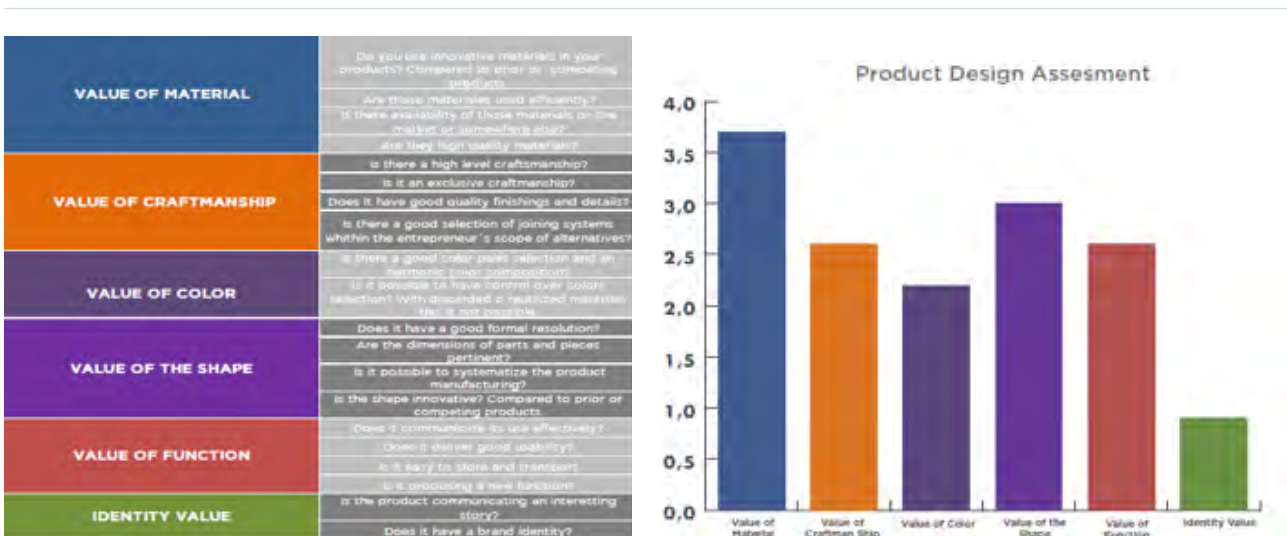
The chart above shows that teamwork is the competence that was less recurrent, this can be explained by the fact that much of the artisans work by themselves and had had bad experiences working with partners, they like being able to manage their own timing. However, strategic design implies teamwork for project development, so there is a need to explore incentives for the group to visualise how teamwork can help scale a micro business.

Even though they have a high level of self-confidence, it is difficult for these women to take the initiative given their working environment and cultural background.

Product design assessment

This is an evaluation of a product; each entrepreneur left its product to the consulting team for this purpose. This process was carried out by consultants in design to detect the added value of the product using the following criteria: Value of material, value of craftsmanship, value of colour, value of shape, value of function and identity value.

This assessment helps not only to get an idea on how design can contribute to make a product more competitive, but also to identify design attributes that might not been acknowledged by the artisan. The detailed attributes that the instrument evaluates are shown on table 3.



In conclusion, incorporating design in the work of craftsmen, there is a complex set of elements that should be considered for a design strategy to be effectively implemented and maintained over time for sustainable value creation. First it is required to detect whether the entrepreneurial attitude competences are rooted in the artisan to address an innovation processes. In this sense, there must be a bond of trust that ensures receptiveness.



Second, it must be feasible to measure the initial status of a micro-enterprise, here the designer's role is key to detect those attributes and skills that should be food to feed a new product development process. Finally the entrenchment of practices and sense of ownership of a design strategy, is only achieved if there is an understanding of the environment and the identity of artisan so that design intervention can be sustained over time autonomously. All this confirms that a diagnostic design tool for this business segment is a tool to facilitate the innovation process for social entrepreneurship focused on the design.

circular interdependency: a mindful design investigation into a natural living system

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Abstract

This research asks, 'To what extent can autonomy, circularity and self-reference inform design methods and direct interdependent design outcomes?' At the centre of the inquiry is a colony of domesticated bees and the manner in which design practice might operate as an enhancer of digital, material, and methodological potential to obtain a better understanding of systems in which the outcome is unpredictable. Here the act of design is a circular interdependent investigation into a continuously changing environment. The design process enquires into the incorporation of both artificial and natural methods of object creation.

Audio recordings from inside a beehive were translated into 3D shapes. Based on geometric hexagonal tessellation and triggered by the frequency of the bee wings' movement, a digital honeycomb cell moved in rotational symmetry. These shapes were 3D printed in beeswax. The objects were placed back into the hive to allow the living organism to respond and create the final artefacts. Here growing processes intersected with making processes.

The aim is to work in nature, and to work with nature, and by learning from natural living systems to also make as nature. A possible future resilient design future might not just be biomimetic, it could turn neobiological.

Keywords: 3D printing, beeswax, design mindfulness, biomimicry

circular interdependency: a mindful design investigation into a natural living system

1. Design of the study

1.1. Framework

The research paradigm is constructivist. The research is qualitative and may be framed as a practice-led creative inquiry (Scrivener 2000). The framework is defined by the existing research fields of design for resilience, design thinking, design-driven innovation and biodesign.

This study constitutes a practice-led design research project that asks ‘To what extent can autonomy, circularity and self-reference inform design methods and direct interdependent design outcomes?’ At the centre of the inquiry is a colony of domesticated bees and the manner in which design practice might operate as an enhancer of material, digital and methodological potential.

The aim of the research is to obtain a better understanding of systems in which the outcome is unpredictable and individual. Here the makers and users are considered present observers who analyse the act of design as a circular, interdependent investigation into a continuously changing environment. Accordingly, the investigation goes beyond imitation to integration, dissolving boundaries and synthesising new hybrid typologies. The incorporation of living organisms is key as the design process enquires into the incorporation of both artificial and natural methods of object creation. The act of designing and manufacturing occurs in a natural living system, and in collaboration with a natural living system.

Design as an act of recalculation (Berwanger 2012) of a natural living system includes the material sources, the makers as well as the users. All are considered to be part of one living environment. They grow the value generation from the outset of the design process and continue to define design outcomes until the object can become part of nature again. Thus, because humans are part of a natural living system and so is the act of designing, the research revisits a cycle of non-industrial growing and consumption (Pollan 2013), where commodities like beeswax and honey are employed to create meaningful (Verganti 2003) objects. Verganti (2003) argues that a product can bring messages to an audience in several ways. Aside from styling, the functionalities of a product aim to satisfy the operative needs of the user. Its product meanings, however, aim to satisfy the emotional and socio-cultural symbolic needs of the user.

1.2. Interdependency

The study develops an investigation of a living natural system and processes of interdependent design and development. Within the investigation—called *Sleeping with Bees*—audio recordings from inside a beehive will be translated into 3D shapes. Based on geometric hexagonal tessellation a digital honeycomb cell will move in rotational symmetry triggered by the frequency of the bee wings’ movement at 190 Hz (Chapman 1969). These shapes will be 3D printed in the beehive’s natural material (beeswax). The artefacts will be placed back into the hive—the source of the sound and the beeswax—to allow the living organism to respond and create the objects for exhibition. Through parallel iterations of sound recordings, sound spectrum analysis, generative model making, additive manufacturing methods and biological growing processes, temporary representations of the living world will surface. This investigation aims to disclose circularity in creation that is based on natural geometric growing processes and the inclusion of its natural environment. The investigation is situated in the field of design art and will lead to a second investigation that is more dedicated to high use product design to instigate the development of meaningful and useful objects, born from an issue or opportunity in the local environment of beekeeping (Thackara 2005, 2015). The material knowledge obtained in investigation one will feed into an inquiry of objects like beehive foundation sheets and honey containers. The designer no longer operates as a discrete agent who moves the design in a linear direction from a set starting point. This process is investigated with a view to creating as nature, in nature with nature.

In the research pre-empting this inquiry I creatively considered the continuously changing coastal landscape and employed observations to inform a design process that mimicked the natural process of wind, the energy in water and the way that these elements continuously shape our land. Thus, what we might consider solid, I conceptualised as continuously changing. The primary concern of this early study (beyond its technological dimensions), was to explore how design might operate as a circular process. I proposed that design does not need to be driven by a fixed question. Rather it may be seen as an environment in which one pursues a concept and its potential.

The research leaves technological traces for further development. The code that is developed is open source and globally accessible via the Github platform. The digital files that are produced for the custom-made 3D printing

extruder will also be available online via Thingiverse. Aside from this global access, the 3D Additive Manufacturing Lab at Auckland University of Technology will be extended with a machine that is capable of printing in natural semi-molten materials, allowing other researchers to embed this into their work. To this extent the research conducted does not operate on its own; instead it is set up as an open interdependent network.

In short the inquiry considers three circles of interdependency:

- Software and hardware development, through an open source workflow;
- Design thinking, by sharing knowledge in articles, conferences and exhibitions;
- Artefacts and objects, where creation and usage become part of an extended living natural environment.

Through this, these interdependent cycles, the research aims to contribute to the field of knowledge construction into design-driven innovation (Verganti 2009) and sustainable design practice.

3. Literature and past research

3.1. Creative production

This research may be understood as a practice-led study (Scrivener 2000) that engages with a process of reflective/reflexive inquiry (Schön 1983; Gray 1996). According to Scrivener (2000), design research may be divided into two categories: problem-solving research projects and creative-production projects. Both forms of research allow for the generation of artefacts, but they differ notably in their nature and in design development. Problem-solving research projects, he suggests, are generally related to the development of new or improved artefacts. Here the artefact is a solution to a known problem, to which it demonstrates a useful solution. The problem that is solved is normally confirmed by others and the knowledge represented within the artefact can be described, transferred and applied. He argues this knowledge is generally more important than the artefact. In creative-production projects however, Scrivener argues that the artefact may be more important than any “knowledge” represented in it. The knowledge, he proposes, “is a by-product of the process rather than its primary objective” (2000, p. 3). In the research discussed, the artefact may not be generated in response to a known problem and as such may not demonstrate a solution to a problem.

Schön (1983) considers that when designers make sense of a situation that they perceive to be unique, they see it as part of an established range of examples, understandings, images and actions. As such, this allows them to generate creative work. They draw on past experiences in their approach to novel and emerging challenges. Schön (1983) describes the design process as a reflective conversation between the designer and the situation. Here the emphasis is on the development of new ideas, re-framings and appreciations of what originates through practice. In this case the problem need not be highly defined at the outset. This is considered to be the space of the present study as it allows for transformations (Thomas and Carroll 1979) where the designer can exercise intuition and creativity, exploring the parameters of a situation and the resolutions, simultaneously.

The work generated within this research project is treated as a potential ingredient for generating new processes from which new outcomes may emerge. In this open framework, design iterations allow for a multilayered generation of experiments. The design research is generated out of a response, not to one, stable question or the pursuit of an anchored truth, but to a set of continually changing ideas and outcomes. The study is more than a task completion. It is a framework for creative and analytical exploration and discovery. Its multifaceted character altered its shape, role and meaning throughout the process of its development. Facilitating this to enable unexpected outcomes to emerge as well as governing the progress of the work has shifted my attention. The inquiry is no longer predicated on an aesthetic solution. Instead it is concerned with a way of thinking that encouraged reflective questioning and discovery.

3.2. Contextual research

The main aim of investigation one has been to synthesise sound and visual components into meaningful material shapes. In combining digital fabrication tools with experimental additive manufacturing, this research has explored circularity to inform design methods and direct interconnected design outcomes.

This first research investigation is contextualised by a number of international research projects that investigate the transformation of intangible audio signals into tangible 3D and vice versa. Studio Realität (2008) transforms selected music albums into circular 3D printed shapes with different rings representing the individual tracks of the album and the height profile of each ring visualising the dynamics of the track. The tangible object delivers an overall impression of the album. It uses software in a similar way to the research presented in this article to visualise sound based on spectrum, amplitude and duration. Fischer (2010) also uses spectrum analysis to turn an audio track into a 3D printed landscape. While a scanning light is sweeping over the object the original sound is played back. This concept is unidirectional and the audible sound is not reconstructed from the physical object. Gilles Azzaro (2013) employs a similar principle, but chooses a specific moment – a speech by Barack Obama – and uses a

laser line scanner to visualise the concurrently played section of the audio clip. The artefact works as an index. It acts as a quote of its sound origin. The project 3D Printed Record by Ghassaei (2012) is capable of recreating sound

Figure 1: van Melle & Marks, S. (2014), *Frozen Waves*.



Figure 2: Studio Nendo. (2015), *Chocolatexture*, www.nendo.jp/en/works/chocolatexture-2 Accessed 7 July 2015.



from the 3D object, but is tied to the principle of a standard 12-inch record, not granting any flexibility in shape during the generation of the 3D artefact. The reverse process of turning physical objects into sound is explored by Paul (2012). Paul uses a laser distance scanner to convert the silhouettes of objects into different pitches of a synthesiser that is accompanied by a beat track synchronised with the rotation of the object. Reading back the 3D printed objects has been visited and published in *Frozen Waves* (van Melle and Marks 2014) where data loss and sound recognition led to interesting points for future research (Figure 1).

Design studio Nendo (2015) developed a series of chocolates for Maison et Objet (Figure 2). In *Chocolatexture* nine similar-sized types of chocolate feature pointed tips, hollow interiors, smooth or rough surface textures. With identical material, the characteristic textures create different tastes. Each chocolate is directly named after Japanese expressions used to describe texture and as such each artefact is part of a learning tool. This is an insightful design approach employed to redefine food based on typical Japanese design principles and it adds a layer of meaning to each object.

Two further bodies of research relate to the project's concerns with the potentials of working with bees. *Seed of Narcissus* (2011), developed by Studio Liberty, explores an object's inner fragility as well as its ability to act as a vessel for the spread of pollen (and as an aid in the reproduction of flowering plants). The glass bulb was made in a high speed, high temperature, machine driven environment. The outer wax structure was the result of the natural and relatively slow process of honeycomb building (Figure 3). The relationship between the designer and the bee colony is evident, although the final shape is largely dictated by the designer and the industrial process. *Yuansu II* (2014) is a project by artist Ren Ri (Figure 4). The project's title is based on the Chinese words for element (yuan) and mould (su), and it refers to mankind and his influence

Figure 3: Studio Liberty. (2011), *Seed of Narcissus*, www.coolhunting.com/culture/ren-ris-bees-wax-sculptures Accessed 12 January 2015.

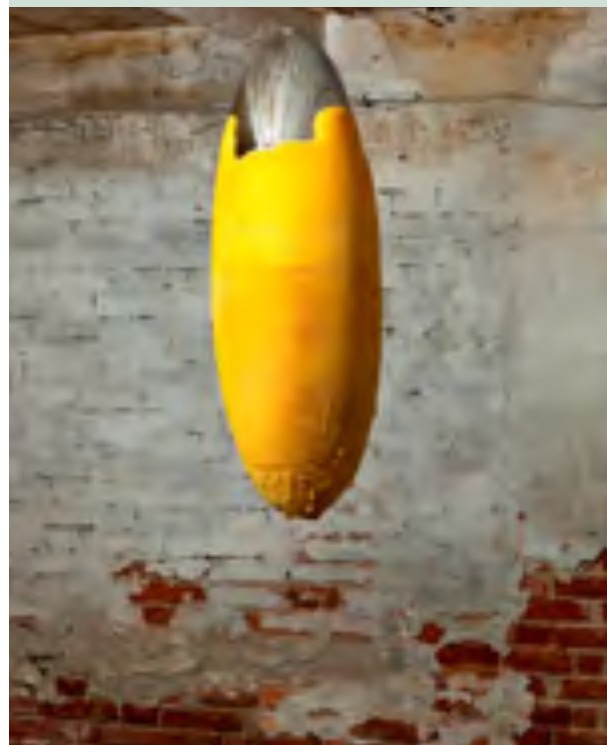


Figure 4: Ri R. (2014), *Yuansu II*, www.coolhunting.com/culture/ren-ris-bees-wax-sculptures Accessed 12 January 2015.



on the environment. During the production of each piece, the queen bee is kept at the centre of a transparent cube. This results in the other bees gathering around her, to start building around the centre. Every seven days Ri changed the gravity of the honeycomb by rotating the cube on to a different side. Key to his work is the elimination of the artist's subjectivity and the unpredictability of the final outcome.

Memories and expectations

Investigation one has developed through a number of iterative investigations based on the hypothesis that objects are continuously changing processes in time. Within it sound recordings, sound spectrum analysis, parametric 3D model creation, and materialising methods such as 3D printing, physical representations of the acoustic world are recorded and re-composed. In 1978, designer Jay Doblin argued that a product might be conceived as frozen information (Doblin 1978). I suggest in this study that a product may also encapsulate where, when and how it was made. For example, a profound intersection may be discovered between the growing and processing of food and the artificial way of creating and manufacturing design work.

The research resonates with anthropologist Lévi-Strauss's (1975, p. 89) arguments that humans insist their food should not only be "good to eat"—tasty, safe, and nutritious—but also "good to think". For among the things we consume—edible or non-edible products—we consume ideas. In this perspective, hedonic likes and dislikes originate from a synthetic mode of perception. We respond to objects that we have learned to recognise. Recognition of food is therefore important to survival (Katz 2003). Katz explains that the brain's integration of food qualities makes it difficult to discuss the different sensory systems in isolation from one another since these systems tend to interact. He argues that our final perceptions receive input not just from a variety of sensory systems, but also from our memory or past associations. When it comes to assigning priority to sensory information, humans are visual animals. We tend to rely most on what we see. We learn to associate the appearance of a food with its other sensory qualities.

This resonates with Pollan's argument that, as in so many areas of contemporary life, the cultural experience of food has become a visual one. Pollan (2008) argues that food is about pleasure, community, family and spirituality. It is not only about what mankind digests (Brillat-Savarin 1994); it is also about our relationship to the natural world, and about expressing our identity. Ever since humans have been eating collective meals, their consumption has been about culture as much as it has been about biology. Desmet and Hekkert (2007) divided a product experience into three subcategories: the aesthetic experience, the experience of meaning and the emotional experience. The experience of meaning is defined by cognition. Here cognitive processes like interpretation, memory retrieval, and associations, allow us to recognise metaphors, assign expressive characteristics to a product, and assess its significance.

Kosslyn (2003) argued that visual mental imagery is seeing in the absence of an immediate sensory input. It relates to human experience as memory does not only contain an image or an event, but also information to its sensorial context. The work investigated here balances between recording memories and creating expectations. The aim is to create a stronger and more meaningful experience by inviting the audience to actively take in the exhibition through a multisensorial experience.

Locality and biological design

The notion of the place where one lives – in this case an island off the coast of New Zealand – and the products that can express local qualities (Pollan 2013) have influenced the decision to pursue the inquiry using a material of local significance. For the first investigation a local beekeeper was approached to participate in the research experiment. This was because, like cheese and wine, the production of honey is impacted on by geography, climate, weather, geology and soil. This is referred to as *terroir* (Katz 2003). The complex combination of these elements is why flower nectar has a special composition. It gives the resulting honey from that nectar a unique fingerprint and a specific colour, odour and flavour.

According to Benyus (1997), humans, like any other life form are still beholden to ecological laws. The most irreversible of these laws says that a species cannot occupy a niche that appropriates all resources without sharing. Species that ignore this law eventually destroy the community that supports its own expansion. Reaching our limits may lead to an opportunity for us to move to a new survival phase, in which mankind adapts to the Earth rather than the other way around. Benyus divides her concept of biomimicry into three categories:

- Nature as model. Biomimicry is a new science that studies nature's models and then imitates or takes inspiration from these designs and processes to solve human problems, e.g., a solar cell inspired by a leaf.
- Nature as a measure. Biomimicry uses an ecological standard to judge rightness of our innovations. After 3.8 billion years of evolution, nature has learned: What works. What is appropriate. What lasts.
- Nature as mentor. Biomimicry is a new way of viewing and valuing nature. It introduces an era based not on what we can *extract* from the natural world, but on what we can *learn* from it.

In *Biodesign* Myers (2012) argues that the convergence of biology and design is crucial in supporting the ongoing effort to relieve the negative impacts of the legacies of the Industrial Revolution. This combination, he suggests, might lead to a reconception of the primary design principles of value generation, growth and sustainability. He also argues that biodesign goes further than other biology-inspired approaches to design and fabrication. This study looks beyond biomimicry (Benyus 1997), cradle to cradle (Braungart 2002), and forms of sustainable design practice. Its aim is to lead a possible way to the embodiment of living organisms as essential components in both the making process and the final shape of the design work. Here the relationship between the designer and local producers, like the island apiarist and the island bees, is key. The inquiry may be best understood as a modest attempt to find novel ways of fabrication—materialising the immaterial—and investigating circular design. Here manufacturers and designers will be enabled to start collaborating in a holistic way where the impact on the environment may be seen as input stimuli. The project explores ways in which we might create and move from an artificial and industry-based system towards a system in which natural and artificial systems support each other.

A system is more than the sum of its parts. Many of the interconnections in systems operate through the flow of information. Systems often have the property of self-organisation. They possess the ability to structure themselves, to learn, diversify, and complexify. System behavior unfolds itself as a series of events over time. According to Meadows (2008) a set of elements or parts that is organised and interconnected in a pattern or structure that produces a characteristic set of behaviours, may be classified as its function or purpose. Balancing feedback loops are equilibrating or goal-seeking structures in systems. They are both sources of stability and of resistance to change. Resilience is limited. Systems need to be managed not only for productivity or stability; they also need to be managed for resilience. There are no separate systems. Our whole world is a continuum. Drawing a boundary around a system for isolation is depending on the purpose of the conversation. Everything we think we know about the world is a model. Our models fall short of representing the real world fully.

In *The Meaning of the 21st Century*, Martin (2006) argues that evolution has gone through billions of years of trial and error and therefore nature has learned to protect itself from nature. However, it has not learned to protect itself from human artificial works. Nature itself is profoundly robust. However when confronted with human technology some aspects of nature may be considered vulnerable. New technology is essential to our future, yet we must use it with appropriate respect for the deep complexity of nature. According to Martin (2006), mankind should not try to replace the wisdom of billions of years of evolution with cleverness. Instead we should build a thoughtful partnership with nature. Earth's geosphere and biosphere are an integrated entity. Lovelock (2006) calls this complex system *Gaia*—an ancient Greek personification of the Earth. If we change the behaviour of Gaia we are interfering with tremendous forces, and the consequences would be devastating for our life on Earth. A huge concern nowadays is that we are recklessly increasing the pressure on this delicately adjusted system. The 21st century must put mankind's efforts in place to regulate human behavior to live at peace with Gaia. This will be essential for future centuries. Small local actions can transform the bigger picture, especially in ways projects are connecting together as social and ecological systems. Sustainability is not something to be engineered, or demanded from politicians; it is a status that emerges through both incremental and abrupt change at many different scales (Thackara 2015). Martin (2006, p. 190) distinguishes the main differences between Nature's Evolution and the Automated Evolution. Remarkable is his statement that plants or creatures that evolve are physically separate. This contrasts highly with Benyus, Meadow, and Lovelock and it seems it contradicts Martin's own use of the concept of Gaia.

Table 1: Nature's Evolution and the Automated Evolution (Martin 2006, p. 190).

Nature's Evolution	Automated Evolution
A biological plant or creature	A process of software
Glacially slow evolution	Very fast evolution
Immense complexity	Low complexity today; eventually complexity exceeding that of nature
No long-term goal in mind	Long-term goals that are set
Random trial-and-error	Steered by an intelligent design team
Survival of the fittest	Selection based on design criteria
The selected version can't be immediately replicated	The selected version is replicated and spread through the Internet
Methods of evolution rarely change	Methods of evolution evolve rapidly
Each plant or creature that evolves is physically separate	Evolving software can be interlinked on the Internet

Many of the troubling situations in our world are the result of design decisions. Eighty percent of the environmental impact of the products, services and infrastructures around us is determined at the design stage (Thackara 2005). Design decisions shape the process behind the products we use. This includes the materials and energy required to make them, the ways we engage with them daily, and what happens to them when we no longer need them. Simon (1996, p. 111) says “Everyone designs who devises courses of actions aimed at changing existing situations, into preferred ones”. Victor Papanek (1972, p. 23) follows this construct by stating, “design is basic to all human activities—placing and patterning of any act towards a desired goal constitutes a design process.” Designing is what humans do. We try to make the world—the processes and systems that surround us—meaningful (Verganti 2009). Empathy to context, to relationships, and to consequences are key aspects of the transformation from mindless development to design mindfulness (Findeli 2001). Design mindfulness involves the determination to:

- think about the consequences of design actions before we take them and pay close attention to the natural, industrial and cultural systems that are the context of our design actions
- consider material and energy flows in all systems we design
- give priority to human agency and not treat humans as a “factor” in some bigger picture
- deliver value to people—not deliver people to systems
- treat “content” as something we do, not something we are sold
- treat place, time and cultural difference as positive values, not as obstacles
- focus on services, not on things, and refrain from flooding the world with pointless devices.

Two hundred years ago the Industrial Revolution gained momentum. Manufacturing was little and planet Earth seemed big. Today however, we see a global population of more than six billion, and almost everything in our lives is a product of industrial manufacturing. An escalating demand and craving for profit have led to promptly draining resources and the degeneration of our environment. According to Steffen (2006), conventional industry is an ecological disaster as it makes things using a “heat, beat and treat” (Steffen 2006, p. 109) approach. Most of our natural materials are not ready for use. They have to be fused, distilled, or reacted with toxic chemicals at high pressures. This is a highly wasteful process. The few materials that need no manipulation usually have to be cut into different sizes or shapes before becoming products. This creates even more waste. We can improve these processes by working *with* nature, but we can also make change by working *as* nature. This neobiological industry blurs the line between the grown and the made. In design there is a developing role for bio-utilisation—the use of parts of organisms as raw materials—and for bio-assistance—the domestication and use of organisms (Benyus 1997). Tomorrow’s industry might seek to produce objects that work as well as those in nature. Processes may run on solar energy and treat waste as energy. Tomorrow’s industry could eat, digest, and deposit the things we need not just in imitation of living beings. A possible future design industry might not just be biomimetic, it could turn neobiological.

Current and future development of the inquiry

The initial data have been gathered and processed (Figure 5) and the design tool has been designed (Figure 6). The manufacturing tool has also been developed the natural connection has been established (Figure 7) and the first series of objects have been exhibited (Figure 8 and 9).

Figure 5: van Melle (2014), Placing the recording device in the beehive.



Figure 6: van Melle (2015), Six sequences of screenshots of *Sleeping with Bees* in the Processing app.

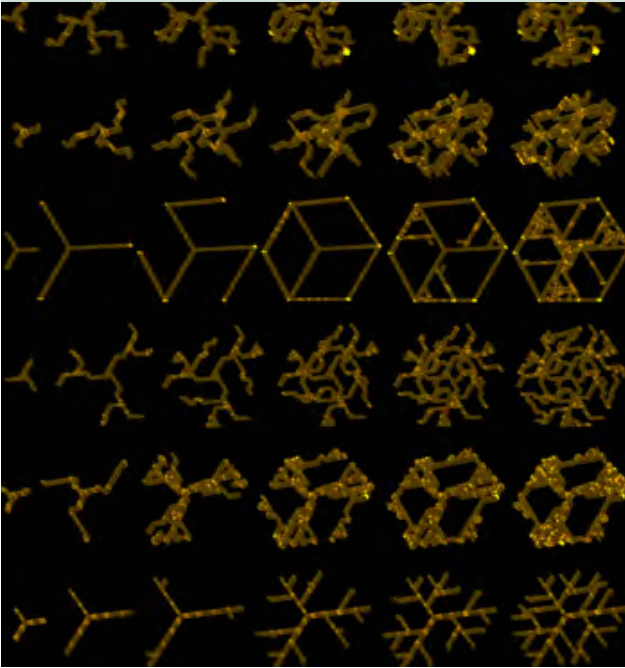
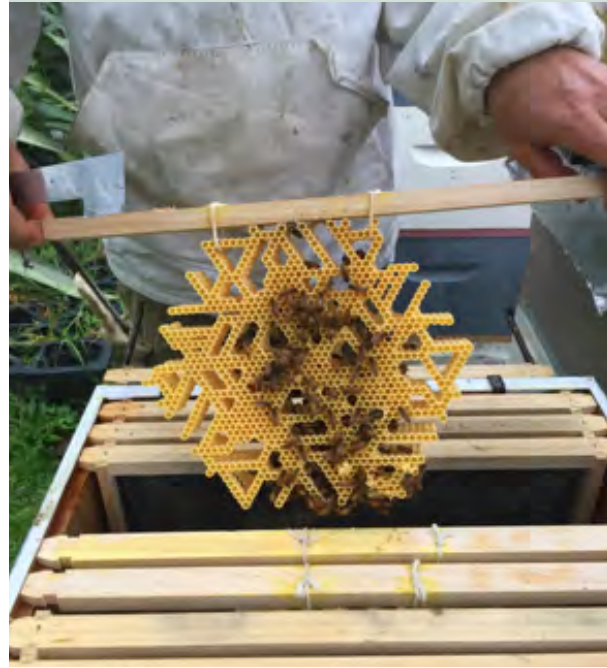


Figure 7: van Melle (2015), A 3D printed sound shape is being taken out from a beehive.



In the future development of this research I am considering how additive prototyping technologies like 3D printing might be combined with the natural system commodities honey and beeswax, to create meaningful (Verganti 2003) and high use objects. Circular interdependency will be further explored through research into fabrication methods that are based on content and background to create more applied design work for usable objects. Here local living systems are key. Future design outcomes will be directed by an ornamental approach (Luhmann 2000). Continuation and circularity (Briggs 1992) will inform digital and craft based design processes. The aim is to treat the act of designing like a recalculation (Berwanger 2012) of a natural living system. The users will take part in the initial design stage and continue further design development throughout the use of prototypes and the final product. They will grow the value generation. The aim is to work *in* nature, and to work *with* nature, and by paying close attention and learning from natural living systems hopefully we can also make as nature.

Figure 8: Marks, S. (2015), *Sleeping with Bees* Exhibition overview.

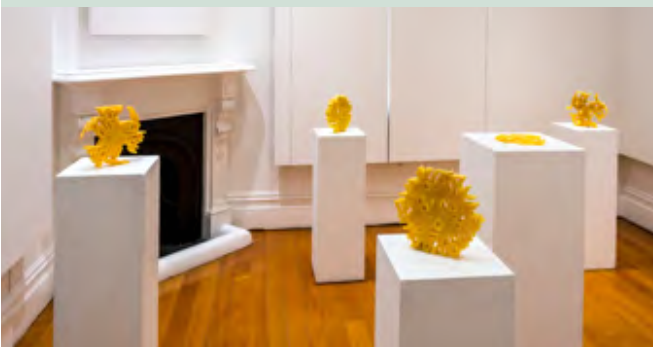


Figure 9: van Melle (2015), *Sleeping with Bees* Exhibition detail.



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the role of craft in creative innovation: skin, cloth and metal

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Abstract

This paper explores the central idea of creative innovation in the crafts through research methodologies informed by experiential knowledge of fashion, textiles and jewellery practices. The relationship between the body, materials and technology is reinforced through discussion of aspects of two projects, *Crafting Anatomies* (Townsend et al 2015) and *Flex-It* (Dean and Niedderer 2014) which the authors were involved in and which draw on references to advanced, modern and historical crafting contexts. The paper seeks to demonstrate how craft, and research through craft, can facilitate creative innovation by mediating the recursive interaction between analogue and digital techniques (Adamson 2015).

In *Crafting Anatomies*, skin as material and clothing, is the starting point from which to craft new biological, surgical and wearable outcomes, informed by fashion and textile approaches. *Flex-It* explores elasticity as a medium for emotional expression in silver jewellery design and production, and how complex pieces devised using established techniques to incorporate moving parts, can be produced using additive manufacturing.

The examples demonstrate how craft continually reinvents itself, by contributing to its own development while benefiting the wider areas of human experience and existence.

Keywords: craft research, experiential knowledge, materials and technology

the role of craft in creative innovation: skin, cloth and metal

Introduction

Creativity in art and design is often portrayed as the result of pure idea generation by artists and designers who are somehow freed from the constraints of acquiring the many hours of technical skill and know-how associated with craftsmanship (Sennett 2008). Dorst and Cross (2001: 435–36) help to explain this preconception, as the designer's finding of the surprise solution, which facilitates the creative leap, rather than routine or default solutions which facilitate the incremental changes that are often associated with craft. However, it is often incremental changes to the way new or established technologies are mediated via the hand and computer that leads to innovation. As Adamson states:

We should not simply see craft as the static ground from which the digital emerges. Instead, we should understand the interaction between the analogue and the digital as recursive, with each array of techniques decisively inflecting the other (Adamson in Openshaw 2015: 287).

This paper explores two distinct areas of craft practice, fashion/textiles and jewellery, to demonstrate how designer/makers in these areas iterate between traditional and digital tooling to develop new craft based methodologies, products and experiences to facilitate innovation. The first examples to be discussed centre on the relationship between skin and cloth, body and dress, as featured in *Crafting Anatomies* (Townsend et al 2015) where embroidered textile practices were employed to 'culture' biomaterials for a *Biological Atelier* (Congdon 2015); pattern cutting techniques informed dialogues around surgical procedures for *Skinship* (2016) and historical fashion items were studied and deconstructed to design speculative wearable technologies via the *Electric Corset* (Kettley et al 2015; Townsend et al 2015). The second project, *Flex-It* (Dean and Niedderer 2016) investigated the potential of flexibility as a functional and affective design element within jewellery design. The experimental research explored how to incorporate emotional expression through flexible parts into a series of ring prototypes. The design was based on pieces crafted using traditional techniques, through the structural development of metals using Additive Manufacture (AM).

All examples encompass a strong reliance on experiential knowledge of materials and making as catalysts to devise interdisciplinary methodologies and create innovative products that have the potential to enhance user/ human experience. The following section contextualises the relationship between experiential knowledge and creative innovation, prior to discussing the projects.

Creativity, innovation and experiential knowledge

In the last 20 years, the idea of creativity has been defined variously and by different disciplines (e.g. Csíkszentmihályi, 1996, Sternberg 1999, 2011, Kaufman and Beghetto, 2009, Cross 2011). Where the different views appear to converge, is that creativity denotes some way of thinking, doing or bringing something new into being that is worthwhile and that has not been thought of, done or made before. Creative ideas not only look at concepts and things in novel ways, but also bring together things that would not normally be thought related. The question that remains at the heart of the creativity debate is how creativity comes about and can be fostered. One of the earliest accounts and which is still current today is the insight by Polanyi (1985) that the step from the known to the unknown requires intuition and that this intuition is based on tacit knowledge, and in particular experiential knowledge (Niedderer 2007).

In order to make something new, the craftsperson needs to acquire experiential knowledge of materials and technologies beyond a purely pragmatic level (Sennett 2009: 288). Creative innovation in the crafts is often facilitated through the development of 'new relationships between the handmade and the digital' which are changing the ways we think about, make and experience objects (Adamson in Openshaw 2015: 286). This idea is underpinned by Sennett's explanation of the word experience, via the dual German meanings of *Erlebnis* and *Erfahrung*: 'The first names the event or relationship that makes an emotional inner impress, the second an event, action or relationship that turns one outwards and requires skill rather than sensitivity' (Sennett 2008: 288). While this definition could be challenged in terms of *Erfahrung*, as what you learn through time may include skill *and* other kinds of knowledge, overall we concur with the suggestion that intuition is based on our prior experiences, both emotional and sensory, as well as our intellectual ability to understand the world, i.e. through expertise, which can be both enabling through offering the power of understanding and explanation, and limiting by entrapping the mind in preconceptions of what has been learned.

Current debates on experiential knowledge continue to investigate the relationship between 'personal, experiential, cultural, emotional, environmental and social aspects' of designing and making as well as the notion of what we can know experientially from working and collaborating in different ways and with diverse materials (EKSIG 2015: 4).

For example, Lene Tanggaard¹ challenges the myth of the lone creative genius's idea by emphasising the interplay between theoretical and empirical elements, framing creativity the result of 'socio-material practice' (Tanggaard in EKSIG 2015: 10). Elvin Karana discusses the potential for new materials to present the possibility of new products through sensations, thoughts, feelings and behaviours (Karana et al. 2014). Karana's definition of 'innovation' is linked to the ability of a product to affect the maker and user's experience through an embodied form of analysis (Ibid.) This supports the authors' view that creative research and innovation in the crafts requires sensibilities of material understanding and human values through the joining of emotion *and* knowledge (Niedderer and Townsend 2014). The following projects illustrate how craft is instrumental within the creative process through highly skilled material selection, technology application, in response to human needs and experiences.

Crafting anatomies: skin, cloth and wearable technology

'Crafting Anatomies: Material, Performance, Identity' was an exhibition and symposium devised by Dr Katherine Townsend, Dr Amanda Briggs-Goode and Rhian Solomon in 2015 for Bonington Gallery, Nottingham.² The project 'placed the human body at the centre of a multi-disciplinary dialogue; exploring how this entity has been interpreted, crafted and reimagined in historical, contemporary and future contexts.' (Crafting Anatomies 2015). The Materials section of the exhibition focused on the parallels drawn between the skin and cloth, the body and dress, as evidenced in *Skin* at the Wellcome Trust, (2010) and at *Make: Shift 2014* hosted by the Crafts Council. The three projects described here focus on 'skin' as a bioengineered material (Congdon 2015), 'skin as cloth' – a meeting place for fashion and surgical practitioners (Skinship 2015) and historical dress as a 'second skin' and conduit towards wearable technology.

Biological Atelier

PhD researcher, Amy Congdon considers skin as a biomaterial in her Biological Atelier, a series of imaginative future fashion collections that explore 'the potential of biotechnology, what these new tools and materials could mean in the future' (Amy Congdon 2015). Her approach is informed by her education as a textile designer and various residencies with Microsoft, Nissan, SymbioticA, Biocouture and through working on the Biolace project (Ibid.). The pieces from her Extinct S/S 2082 collection exhibited in *Crafting Anatomies* included fashion accessories produced by culturing skin cells over digitally embroidered scaffolds to strategically control and shape their growth.

Congdon's method of growing skin cells to produce organic fabrications has been developed through collaboration with Lucy Di Silvio, Professor of Tissue Engineering, Kings College and her reconceptualisation of a 'biology lab as a material engineering lab', as discussed at *Make: Shift 2014* (Crafts Council 2014). The desire to devise new tools and materials has resulted in a novel substrate and interdisciplinary methodology that blurs the roles of 'the designer, the craftsmen and the scientist' (Amy Congdon 2015). The process of crafting skin cells is speculative, design-led and a potentially sustainable future fabrication process that reflects 'the rise of a new bio-materiality'³ (Collet in EKSIG 2015: 12). The significant difference is that Congdon is not working with 'synthetic', but 'human' biology, using 'living technology' to foster innovative substrates (Ibid.). The work represents how dedicated (textile) skills, based on 'the tactile acquisition of knowledge' (Philpott 2012: 53) can be deployed in conjunction with unrelated practices to develop pioneering structures. 'In such practice, innovation is generated through the maker's creative response to unforeseen behaviours of both process and material.' (Ibid.)

Skinship

Following the theme of skin as fabric, is the collaborative network sKINship (www.skinship.co.uk), who facilitate creative connections through exchanges between the fields of design and plastic surgery. Developed by Rhian Solomon in 2011, sKINship is a collective of specialists who 'cut, create and make' for the body, including bespoke pattern cutters, industrial designers, concept developers, footwear designers and consultants from a variety of reconstructive surgery specialisms (Solomon in Ravetz et al 2013: 114).

Working in collaboration with couture pattern cutter, Juliana Sissons, sKINship, has run a number of hands-on workshops to open up dialogues between disparate professions to develop innovative products and services. These have included creative pattern cutting for plastic surgeons from St Thomas' Hospital, London; conversations between Savile Row Tailors and specialist burns surgeons; plastic surgery workshops for designers and patients undergoing reconstructive surgery. Based on her specialist pattern cutting skills and new knowledge of surgical practices, Sissons has interpreted surgical cutting and construction techniques through experimental 'surgical fashion

1 Tanggaard, L. (2015) The Socio-materiality of Creativity, Keynote 1, EKSIG 2015.

2 Crafting Anatomies: Material, Performance, Identity, Bonington Gallery, Nottingham Trent University, 7 January- 4 February; Crafting Anatomies Symposium, 30 January 2015.

3 Collet, C. (2015) 'Harvested and Grown: The rise of a new bio-materiality', Keynote 3, EKSIG 2015.

garments', which investigate new concepts for dart manipulation to inform the contouring and fit of clothing. A collection of working prototypes draped and sewn from knitted jersey (the closest cloth to skin due to its construction) were displayed in *Crafting Anatomies* along with a film recording the dialogue between pattern cutter and surgeon.

Findings from the SKINship initiative include considerations of grain direction, colour (skin tone), pattern, and thickness of 'cloth', as guiding factors to inform the 'cut and construction' processes of the body for each 'craftsman'. The fashion and surgical practitioners have also observed technical similarities in the use of geometry, the opening and closing of angles, to create or reduce fullness and form, in addition to the capabilities of each party to visualise the body in two and three dimensions when creating symmetry through shaping (Skinship 2015). By drawing on the similarities (and sometimes differences) of how practitioners in each discipline 'think and work' (Cross 2011), SKINship is currently developing innovative tools, such as a surgical teaching garment that communicates two types of breast reconstruction procedure to patients.

Figure 1a-c: Toile by Juliana Sissons based on plastic surgery reconstruction for Skinship (2015) ©Skinship 2015

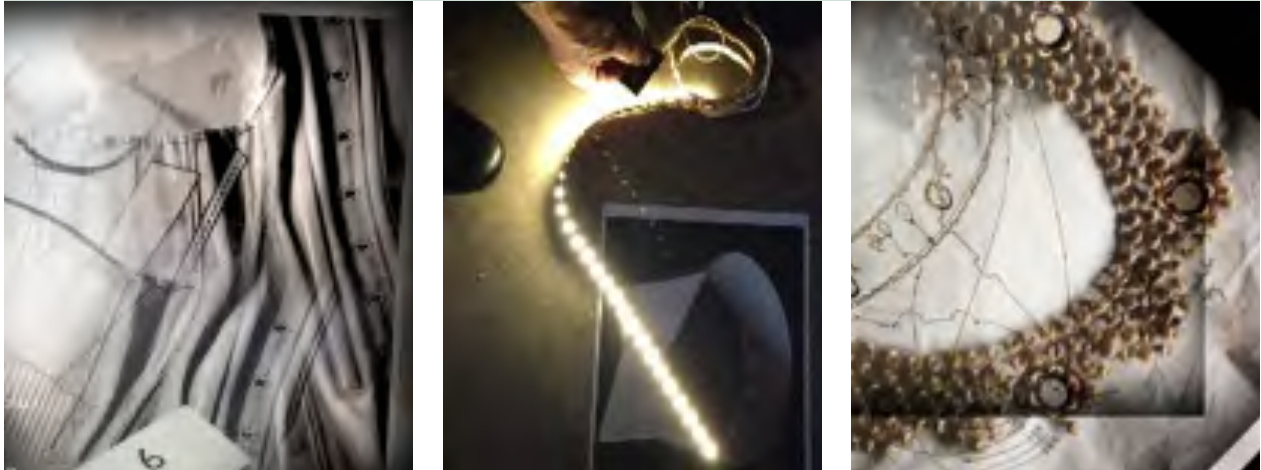


The Electric Corset and other future histories

Moving to the relationship between skin and cloth, The Electric Corset conveyed how archival research into historical dress can inform the design of wearable technology. Devised by Dr Katherine Townsend, Dr Sarah Kettley and PhD researcher Sarah Walker the title for the project and exhibit was based on an advertisement for a Victorian 'electric corset' made which represented a wearable innovation from the past. The aim of the research/ practice was to demonstrate the wealth of historical artefacts and references available to designers of smart textiles and wearable technologies by considering the anatomy of dress as a catalyst for future wearable designs through an annotated physical anthology of historical artefacts and speculative prototypes (Townsend et al 2015). A process of selection was initiated through visiting and studying items held by Nottingham City Council Museums Collections in collaboration with the curator of Costume and Dress, Judith Edgar. The final pieces that were selected to exhibit and inform the creative ideation process included a white twill ('jean') woman's corset (1800-1810), a woman's dress collar, embellished with shells and glass beads (1920-30), detachable men's starched linen shirt collars (1850-1952) and a footman's livery coat (1890-1910).

Varying dimensions and themes were identified within the objects to inform speculative designs for future wearables such as: functionality, wash-ability and maintenance; layering and detailing to denote class and identity; modularity and loosely defined conceptual spaces between clothing and the body and adornment as a site for creative product development (Ibid). Accompanying the garments in the exhibition was a film that communicated the research methodology through still images, short video clips and quotations. The content included photographs of the garments and accessories (taken in the archive) and documentation of the process of experimental ideation, or 'play' inspired by the construction and decorative details of the items (Glazzard et al 2014). For example, the boning and ten-hole lacing of the corset; the buttons, fastenings, pockets and decorative cording of the footman's jacket and collar shapes inspired 2D drawings, collages and material sketches and assemblages. 3D partial garments were 'moulded' by working on the half and full-size mannequins using cloth manipulation, stitching, smart elements such as basic circuits incorporating LilyPad (Arduino) and SMA's (shape memory alloys). The crafts-driven creative prototyping employs some of the principles of Kettley's 'foundations of craft', particularly steps 1-3 (of 7), which cover 'risk and visual language', 'extending material' and the 'internalisation of material' (Kettley 2012: 37-38) It also prioritises hand making as a 'way in' to the programming and use of digital tools (Taylor & Townsend 2014).

Figure 2a-c: The Electric Corset and Other Future Histories (2015) Experimental Ideation ©Electric Corset 2015



The methodology presents a viable way of working with visual and tactile ‘concepts of craft’ (Macdonald 2005) to further the field of wearables design. The approach pre-empts the invention and availability of specific technologies by considering identity and expression as functions of clothing and adornment and by drawing on the fields of embodied participation, interaction and service design approaches (Kettley et al 2015). It was also intended to help build critical mass in anthropological, crafts-driven approaches to smart textiles and wearable technology and inform critical debate around the body in relation to new embedded technologies.

Flex-it: integrating emotional expression into jewellery design

Lionel Dean and Kristina Niedderer’s research focuses on exploring material intervention to affect the user’s experience and emotions akin to Karana et al’s philosophy (2014). The research investigates the potential of flexibility as a functional and affective design element as well as its potential applications which bridge the areas of jewellery design and emotion design through the structural development of metals using Additive Manufacture (AM) also known as 3D printing.

Research into AM in metals, in particular Direct Metal Laser Sintering (DMLS) and Selective Laser Melting (SLM), is still highly specialist and is mainly focused on achieving structural complexity, by seeking to eliminate flexing to create stability through enhanced strength and stiffness (Murr et al. 2012). Based on their research into the nature of flexible structures and of current deformable AM geometries, Dean and Niedderer (2016) identified various technical applications and a small number of individual practitioners exploring AM to create extremely flexible objects and materials (e.g. Kleemann, 2012; i.materialise, 2013). Their findings indicated limited research into the affective qualities of flexible AM structures resulting in the formulation of a series of practical experiments to explore their emotional and functional design potential. The experiments built on Niedderer’s work (2012) with Argentium silver and laser welding, where she explored the notion of movement as an alternative to visual semiotic and appraisal approaches to create product expression. The study developed a ‘soma-semiotic framework’ as an aid for creating and interpreting complex emotions in design, which was further developed through the Flex-It project in collaboration with Dean (Dean and Niedderer 2016).

The soma-semiotic framework distinguishes expressive, functional and behavioural movement, which can have both concrete and symbolic meaning, and is read through a combination of semiotic and somatic interpretation. Niedderer distinguishes the three key features of the framework as: semiotic and semantic object indicators; their individual emotional meaning; and the summative interpretation of all meanings as shown in Table 1 (Niedderer 2012: 65-66).

Table 1: Schema of soma-semiotic framework of emotion

Meaning	Description of movement/image	Soma-semiotic interpretation of individual movement/image with regard to emotion	Soma-semiotic interpretation of combined movement/image with regard to emotion
Indicator			
Movement 1 (expressive/functional/behavioural)
Movement 2 (expressive/functional/behavioural)
Visual image 1

Dean and Niedderer's experiments focused on the use of stainless steel (SAE grade 316L) with SLM to create flexible structures. The initial prototype was based on an existing piece of jewellery designed by Niedderer (Fig. 3) chosen because it already contained an element of flexible structuring in the form of a spiral spring - which had the potential the dual functionality of flexible sizing via the petal moving shapes - and for the abstracted (but recognisable) flower shape, which imbued the design with meaning. It was also selected for its complex structure, which was difficult and time consuming to produce using traditional methods, making its translation through 3D printing (AM) appropriate.

The AM process allowed for greater complexity in terms of the number of spring elements, but at the same time, the nature of the formed AM material restricted the design to finer movements than in the conventionally made pieces. The resulting form was effectively an array of springs arranged radially around the finger and joined by a rigid outer ring (Fig. 4). In spite of their free form potential, AM layer-built technologies each have their own practical limitations (Dean 2013: 170–73) and in common with many other AM metal technologies, SLM, the process used for the prototypes in this research, normally requires a sacrificial scaffold-like support structure to be built along with the part. Following numerous trials (Fig. 5) to eliminate the need for an internal support structure, the final design (Fig. 6) was built without any internal supports, which allowed for easier clean up and finishing.

The soma-semiotic framework was applied to analyse the pieces with regard to their affective qualities and expression in comparison with the originals. Like the originals, the design was intended to be sized to fit the desired finger comfortably through flexing without a change of geometry, and that the ring, once in place, could rock against the finger. The result of the analysis was that while the design had been intended to offer a greater aspect of playfulness, instead the current design further emphasised perceptions of functionality and technicality. The intended 'function' of the springs is perceived to be a 'one size fits all' adjustability, which rather masks and distracts from the playful aims. This is useful to understand to help with the further design development. Now, with the better understanding of the design expression as well as the performance of the SLM material, the intention is to disassociate flexible movement from function and create less obvious movements that provoke a greater emotional response.

The case study demonstrates two ways in which experiential knowledge has been used to achieve innovation: Firstly, it enabled a perspective on what SLM printing could be used for and achieve: rather than creating structural rigidity, the experiments tried to ascertain how structural flexibility can be exploited, in this case with regard to the expression of emotions. Although this work is in its early stages, this new perspective might offer potential for a number of further development options. Secondly, the nature of the design required finding ways of eliminating the usual support structures.

Conclusion

The crafting approaches discussed here demonstrate how creative innovation occurs when established practices of making are integrated with, or reinterpreted via advanced technologies. The case studies go some way to proving Adamson's assertion that craft should not be viewed as 'static ground', from which a superior form of digital production 'emerges'. (Adamson in Openshaw 2015: 287) The relationships between different (craft) disciplines, bodies of knowledge, and technologies are iterative, or as Adamson calls them, 'recursive' (Ibid.). The role of tacit or the 'tactile acquisition of knowledge' (Philpott 2012: 53) of materials and making are also highlighted as

Figures 3(L) & 4(R): Showing Niedderer's original pieces that the prototypes were based on and the first CAD model ©Niedderer 2015



Figures 5(L) & 6(R) showing working prototypes with internal scaffolds and final design, produced without internal supports ©Niedderer 2015



being essential when stepping into unknown territory. For example, the use of 'scaffolds' to structurally support cellular (skin) growth and SLM (metal) fabrication, produced using existing textile and precious metal working (e.g. silversmithing) skills in the work of Congdon, Dean and Niedderer. The shared but different 'material understanding' (Solomon 2013) that plastic surgeons have of skin and pattern cutters have of cloth was significant in Skinship's development of new approaches to surgical procedures. The integration of analogue components with digital images informed by textile and fashion design and construction methods informed the development of potential wearable prototypes.

In the publication, *Together*, Sennett (2013) explores craftsmanship as a collaborative act, one of cooperation with other individuals and organisations from diverse cultures, backgrounds and with different belief and value systems. This is exemplified in various degrees by the examples cited above: the textile designer and scientist in the *Biological Atelier*; the pattern cutter and surgeon in *Skinship*, the crafts-driven wearables design team and curator in the *Electric Corset* and the silversmith and additive manufacturer in *Flex-It*. The specialist knowledge and skills applied, combined and exchanged in all these cases are supported through interdisciplinary cooperation, which Sennett considers to be a craft skill in itself. The craft methodologies and outcomes discussed represent innovation in terms of future biomaterials that are more sustainable, surgical procedures that enhance patient wellbeing, wearable technologies that are synthesised with fashion more intuitively and jewellery that has the capacity to respond more flexibly to the practical and emotional expressions of the wearer.

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conference papers academic and professional strands

FUTURE SPACE

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Design fiction – a countermeasure for technology surprise *E. Scott Denison*

design - for or with the others?

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Abstract

This contribution debates, as an outcome of several Master Thesis Works conducted by graduate students and research groups at the Zurich University of the Arts, the relevance and the value of “Social Design” for the design discipline as well as for the design education on a higher level.

Undoubtedly the global stream of humans, cultures and habits sends signals for the design of objects, services and spaces. May it be for underserved, refugees or immigrants; one expects the consideration of design for the specific needs and challenges of the concerned humans.

The intercultural dialogue and the global fragmentation shape the future working environment for designers. How to deal with multicultural affordances and non-linear developments in the society? How to implement multicultural perception on objects and spaces? This contribution enables an unfamiliar and controversial view on the role of design in the intercultural and interdisciplinary field of social interactions.

It presents methods and arguments, how designers are able to implement a multi-perspective view on their own work. These methods are results from research and practice. They define a strategy for the design impact on social issues. Design can act as a catalyst for social change: this should be underlined with this article.

Keywords: intercultural design, social design, inclusive design, participatory design, social development

design - for or with the others?

1. The role of social design

1.1. What can design produce?

There is largely agreement on the role and the effect of design: design can shape products and services; it can rethink systems and define innovative processes. Design deals with styles and aesthetics; it evokes desires but it also fulfils needs in a very basic and functional way. What was always inherent to design is the close view on the user. Design acts as an advocate for users and takes their needs and concerns seriously, supports them with good functions, addresses all senses and makes the things emotionally appealing. Good design means defining all these “user interfaces” in a competent way, regarding behaviour, value and meanings. As for example Dieter Rams stated this in his “10 principles of good design”¹.

In the last decade, complaints occurred widely amongst the academic community: design is getting a replaceable factor, which deals with meaningless and irrelevant content, acting only as a marketing tool for companies who want to differentiate themselves through design. This might be true: the consumer cannot really decide which shaver or hairdryer amongst a choice of maybe fifteen different might be the most suitable for him or her. This perception of design puts a sharp contrast to a sustainable and socially acceptable way of life. If design is used to only promote consumption with replaceable and very similar products and services, it will only define trends that are out-dated after a short period by the next designs itself. Here is no chance for the growth of a sustainable and responsible culture of consumption. In this matter: design contributes more to the consolidation of social differences as compared to the abolition.

Design is often perceived as a typical phenomenon of saturated societies in so called “developed societies”. At the same time it is often reduced to “western consumerist societies”. “Abundance” is a term that is often referred as relating strongly to design; instead of focusing on human and social needs, design responds to market-based interests. The idea that design, as part of an open economic market, drives the desires of the peoples on the right track is therefore only half true. Indeed: phrases as “form follows function”, “honest design”, “simple but useful”

or “less is more”, simply put a sticker on products and reduce former design attitudes to stylistic phrases that are easy to read in catalogues or marketing campaigns. Therefore we are attempted to ask critically: lost design it’s social pretension, to act as a positive facilitator between industry and user?



Setting up a new design education in Marrakech, Morocco.
(Image: Peter Vetter, ZHdK)

1.2. Back in the history of the role of social motivated design

Starting with some interesting attitudes in the late 19th and early 20th century, design had a strong self-definition as something that can improve not only products and process, it was obvious that design should put respect on the circumstances how things are produced and distributed.

On the way from Arts & Crafts

to the industrialised way of production, some remarkable positions underlined this responsibility of design. Robert Owen (1771-1858), an entrepreneur early textile tycoon, was aware that in his textile factory in New Lanark near Glasgow production quality and the welfare of the labourers are independent. So he improved the living quality

¹ www.vitsoe.com/de/ueber-vitsoe/gutes-design.

for them and defined a social standard for his production². He wanted to make New Lanark a better place to live and work, and hoped other factory owners would copy his ideas.

Similar could be recognised for the “Wiener Werkstätten” and the early “Bauhaus” Period in Weimar; with the creation of objects the designer or artist defined also the working conditions for the labourers and craftsmen. The wish to form everything anew, no matter whether everyday objects or representative items for a “new society” liberated from the limitations of the former class society, was one important goal of these movements³.

This was in the 50’s and 60’s of the last century updated by the German “Schule für Gestaltung Ulm” (HfG Ulm)⁴. But this time, the rather arts and crafts point of view on design and production was replaced by a scientific and research aspect on how things should be designed for a modern democratic industrialised-consumer society. In the 1970’s Viktor Papanek⁵ and Lucius Burckhardt⁶ are both visionaries, and at least observers of the social impact of design and the description of a new role for design in the society. Knowledge of design should be used not only to



New Lanark; Robert Owen believed that it was important to have happy workers. He introduced nursery and dayschool for the workers childrens as well as entertainment for them. (Picture source unknown)

the design of things and objects, but rather the definition of social relations and processes. Bruno Latour defined later the “Actor-Network Theory” in the 1980’s. Related to this theory, social connections are materialised as well as semiotic symbols.⁷

1.3. Conclusion

If we speak about “Social Design”, we do not think about a new trend or even a new design discipline. “Social design” means the focus of the design discipline, (as it was since the term “design” made its way as a discipline itself), on the effect on changes and innovations for the society. Of course – we always see this in a positive way: design helps to improve, support and respect the living conditions of humans and their environment - in whatever situations they live.

2. Design for basic needs

2.1. We design for humans, not for industries

Hence, in the midpoint of our considerations are always humans. How can design affect their life in a positive way and how can solutions be developed with the involvement of “those concerned”, which increases their quality of life, including nature and resources? Design, unlikely other disciplines, has the potential to negotiate conceptual alternatives and materialise things and processes. At the same time it explores new solutions. In its social orientation and effect, design tries to think always entirely and not isolated about value-adding chains and

2 Arthur John Booth (1869, p70 ff). Robert Owen, the founder of socialism in England. Publisher: Trübner & co. London.

3 Faulenbach, Bernd. (1995, p199-210). Bauhaus und Arbeiterbewegung in der politisch-kulturellen Auseinandersetzung der Weimarer Republik. Jahrbuch Arbeit, Bildung, Kultur, Bd. 13.

4 René Spitz (2014): HfG Ulm. Concise History of the Ulm School of Design, A5/06, hg. von Jens Müller, Zürich.

5 Papanek, Victor (1971): Design for the Real World: Human Ecology and Social Change, New York, Pantheon Books.

6 Design ist unsichtbar (1995) Hrsg. Hans Höger, Ostfildern.

7 Bruno Latour (1987): Science in Action: How to Follow Scientists and Engineers Through Society. Milton Keynes: Open University Press.

sustainable resources. This can have a positive effect on social relations. Importantly, the “empowerment” of the persons, families and communities are part of the solutions to increase the autonomy and the self-determination of these. Design solutions should not lead in a new dependency; it should offer options to increase the independency. We in the western world received this with the French revolution: *liberté, égalité et fraternité*. Still, most of the humans of our planet ask for these values⁸.

We come to the conclusion that “Social Design” asks for basic questions about the design discipline itself and, hence, on the education and design processes generally. In spite of an increasing globalised world, with multicultural life forms, can designers withdraw on questions of aesthetics and trends? Are Designers responsible how and for whom resources are reserved and consumed and what are the social impacts of their activities?

2.2. Design in the context of development aid

“Design”, in its common notion, is seen as an achievement of the industry in the so-called “developed” regions of the world. Design is involved in a lot of economic processes, but still largely not used in the context with less prosperous regions of the world. Do we know any African, Latin American or Asian designers or even design companies? In these regions imported consumer goods dominate a globally oriented

design perception, which barely takes into account the idiosyncrasies of live, culture, economic condition and possible sustainable benefits for the population. We have learned to design for our society, so why should we not support others in learning how to design for their societies? This is still paradox, because design has the potential to identify problems and topics in its own way and deliver innovative solutions that are more than just “more of the same”, considering western or “developed” values. If, at least this is what design is always claiming, it has the potential to adapt specific contexts very precise. Design should have much more impact on social conditions, than on the variety of consumer products.

90% of the world population lives a life far away from “Design” and its achievements, as we know it. Major awareness draws the exhibition “Design for the Other 90%” at the Smithsonian’s Cooper-Hewitt, National Design Museum, in 2007⁹. Of the world’s total population of 6.5 billion, nearly 5.8 billion people, or 90%, have little or no access to most of the products and services many of us take for granted; in fact, nearly half do not have regular access to food, clean water, or shelter. “Design for the Other 90%” explored more than 30 projects which reflect the growing movement among designers, engineers, students and professors.

Especially in development aid contexts, design can be most effective: recent discourses promote design as a catalyst for social change and the generation of social innovation. Designers can apply their knowledge for the benefit of a less privileged and under-served population in cooperation with humanitarian organisations. However, are design students and design universities prepared for such new challenges? Designers are neither social workers nor specialists in development aid¹⁰. Designers are designers; they think, act and respond in a very distinctive way. We call it often “design thinking” or better “Innovation through design”. But whatever we may call it: social changes and development aid can make use of the knowledge, the experience and the methods of design.

2.3. Learning from other design role models

While globalised companies become aware of the advantage utilising design, development aid organisations and social entrepreneurs are still largely inexperienced with the integration of design. In addition to the typical design transfer performance (“better” products, “more efficient” production, “new services”, “pleasant look”), design has a genuine effect: it triggers knowledge processes, initiate social changes, convey fair information, create cultural embedding or facilitate entrepreneurship on a small level. Design in the context of development must think for both



Co-creation in rural areas in Kenya.
(Image: Philip Moreton, ZHdK)

⁸ The Economist, Democracy Index 2014, 2ff

⁹ Catalogue of the Exhibition (2007): Cynthia E. Smith: Design For The Other 90%, Editions Assouline

¹⁰ The “DESIS” Network, founded by Ezio Manzini, Professor at the Politecnico di Milano put social design on the agenda of the international design education. The network is still active and part of the CUMULUS family www.desis-network.org

worlds: designing goods that are needed in developing regions, but also support companies and services that reach from there to our markets. Another aspect concerns the training and support in regions that have little economic power; we speak here from “capacity building”. Based on traditional skills, knowledge and methods, design can create income sources that leads to economic independence.

Design is able to provide pioneering support primarily based on intercultural dimensions and dialogues. But designers do not do this alone. They cooperate with organisations, which are already present at the sites and dispose knowledge about the local conditions and behaviours. This implies the development of new methods,



Involving the community in the design of a Mycelium based toilet system in Kenya. Master Degree project Joshua Urielli (Image: Josh Urieli, ZHdK)

in which users are actively involved in the process of the creation. Therefore we call this involvement “co-create” or “participative design”. Design, in the western world, works along given briefings, since the markets are well known. But in development contexts, the briefing is neither written, nor is the need of the user transparent. So we simply integrate the future user in the design process actively. The design discipline must be aware that the world will change. More than 650 million people in Africa are using a mobile phone everyday¹¹. That is more than in Europe or the United States. Africans transfer and receive money via their mobile phones-everyday. Here (as well as in South America and Asia) a society starts to rise, which organise itself completely different than ours. Goods, services and information flow differently, selling and buying is organised along needs and not along supply chains. It would be naive to think these societies would follow simply our role models. No – they will develop their own new patterns and with a different understanding of design and the use of products and services. This will result in a total new way, how “design” is defined.

2.4. Social design as catalyst opener for economic changes

Looking to Africa, you will notice, the usual western brands and products are sold to a vanishingly small minority. But 99% of the population cannot afford this. This part of the society is depending on cheap products, mainly imported from Asia. African products? African design? Barely visible, and if, then probably most likely as “Arts and Crafts”. It would be wrong to assume, that establishing a design culture in Africa must similar to here in Europe. It would simply lack the necessary technical and economic fundamentals. In Africa design can rely on existing knowledge and practice with the direct involvement persons concerned to “make things”, which can have a direct positive impact on their and the life of their communities. May it be for products that can make life and work easier or the creation of services that are sources for income. “Empowerment” of those who are affected and the reduction of dependencies is a further positive result. So – many opportunities for a self-determined life have the chance to arise.

Knowledge transfer can support the development of design education by means of participatory methods incorporating local businesses. Looking at our own education, a new generation of design students questioning the

¹¹ www.zdnet.com/article/africa-has-more-mobile-phone-users-than-the-us-or-eu/



Brand development for textiles from Mozambique
(Image Ursina Meyer, Student ZHdK)

responsibility of the design in general and ask what could be the role of design outside the mainstream. For them, creating things that adds more of the same to the fashionable arbitrariness of already saturated markets seems to be dull. They are rather fascinated to support companies and organisations, which want to operate fair trade, use sustainable resources or delivering education.

3. Designers cooperating with development organisations

3.1. "Social design" for whom?

It's a false impression, that social design is a method, limited to so-called "less developed" societies. Design methodologies can serve marginalised groups with a social objective and these occur frequently in our immediate vicinity. May this affect humans who are socially excluded and disadvantaged or not able to participate otherwise of the achievements of our society¹².

"Design for all" or "inclusive design", is valid for all people in a society and let them all benefit. This is part of the social idea of design. It can be effective for elderly people, disabled people, refugees, migrants, or humans that live otherwise on the margin of our society.

Migration movements change our society at the moment very rapidly. We are confronted with an increasingly culturally and economically heterogeneous society, whether we like it or not. Many discourses concerning the everyday life here: religion, behaviour, values, cultures change with increasing migration streams. This alienates us on the one hand; on the other hand, we recognise we cannot solve these problems with our traditional patterns. Design can contribute, that these differences are not settled in a dispute, rather that the variety and the diversity can be resolved and utilised in a positive way.



Prototyping of 'SAFIR' water filter in Colombia in a rural community (Image EAWAG Dübendorf)



"From feces to fuel", low-tec energy production from collected human feces in settlements in Kenya. Master degree project Mona Mijthab 2014. (Image Mona Mijthab)

3.2. Participation of stakeholders – observing, understanding, acting, involving

Is "Social Design" a new design category?

No, social design combines knowledge of design with social experiences and is actually available in any design discipline or design activity. However, it requires putting other priorities and topics on the list of the design education. We train our design students today so that they are able to work in a typical of labour-divided environment. Here all parties understand their role and function quite well. This no longer works in many social and development contexts. The completely different circumstances, be this climate, culture, values, religion, etc., make it nearly impossible to come up with solutions for humans in socially different regions or contexts, simply developed on the desk. The accusation of arrogance can only be overcome when collaborating directly with those affected. And for this – we have to be there.

Once this is understood, the differences between "experts" and "users" dissolve. Who is unable to

¹² United Nations (UN) (1995, p 57) The Copenhagen Declaration and Programme of Action: World Summit for Social Development, New York, United Nations Department of Publications

expose himself to the circumstances in social design projects, cannot develop meaningful contributions. Something that designers know very well: observe, analyse, evaluate and draw conclusions for new solutions: this talent is extremely useful within social design projects. But there are other aspects, such as knowledge of cultural differences and knowledge of ethnographic methods. Still much experience has to be acquired simply on the spot. Education that is focusing on social design, should consider parallel aspects as it was previously necessary for so called “good design”, the so called “Principles of Universal Design” might offer some ideas about not only a “good” but also an inclusive design for all humans¹³.

3.3. Observing, understanding, acting, involving

Detailed problem definitions allow the use of social design methods. Basic observation and analysis is the imperative for designers. Social design means often to write the briefings for the design process itself, or at least together with the involved persons. Organisations such as IDEO¹⁴ or the declaration of the “Sustainable Development Goals” (SDG)¹⁵ of the United Nations offer best practices. However, you can train only limited proximity to the parties concerned in a design process. This is important, and must be well prepared. For the work in social design contexts we have set up the following simple characteristics:

Observation and action

- -be prepared: where are you going, what awaits you there, who will you meet there?
- -what did you see, hear and feel?
- -identify the scenario: who wants to do for whom something and why?
- -what can be the benefit for the persons concerned?
- -watch the habits and behaviour of the persons concerned
- -define with the affected persons their needs and demands
- -take into account cultural relations, traditions and behaviours
- -integrate “soft factors”
- -use simple models that can be quickly implemented and tested
- -notice what you do and what is the impact
- -analyse economic models and value chains
- -use regional resources and tools
- -understand regional aesthetic language
- -support local, independent creation, production and marketing
- -pass over knowledge, learn from existing knowledge.

Possible design criteria

- -reasonable and flexible in use
- -simple, understandable and intuitive
- -fault-tolerant, robust and durable
- -little, or no external energy sources needed, produces no pollution
- -aesthetically appealing and from high quality
- -not discriminating
- -sustainable production, -use and -recycling
- -creates no new dependencies
- -gender-, cultural -, ethnic - and religious sensitive
- -offers potential for entrepreneurship or creating jobs
- -can be evolved with existing knowledge and resources
- -development and marketing remains in the hands of the persons concerned
- -locally embedded with a direct benefit for the person concerned.

4. Conclusion

Bottom line: design with social objectives will serve not only the “victims”, it can alter the design discipline itself and develop it further. This approach changes the focus from anonymous product or service solutions to social effects through design methods incorporating the concerned. Design is not able to solve all social problems. However, it can offer intelligent processes and solutions, where the concerned humans are in the centre and are able to benefit from

¹³ Butler, Holden, Lidwell, New York State University (2003), The Principles of Universal Design

¹⁴ novoed.com/design-kit-q1-2016

¹⁵ sustainabledevelopment.un.org/?menu=1300

its achievements. Furthermore, and not at least, this opens interesting opportunities for our graduates from our design universities.

5. Recent projects

Zurich University of the Arts is expanding its social design activities, especially in the field of education. We are working on 2 year research project, supported by the Mercator Foundation, where two Swiss NGO's ("biovision" and "swisscontact") and education partners are involved. The project is about the social focused education of designers from Switzerland, Macedonia and Kenya. Based on the field research with concerned communities, it will deliver an online tool and methods for intercultural participative design methods. Furthermore we are involved in the development of a design university in Marrakech/Morocco and the utilisation of design methods for sanitation projects in peri-urban settlements.

urban social initiatives and co-creation

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Abstract

As part of the 2014 fall semester study programme, Studio Design and Social Innovation, from Aarhus School of Architecture, collaborated with DemokraCityon a community initiative project to revitalise TILST, a town located on the outskirts of Aarhus, Denmark. DemokraCityon focuses on urban social initiatives and co creation design projects that encourage citizens' community involvement, commitment, and collaboration. Initiated by the Aarhus City Council, "NEW ANGLES ON TILST" aims at involving residents and local stakeholders directly in the development and planning of the neighbourhoods in close interaction with municipal staff and architects. Located approximately 10 km west of Aarhus, Tilst is a suburban area with large city blocks and traditional residential areas. The area has an unofficial reputation as a dormitory town and is known to have problems with misdemeanour crimes and vandalism due to social class segregation.

This paper will describe how interventions in Tilst, in collaboration with local residents, help devise social initiatives that aim at improving the local community identity. The project is concerned with examining the potentials of a place, and with initiating a new use and story for the site, thereby building a new identity and creating value for the area.

Keywords: co-creation, social capital, social innovation, democracy

urban social initiatives and co-creation

Background

The focal point of this article is the suburb Tilst and the project “Citizen Collaboration Version 2.0”, which was adopted by the city council on 22 May 2013. This project is an innovative collaboration between the City of Aarhus, Aarhus School of Architecture and DemokraCity™¹. The aim of the project was to involve residents of various local suburbs surrounding Aarhus in developing their own communities. Local communities that have gone through this integration process should have a stronger identity and increase a well-functioning local social environment

An important element in the agreement between Aarhus School of Architecture, DemokraCity and Aarhus Municipality was to explore how the decentralisation of the democratic processes can be developed and how decentralisation can contribute to greater involvement of citizens in their own activities. The idea was to shift the citizens' overall understanding of democratic processes from “Centralised” towards “Decentralised” and thus change their self-understanding from “Passivity” towards “Commitment” (Figure 2). Several local areas have been involved in the project, but the case in this article is based on student projects in the suburb of Tilst.

Framing the problem

In Denmark, as in many other countries, migration from rural areas to the big cities create numerous problems. The cities grow beyond their means, and soaring real estate prices put tremendous economic strain on individuals in cities. Also, the cities are challenged on many levels in terms of managing the city's growth, its infrastructure and managing public services in such a way that the needs of individual citizens are met. Figure 3 shows the population growth in Denmark and how it condenses around the three biggest towns.

These complex issues concern the whole of Denmark and can be

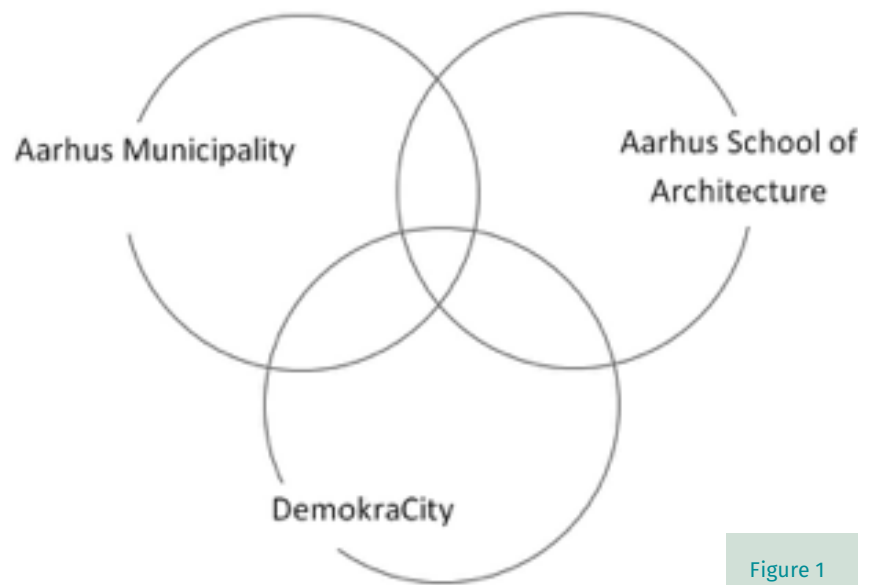


Figure 1

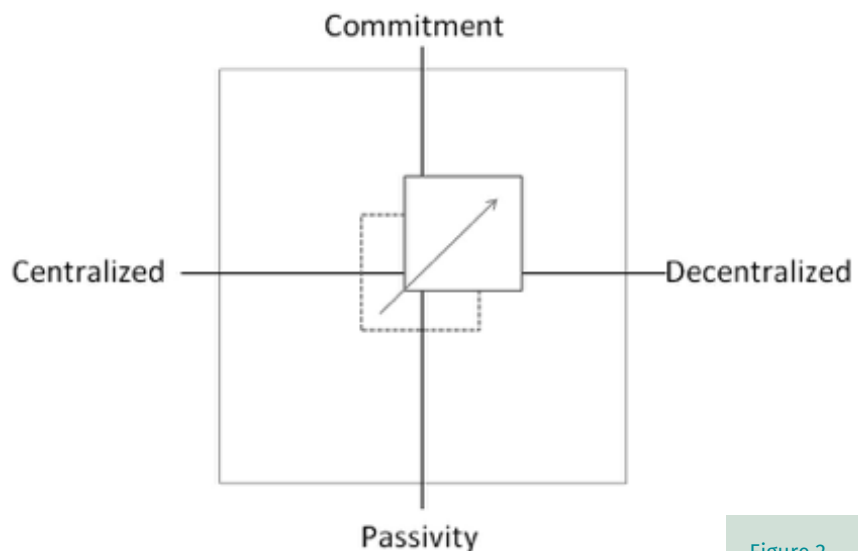


Figure 2

¹ DemokraCity™ is a private consulting company whose aim is to develop cities and residential areas on the basis of a democratic culture in which citizens' initiatives, commitment and responsibility are focal points. This is done by releasing the potential of the city by removing the distance between city and citizens to allow every citizen to be committed, take responsibility and be a co-creator of social, physical and cultural development (empowerment). Trust is the foundation of commitment and will, together with social capital, be at the heart of efforts to eliminate the distance between city and citizens. It's about doing things in new ways to create a positive social impact for the individual and generate socioeconomic benefits.

addressed through some of the social design tools dealt with in this article. This article, however, will address the problems that occur on the outskirts of bigger towns where social systems and the economic base are under severe pressure due to migration to the cities.

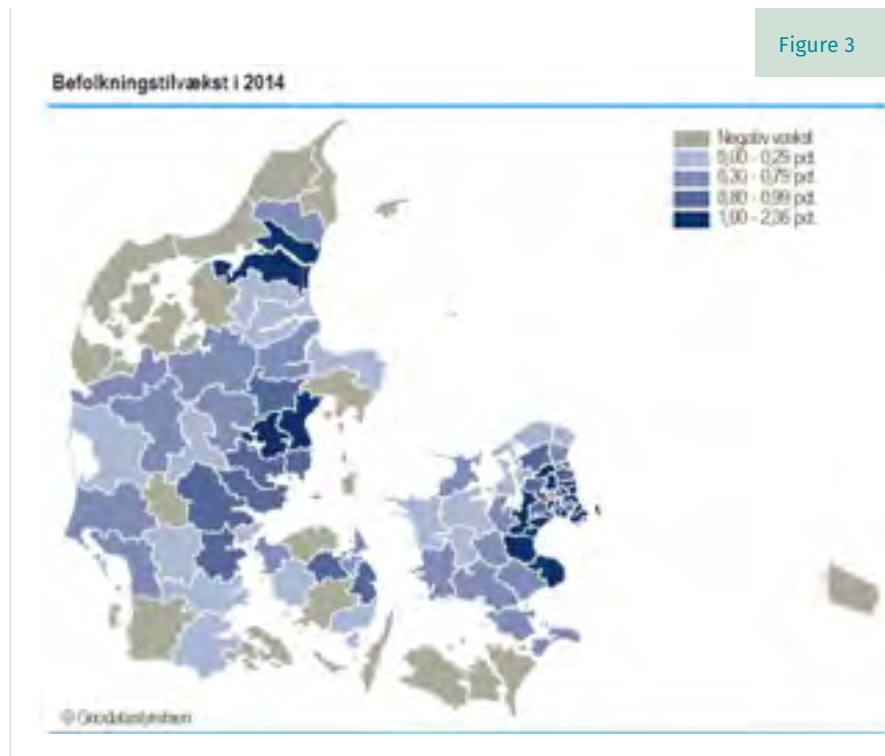
These suburban areas, “suburbs”, around the towns, are increasingly populated by people with lower incomes because of increasing prices in the cities, and by the older segment of citizens who, for economic but also for other reasons, choose to live outside the cities but in the proximity of public transport. This creates difficult social situations, in which different parts of the local communities are segregated in smaller societies. These different groups have difficulties communicating with other

groups across the various social and physical barriers. In the case of Tilst, the three different categories, immigrant neighbourhoods, single-family housing and old village neighbourhoods, are divided areas. This creates myths and negative stories between the neighbourhoods, and prejudice thrives due to a lack of understanding and touch points between people.

This article argues that processes such as those practiced in architecture and in participatory design / co-design can be developed for use in social development processes with the goal of building socially well-functioning communities with an independent identity – communities in which residents are active in local issues, and where the community helps build social capital.

The Danish Architectural Policy 2014, “Putting People First”, focuses on the importance of architecture and its ability to develop society and on how important continuously developing the democratic process is. The architecture and the environment it creates are not just about buildings, but just as much about welfare: It is about the welfare state, which ensures the individual a high degree of safety and security in everyday life, both in relation to income and more qualitative aspects.

What the Danish government is actually asking for is for architecture to take responsibility for creating a sustainable society, not just environmentally and economically, but also a socially sustainable society. Social Sustainability is the least defined and least understood of the different ways of approaching sustainability and sustainable development. Social sustainability has received less attention in public debate than economic and environmental sustainability. According to Social Life², to work with social sustainability is: A process for creating sustainable, successful places that promote wellbeing, by understanding what people need from the places they live and work. Social sustainability combines design of the physical realm with design of the social world – infrastructure to support social and cultural life, social amenities, systems for citizen engagement and space for people and places to evolve.³ Based on this definition, it is obvious that architecture and the architectural design process is a major player in this. But are the architectural design processes up to this task? In design and design research, participatory design and codesign are well documented processes, and this can easily be the point of departure for a social innovation process. If those human-centred design processes are combined with the architectural approach to urban development, they become a powerful tool in social design.



² UK-based social enterprise specialising in place based innovation (originally set up by the Young Foundation). www.social-life.co

³ Woodcraft, S. et al (2011) "Design for Social Sustainability", London: Social Life.

Social design and co-creation

Social design and social innovation relates to this complexity in our world and to our behaviour as people. Robin Murray works with the concept of “social economy” as a parallel to the monetary economy. The main elements of this “economy” include distributed networks that build and maintain social relationships as collaboration and relational systems⁴. This social economy represents not just part of our everyday household economy (e.g. free child care as an act of friendship, etc.), but is largely responsible for building and maintaining a social culture that creates value in other ways. “Peripheral Denmark” is a term that refers to the problems that result from the migration from rural areas to cities. This has created a development characterised by negative growth outside towns and decreasing monetary capital, resulting in low prices on houses and real estate, and the closing of many businesses and local shops. This problem will be one of the major challenges society must deal with in the future. Social design is one of the tools that can provide various ideas to address this challenge. Through the development of network-based collaborative relations that activate citizens and residents towards a common goal, “social capital” and strong social environments with a visible identity can be built. This can reverse the negative development experienced by local areas. It is about getting people away from their TVs⁵ and make them take active part in community value-building activities.

The building of social capital may well occur by itself, driven by strong individuals who have the personal resources, the conviction and the vision necessary to drive such processes and systems. Unfortunately, they are too few, particularly in the environments that may be in most need of this type of activity. Therefore, we need a deliberate and structured effort to design systems that encourage and help citizens take initiatives and demonstrate innovative and social behaviour.

Professional designers can play an important role in this process. Designers who work with such social processes must operate on two levels⁶. Firstly, the designer must involve local actors on a day-to-day basis in continuous ongoing codesign processes, on the project level. This requires the frequent and notable presence of the designer in the area for a considerable time. Secondly, the designer must act as cultural operator in cooperating with local actors, creating shared images and narratives that develop and support the vision of the new social future. The designer must be the one who helps the public understand the big picture at hand. He must provide to the citizens with the insight that makes them answer, if anyone should ask, that they are in the process of building a cathedral - they are not just stonecutters but he must also help concretise ideas into comprehensible and feasible solutions (See *The Three Stonecutters*⁷) Manzini acknowledges the complexity of designing social behaviour that can provide this kind of value. There is also a dilemma in being an “expert designer” and at the same time ensuring that it is the citizens’ own values and interests that drive the processes. The goal of the process is a culture change, not necessarily a new community centre. The designer’s role is therefore, according to Manzini, to develop and facilitate a design culture in the (local) community. A culture that puts the community in a position where it can develop qualified ideas for a better life and visualise scenarios and visions that are credible to all. You could say that Manzini’s vision is to develop a “design thinking culture” that provides an empowered pro-active approach, focusing on collective development rather than an individual passive approach. Designers must supply the communities with the tools to do so in a qualified, creative and sustainable way. The design process and the local inspired actors are the real heroes in this development - not the “expert designers” - but the designers are the enzyme needed to initiate the process.

The fundamental approach to the design process used in the Tilst project originates from The Danish Design Centre model “The Design to Improve Life Compass”. This compass is a generic division of the design process into four phases: Prepare – Perceive – Prototype – Produce. The Compass is designed as a tool for helping students and others who work with the design process, to navigate, focus and stay on track during the process. Its pedagogical and visual qualities make it a useful tool to guide students and non-designers through the complexity of the social design process.

Democratic urban development and collaborative processes

In the autumn of 2015, Studio Design and Social Innovation held an intensive nine-week learning course, which focused on two main areas – democratic urban development and collaborative processes. An understanding of a democratic urban development requires a theoretical and practical knowledge of new roles that come into play in a democratic cocreation process. For this democratic urban development to take place also requires a new mind-set, new forms of cooperation, new roles and new skills.

4 Murray, R. (2009) “Dangers and Opportunity”, London: NESTA.

5 Putnam, R.D. (1995) “Bowling Alone: America’s Declining Social Capital”, *Journal of Democracy*, vol. 6, January pp. 65-78.

6 Manzini, E. (2015) “Design, When Everybody Designs”, Cambridge: MIT Press.

7 Senge, P. (1990) “The Fifth Discipline: The Art and Practice of the Learning Organization”, Michigan: Doubleday/Currency.

Architecture, design and co-creation

Students participated in a process that focused on how key stakeholders, citizens, municipal employees, and design / architecture students may – together – develop a specific locality / city district through collaborative processes and temporary architecture. The process involved both developing and testing of concrete 1:1 prototypes, and attempts to produce tools for engendering knowledge for rethinking and developing local areas / cities. The designer / architect's role was placed in a holistic, multidisciplinary, and democratic framework by working with concepts such as social capital, empowerment, trust, and sustainability.

Social capital and networks

The study process is based on the American prof. Robert Putnam's theories of two types of social capital: defining social capital (bonding) and bridging social capital (bridging). The distinction between these two types of social capital is central when working with co-creation in projects for an area's common good, as we collaborate with different types of people and networks, whose different backgrounds also come into play.

Frequently, both bridging and defining social capital exist within such a network. Networks with defining social capital typically take the form of "common identity" and are homogeneous groups based on, for instance, religious and ethnic affiliations. These networks are characterised by strong social ties, loyalty, and reciprocity towards other members. This, typically, defines members towards the outside world. Networks involving bridging social capital typically consist of groups that are on par with each other and bring together individuals from different social contexts, without taking into account social distinctions that might exist between network members. Bridging social capital generates extroverted individuals, unlike defining social capital. The trust that is created in these bridging networks can be characterised as trust in "the unknown other." Hereby Putnam identifies bridging social capital as the most important and essential social capital for an effective and efficient society. Thus, the project's goal is to work towards networking with bridging social capital, to help create a change of mindset, new forms of collaboration, and new roles.

Site

Tilst is the chosen local area in focus, and the approach is based on sustainability - both environmentally, socially, and economically. As a type, Tilst is relevant due to its nature, and can thus function as a reference, contribute knowledge and impetus to other projects, promoting democratic transformation in local areas / cities – both nationally and internationally.

Purpose

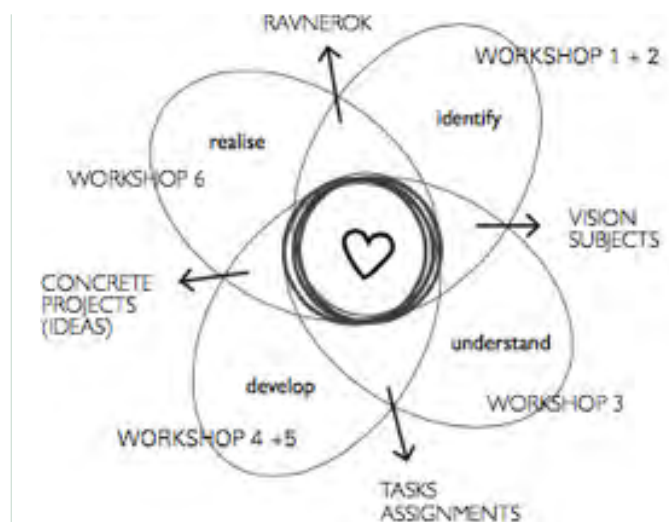
The goal is to educate students at graduate level, with a focus on professional design / architectural competences, to be able to involve all ethical, aesthetic, functional, and technological conditions in the economic, social, and environmental context. A fundamental point is to provide students with academic knowledge and skills to describe, analyse, frame, and deal with professional architectural / design tasks, focusing particularly on urban development in close cooperation with municipalities, residents, and local players.

Education and Workflow

The course is project oriented and takes place partly in Tilst, in the form of direct involvement processes through workshops, and partly at Aarhus School of Architecture, in the form of lectures, field trips, tuition and supervision at the school studio. The course is based on a learning model divided into four phases: prepare, understand, shape, and complete.

Learning

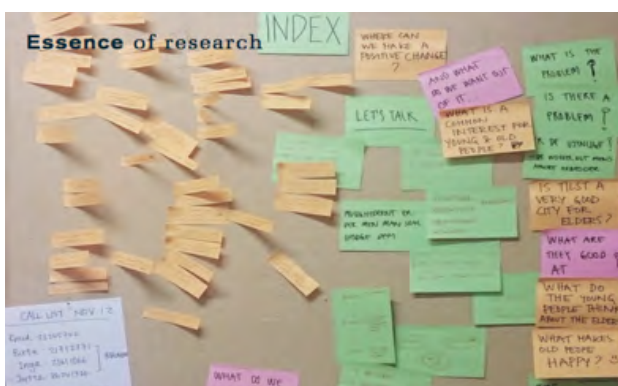
The students, together with residents, local players and municipal employees took part in a training and workshop programme, focusing on going from defining social capital to bridging social capital. The workshop was a managed and facilitated design process. The process consisted of a collaborative process on how you identify, understand,



The phases of the co-creation design process

and address local challenges through the development and establishment of specific physical prototypes. This build-up involving creative processes, supplemented by academic and practical steps, provides students with an extra tool that qualifies them to interact in the area of urbanisation and urban culture. The students' roles as architects / designers was brought into focus in this collaborative process involving residents and local stakeholders, including the municipality. The students practiced the ability to plan and manage work in development processes that are complex and unpredictable. They also learnt to initiate and implement academic and interdisciplinary cooperation. A major focus point was developing skills for both linguistic and visual communication with peers and laymen, and practicing to communicate and discuss artistic and scientific matters.

Case New Angles on Tilst – A social innovation project for seniors started with an initial workshop organised by DemokraCity. 70 people from the area, Aarhus School of Architecture and DemokraCity aimed to share knowledge that was relevant and useful for future work. The information was intended to enable collaboration with seniors in Tilst. The first method that was used was mapping; this was useful for documenting the target group's activities, perceptions, values, as well as relations among themselves. The mapping identifies the main locations where seniors gather and socialise. In addition, this provided a detailed overview of each association's role in the local community and of how their relationships work.



After the workshop, the collected materials were analysed using a data wall. This was instrumental in providing a visual overview: presenting information in relation to other participants. The students returned to Tilst shortly after the workshop to meet senior residents and stakeholders. The goal was to find new angles on the first-hand understanding they acquired through the first workshop. The many visits, dialogues and observations aimed at a deeper understanding of habits, rituals, language, and activities. During our initial visit, we had prepared an "Idea Box", which was placed at three key locations used by seniors. This was an additional research method for acquiring answers to specific inquiries, in order to ascertain specific characteristics and perceptions of the specific area.

To ensure the co-creation design process, the team gathered 30 senior residents for a second workshop. By utilising the local network and the key contacts that had been established, the participants included local seniors familiar with social activity centres in Tilst – people who had in-depth knowledge of the history and social communities of Tilst. After the second workshop, the team identified a need for a united identity for seniors in Tilst. Using keywords and concepts derived from the workshop, the team conducted a series of brainstorming sessions and discussions on concepts that may serve to represent senior presence in Tilst.



After the workshop, the design intentions were defined as follows:

- To create an open senior community by encouraging collaborations and communication between existing social circles of senior residents in Tilst
- To advocate a united and active senior presence in Tilst, while establishing connections with different demographic groups
- To promote the identity of Tilst by utilising the collaborative resources and networks of seniors
- To create opportunities for seniors to continuously co-create using existing skills.

Design solutions

Tilst Walk

The 'TILST WALK' is a walking route that celebrates specific locations in Tilst of cultural, social, or geographical significance.

The walk, indicated by "markers" throughout its length, invites visitors to experience Tilst in a different light. The

aim is to encourage visitors to engage in new interactions and social gatherings, derived from the senior community's knowledge and lifestyle representation. TILST WALK is a manifestation of the seniors' presence and their active participation in the local community, and the active lifestyle will become a bridging factor between different demographics in Tilst.



Markers

A series of markers, made from recycled furniture in unified colours, were used to outline the TILST WALK through different chosen locations. Each marker was located at a chosen spot, featuring local architectural and social highlights. Providing a welcoming message and an introduction to the TILST WALK, the markers also identify the specific highlights and attributes of each spot, communicating the story of Tilst's neighbourhoods to visitors.

A new organisational identity

A new identity representing the senior community is developed with the aim of uniting the different senior organisations, while at the same time creating pride and a sense of ownership in individual residents. The logo for "Senior Liv" is a lively graphic representation that promotes and advocates an active senior presence and lifestyle in Tilst. Shown on all markers and advertising materials for the TILST WALK, it presents a united graphic identity.

Senior Life

"Senior Liv" is the name of the organisation founded by the students through co-creation design processes and involving Tilst's local senior community.

The organisation will be managed and run by selected representatives from each of the local activity centres. It is formed by representatives from local organisations and senior centres in the area. The group aims to work for the senior community and create a platform for social events and initiatives. It will also serve to encourage collaborations among individual residents, welcome newcomers, and connect the senior demographics with other resident groups in Tilst.

The goal of SENIOR LIFE is to establish a communication platform among existing local centres and organisers, exercising strong coordination of events based on a shared calendar. This facilitates advertising and information for many residents in Tilst. The main goal of this organisation is to pool resources and to mediate between the various social initiatives to create a more coherent shared calendar, and to create several strong collaborations between generations, actors and ethnicities.

Conclusion

All sites are different, and a successful process can only be achieved by understanding the unique qualities of each place. Therefore there is no standard solution. One of the basic tools is working on a mapping of the character as a starting point for cooperation between residents, the municipality, institutions, governments, businesses and consultants across existing boundaries, routines and norms. In the process of transforming a district, the workshops are a central element. Here the focus is on raising awareness and building action competence among residents and players so that they are able to be co-developers of their town.

When we change the approach to urban and social development by involving residents in the process, it requires a new mind-set and new forms of cooperation and skills. It also requires a redefinition of the role of the designer in urban and social development processes.



It will require change and developing our skills to match the diverse and complex requirements that involve residents and local stakeholders directly in the development and planning of the neighbourhoods in close interaction with municipal staff and architects. In the search for “what works” researchers, educators, and policy makers must also be prepared to deal with the dilemma of change – to acknowledge that getting there is extremely hard work which requires massive learning from us all.



“One day a traveller, walking along a lane, came across 3 stonecutters working in a quarry. Each was busy cutting a block of stone. Interested to find out what they were working on, he asked the first stonecutter what he was doing. “I am cutting a stone!” Still no wiser the traveller turned to the second stonecutter and asked him what he was doing. “I am cutting this block of stone to make sure that it’s square, and its dimensions are uniform, so that it will fit exactly in its place in a wall.” A bit closer to finding out what the stonecutters were working on but still unclear, the traveller turned to the third stonecutter. He seemed to be the happiest of the three and when asked what he was doing replied: “I am building a cathedral.””

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cultural diversity – a strong didactic design tool?

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Abstract

Understanding the design process and the methodological approach is part of the basic training for students at Design School Kolding. We use the 5C Model/The DSKD Method Cards (Friis and Gelting 2011) as a tool to implement this training. The model divides design methods into four different categories:

- How to create knowledge about what is (1) by experience or (2) by thinking
- How to create knowledge about what might be (3) by experience or (4) by thinking.

In September 2015 a group of undergraduates and teachers teamed up with Brazilian students and professors in Sao Paulo to execute a course about the use of design methods in problem solving.

During the design course cultural diversity appeared on two levels:

- In the students' projects when doing user research, as well as in the collaboration between Danish and Brazilian students.
- On a didactic level when dealing with situations that are unknown.

Based on the above case study this paper discusses the use of cultural diversity in a design process from a design theoretical and a didactic perspective.

Keywords: cultural diversity, design methods, education, cross-disciplinary collaboration

cultural diversity – a strong didactic design tool?

1. Introduction

1.1. Background

Design School Kolding (hereafter DSKD) is a small institution with only 380 students spread across five disciplines. The school focuses on educating designers who are not only talented in a professional speciality but are also able to work across disciplines. Hence all students receive basic training in the processes and methods of the design profession. The learning approach adopted by the school is that we do not know the answer, but together we will find the answer. This democratic and appreciative approach (Cooperrider and Whitney 2000) is in tune with the Danish design tradition, which has a strong focus on users and strives to make sense in people's everyday lives. It makes demands on teachers, curriculum and teaching material, because our aim is to train the student in discovering his or her distinctive characteristic and piece together a course that will realise the individual's full potential.

We teach the students to work together through problem-based project work (Krogh & Wiberg 2015), which means that we formulate assignments in collaboration with partners from the surrounding community. During the study, it is possible to complete elements of the education outside DSKD, either alone as an exchange student, or as part of a team at one of the school's outposts.

This article describes a course at the school's latest outpost in Sao Paulo.

1.2. The layout of the paper

The article explores how the processes and methods of the design discipline can be taught in a foreign context. It describes the demands and expectations placed on the instructors and how working with cultural diversity during the stay in Sao Paulo has boosted the learning process for the students.

The article concludes with a statement from us, the instructors, of what we have learned in the course and what we would like to do differently next time in January 2017.

2. Embracing cultural diversity

2.1. What is diversity and how can it be activated?

When talking about diversity we use the following definition: diversity is difference in ethnicity, nationality, gender, function, ability, language, religion, lifestyle or tenure (Kossek & Lobel, pp 1-19 1996). Overall we call these differences "cultural diversity."

Cultural diversity is activated at DSKD in two ways. It is used methodically by instructors and students to establish a framework for learning to understand others and be able to design solutions that make sense in other people's everyday lives. In the design process we collect information about a certain context and avoid analysing it based on our own understanding. Thus development of ideas and concepts can better be targeted to the reference frames that lie beyond our own context. We realise that the students acquire an increased appreciation of the tools and the processes when they have to adjust the tools to an unfamiliar context and make them useable and meaningful in unknown contexts. Both educational context practice and research at our school (Friis 2015) has demonstrated that diversity can be used as a driver of understanding of the design methodology.

Cultural diversity is also used to actively create as different design candidates as possible. Based on their own competencies and opportunities the students are constantly trained to discover their own characteristics and understand how they differ from each other. In cross-disciplinary project collaborations the individual's latitude and role are restricted and individual competencies are activated.

For many years DSKD has had outposts in China and Ghana where DSKD instructors have challenged themselves, as well as local and Danish students through method courses with learning objectives corresponding to those described in chapter 3.3.

3. Use of design methods in instruction

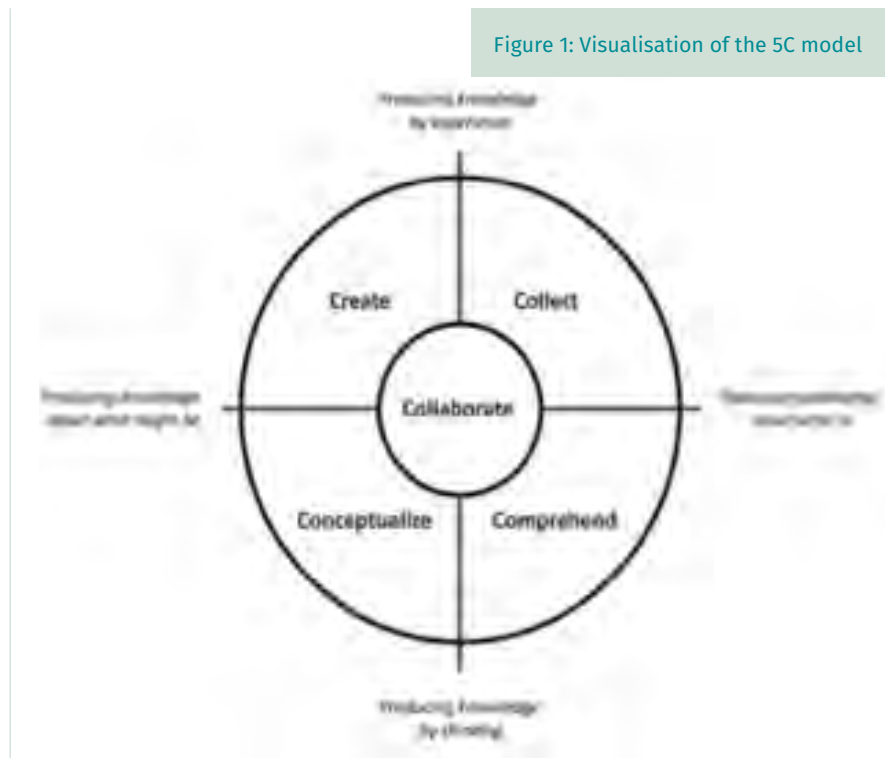
3.1. Description of the DSKD method cards

Instruction in problem solving design at DSKD has been formalised by systematically using design methods. In 2011 two of the school's researchers developed the 5C Model, which illustrates how knowledge is produced in the design process. The model is accompanied by 62 design methods collected from a number of different professional

disciplines (Friis & Gelting 2014). This model and method collection is the toolbox for a series of courses at DSKD.

The model is constructed as an intersection where the vertical axis indicates how knowledge is created in the design process: either by experience or by thinking. On the horizontal axis two extremes indicate the field of knowledge production. One “what is” is knowledge, which describes the existing situation, whereas the other “what might be” is the future scenario.

Each of the five Cs is a category of the method in the model: Collaborate, Collect, Comprehend, Conceptualise and Create. Except for Collaborate these are methods to produce knowledge in the design process.



3.2. The 5C model applied in teaching

All students on the third semester are taught the application of the 5C model in problem solving design. The students can choose to take the course in Denmark or at one of the school’s outposts abroad. They work in cross-disciplinary and international teams with a topic that has been established by the instructors and often in collaboration with a company or a public institution.

The instruction is planned as a continuous course lasting from two to seven weeks. Typically it is structured as a problem-based project work (Krogh & Wiberg 2015) comprising the following elements:

- Lectures and introductions to method and theory
- Exercises where the students test the methods
- Group project work on a case study.

The project work runs throughout the entire course, whereas lectures and exercises are short-term features.

The students use the design methods to produce knowledge about “what is” within the assigned topic. They use the Collect method to collect material and Comprehend to categorise and understand their material. Based on their empirical knowledge they identify the problem and then work towards a solution by generating knowledge about “what might be” with the Conceptualise and Create methods. The conclusion of the project is a presentation of the problem and a design solution.

3.3. Learning objectives in the method course

There is no formal requirement in terms of the delivery format. The objectives are, however, targeted towards the student’s appreciation of the design process and divided into the categories: knowledge, skills and competencies.

Knowledge:

- Have appreciation for cultural diversity and collaboration
- Have knowledge about a problem-oriented design process.

Skills:

- Be able to identify a relevant design professional problem and formulate it as a concept
- Have an understanding of relationships in a multi-cultural creative team
- Be able to communicate and visualise a problem-oriented design process
- Be able to identify important insights and argue for inclusion and exclusion
- Be able to reflect on own and others’ roles in the group work.

Competencies:

- Be able to select and apply concrete design methods to identify and process a problem in an actual international context.

The method collection enables the students to select relevant methods in relation to their own process and in relation to the reality in which the method will be tested. In addition to the school's method collection the students also identify and develop other methods. Throughout the course each student will specialise in selected methods which gradually will become the individual student's specific design DNA.

4. The case: design course in Sao Paolo

In 2015 DSKD entered into a collaboration agreement with Faculdade de Arquitetura e Urbanismo (hereafter FAU) in Sao Paolo. In the course of a very short time the parties agreed that 36 Danish students and two instructors should come to Sao Paolo. A team of four Brazilian professors would assemble a team of 12 students from FAU who could collaborate with the Danish students in a course in design methods scheduled to run over 10 days with instruction from 9 -17.

The FAU staff had identified a relevant design problem. We were to work with the university museum, Museu de Arte Contemporânea (hereafter MAC). The museum had found it difficult to gain an audience after having moved to the city centre. It was decided that the leader of the museum would present the final design brief on the first day of the course. The FAU instructors also explained that classrooms would be made available at the museum, but due to drought and lack of resources in Sao Paolo we could not be assured access to water, electricity or furniture.

The Danish instructors were primarily in charge of the planning and implementation of the instruction. The Brazilian professors were always present as observers and for on-going sparring and evaluation of the course. They were also an invaluable support in terms of communication with MAC and planning of company visits. In addition they took the lead in handling the resource challenges; building furniture out of cardboard, arranging extension cords and obtain water as needed.

On arrival the Brazilian and Danish students were divided into 10 cross-disciplinary and cross-cultural teams and received an honest introduction to the problem from the leader of MAC. He asked the students, "How can we make contemporary art relevant for users with no tradition for relating to the subject?"

Both the Danish and the Brazilian students were highly motivated. The Danish students themselves had paid for transport, stay, materials and food in connection with the course. And the Brazilian students managed to participate in both our course as well as local classes in the evening and as a result gained a working day from 9.00 to 21.30.

Since the course was relatively short and the challenges numerous the instructors decided that the delivery format was going to be a film of maximum three minutes. The film had to be self-explanatory and reflect the design problem, the target group and proposed solutions. The subsequent individual reflection should explain the learning objectives that had been set up.

5. Cultural diversity for teachers

In order to understand how the design instructor handles cultural diversity it is necessary to understand our work method. In the following we shall describe how we took diversity into consideration in our case, partly by positioning ourselves as facilitators and partly by planning the instruction in a didactic manner.

5.1. The instructor's three positions

Instructors at DSKD often face the dilemma that the students want a concrete answer – a quick fix of a problem in the project. Since the instructors are designers themselves and thus possess the same professionalism as the students but with much more experience, it will often be possible to provide the answer. When the instructor refrains from doing so, it is based on the consideration that the best learning is gained through self-realisation. In the case in Brazil the learning objective does not describe the appropriate design solution but rather e.g. reflections on the collaboration in a creative team or an awareness of inclusions or exclusions in a process. Thus the role of the instructor is not to be a designer in the project but rather be the facilitator so that the students will gain optimal learning and develop their own best solution.

The role of advisor in learning processes can be divided into two categories (Wichmann-Hansen & Jensen 2015):

- The field (the academic content, e.g. industrial design, fashion etc.)
- The process (facilitation of the project work.)

Based on this classification the DSKD design instructor can adopt three positions, as outlined below:

A – Tool subjects

When the subject of the design instruction is a professional tool subject such as cutting, chromotology or croquis drawing the instructor is an expert in the subject. Concrete knowledge is being imparted to the students and process work is minimal.

B – Design project

When design instruction takes the form of guidance in individual design projects the instructor takes on the role as part expert in the professional field and part advisor in the process. The instructor must be able to simultaneously discuss the specific problems of a design field and support the student in making his or her own choices and ensure progress in the design process.

C – Design method instruction

When design instruction involves design methods in a problem-solving field the role of the instructor is primarily that of a process facilitator. The instructor’s own professional expertise takes the backseat whereas the students become experts in the field they have researched. The instructor’s task is to guide the students in their choice of methods, help them stay the course in a problem-oriented design process and also discuss inclusion and exclusion.

This positioning as process facilitator becomes particularly evident when the instruction takes place in a – for the instructor – foreign culture. As the students produce increased knowledge about – “What is”, the instructor’s capacity to act as an expert in the particular field will recede into the background. That requires that the instructor has confidence in his own ability to stand in the open and apply the design methods as tools to safely get through a design process.

In the current case our approach to a guidance situation was to ask about the group’s work, including collaboration and progress in the project. Due to our role as process facilitator potential problems were solved by prescribing methods and helping the students use them. We avoided making decisions for students, which meant that the students were forced to apply different methods in order to solve a given problem, make informed choices and reflect on method, solution and own learning.

5.2. Planning the unpredictable

During the planning of the course in Brazil we were confronted with a series of unknown issues: we did not know the culture, our partner FAU, the physical conditions, the Brazilian students’ academic level, the final design brief etc. By using the design process and the associated design methods as a grid in the instruction we could simultaneously be open towards unforeseen situations and be prepared for the instruction.

In the first half of the scheduled programme the student was supposed to produce knowledge about “What is”. At this stage the field was researched, insights were processed and a problem was defined. In the other half of the process knowledge about – “What might be” had to be produced. Here the students generated ideas that would develop the best concept for a solution to the problem.

By making the choice of design methods we guided the students’ process rather tightly, but at the same time we made sure that everybody crossed the finish line by giving them firm deadlines. The course can be seen as a course prototype which was outlined while it was being implemented.

Week 1					Week 2				
28 Sept.	29 Sept.	30 Sept.	1 Oct.	2 Oct.	5 Oct.	6 Oct.	7 Oct.	8 Oct.	9 Oct.
09:00	Check in at the hotel	Check in at the museum	Check in at the museum	Check in at the museum	Check in at the museum	Check in at the museum	Check in at the museum	Check in at the museum	Check in at the museum
	Test from the hotel to the university. From 10:00 Special programme at the Faculty for Design.	Introduction to the museum, code of conduct and setting on the 8th floor. Tour around the museum. Method 80: Road Map	A day in the field. Teachers will be at the museum offering supervision. Method 19: The Observer Working with the group’s own selection of Collect methods.	Method 17: Persona Method 20: Experience Mapping Working with the group’s own selection of methods.	Method 62: Lotus Blossom Go through all the Conceptualize methods and make a selection to be used by the group.	Group presentations of concept Method: 85 Fracting Method 19: Positive feedback	Method 86: Storyboard Method 68: Prototyping Working with the group’s own selection of methods.	Method 71: Video Prototyping	Testing presentations
12:00	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	From 12:00 to 14:00: Video presentations of design concepts.
13:00	Introduction to design brief and method collection. Groups are formed based on two touch points from user journey Method 10: Knowledge & Expertise Method 02: Personal Pictures (homework)	Method 18: Personal Narratives Method 26: Fact & Inspiration Finding Go through all the Collect methods and make a selection to be used by the group. Plan a day in the field tomorrow.	Working with the group’s own selection of Collect methods. Cultural Inspiration by Sandro	Group presentations of insights from a day in the field. Focus on three potential challenges. Method 19: Positive feedback Method 16: Challenge Framing Method 10: Challenge Mapping Go through all the Conceptualize methods and make a selection to be used by the group.	Working with the group’s own selection of methods. At 15:00: Group presentations of some. Method 19: Positive feedback	Working with the group’s own selection of methods to improve concept. Method 80: Roadmap (for creation phase)	Working with the group’s own selection of methods. Method 71: Video Prototyping		Exhibition and reception
17:00	Check out (group)	Check out (all)		Check out (all)	Check out (group)	Cultural Inspiration by Sandro	Check out (group)	Check out (all)	Evaluation and Check out

Figure 2: The programme we had planned prior for our journey to Brazil

5.3. Ad hoc teaching

For the instructors the many unforeseen issues meant that we daily had to navigate in relation to the chaos that emerged from not knowing what was at our disposal. Being far from home, on the other hand, meant that the instructors, apart from their daily chores, could concentrate on running the course. We spent almost all the waking hours together to adjust the programme, plan lectures to fit the students’ level, visit relevant partners, attend to physical matters, such as lack of furniture etc.

We planned exercises where the students tested the methods vis-à-vis the experiences they had gained along the way. We thus utilised the set of methods actively when it was necessary to tighten up the process, mediate conflicts or other challenges that the students encountered in the group work.

When we “invite coincidence inside” (Leth, pp 15, 2009) we force ourselves to work ad hoc, and in Brazil we came to realise that we were very good at that. As experienced designers, we are familiar with the sometimes chaotic design process, and as equally experienced teachers we are used to guiding and facilitating the students in the same processes. These two qualities enabled us to navigate the course on foreign soil.

6. Cultural diversity for students

In the course in Brazil cultural diversity was strongly present throughout the process.

In terms of religious conventions, sociocultural differences and hierarchical structures in Brazilian society Sao Paolo was a mouthful for the Danish students coming from a small homogeneous welfare state. In relation to MAC and the actual design problem it was possible to go deep into the problem and use the methods to reveal constructions, which had initially been overlooked.

6.1. Cross-disciplinary collaboration

The collaboration among the students on the international teams was, surprisingly, characterised by great diversity as well as a great feeling of community. Nationality as well as economic and political circumstances differed significantly, but life style and student life, virtual platforms, age, international orientation and the interest in design created a special solidarity, which we had not encountered previously during our collaborations in China and Ghana. Another surprising observation was that the many comments related to gender political problems in Brazil were not represented in the groups at all.

Since the course was held in Brazil and not on “neutral” ground for everyone the Danish and the Brazilian students played different roles in the teamwork. The Danes automatically became the new eyes that viewed the study field with the wonder of a child. The Brazilians became the bridge builders between the Danes and ordinary people in a culture where ordinary citizens do not speak English, and they also discussed the things the Danish students were wondering about.

Conflicts in the groups were solved by methods in the category Collaborate. In most cases these methods proved beneficial. In a single case with a group that repeatedly engaged in discussions that ended in conflict the solution was to go to the Create category. By means of the methods “Sketching together” and “Prototyping” they discovered a different language than the verbal one, and they worked through the crisis by means of visual and tactile measures.

6.2. Examining what is

The method collection category Collect comprises a number of methods to produce knowledge about What is. It is a sampling of methods from various disciplines. Common to most of the methods is that the students in a physical sense must meet the field they are exploring. With the method “The Observer” the students go out and perform a limited anthropological field study. The method requires that the students relate openly and impartially to their observations.

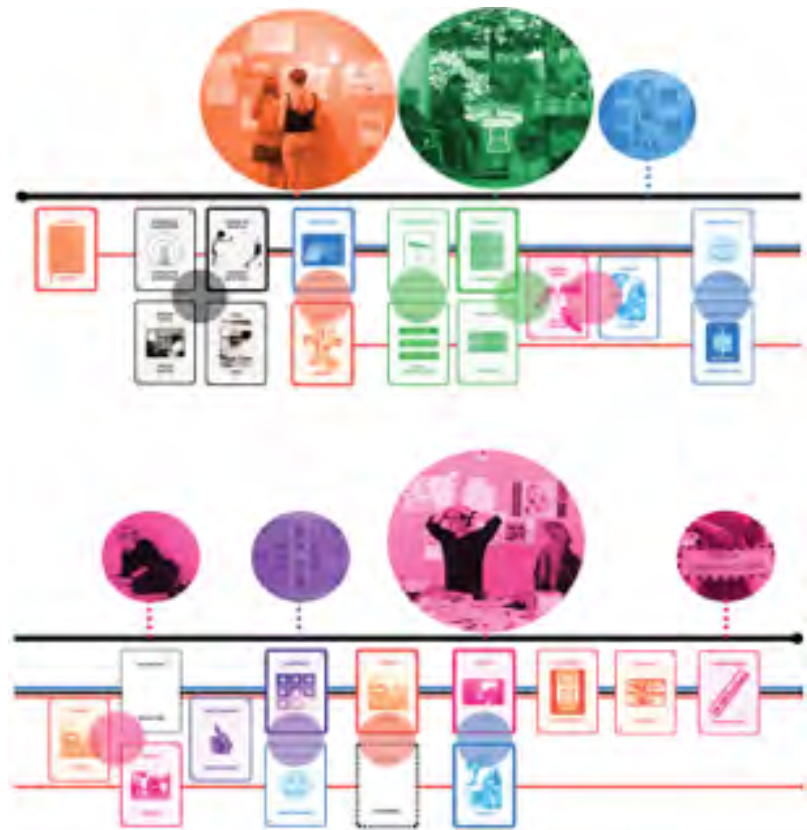


Figure 3: Example of how the groups' choice of methods forms the process.

Observations in a familiar culture can often act as a confirmation of the students' perceptions, whereas observations in a foreign culture often provide surprising insights, which force the students to examine the field further and with other methods. Similarly the students will become aware of their own preconceptions when the insights emerge that what appears to be the normal way to act is only normal in a certain context.

Thus knowledge is generated on several planes:

- The students use the method to collect knowledge about the exploration field
- The students use the method to become familiar with the method
- The students use the method and become mindful about their own preconceptions and thus acquire a new self-awareness

In other words, the students meet themselves in a different way when they work in a new cultural context. They come to realise that different people have different worldviews. This is a fundamental insight that is required if they want to enter into partnerships not only across borders but also across disciplines and be in open processes in these communities.

6.3. Investigating what might be

In the second phase of the project the students were producing knowledge about What might be using the method categories Conceptualise and Create. We had a hypothesis that diversity would create a greater wealth of ideas, but that did not manifest itself.

We presume that the reason was partly the heavy time constraints the students were under in this part of the process. That creativity requires an "Open Modus" (Cleese, pp 50, 1991) means that deadlines and public presentations are damaging for the good process.

Another potential reason could be that the cultural diversity was not as great as expected based on the students' common life across cultures (see 6.1).

7. Summary

7.1. Cultural diversity – a strong didactic design tool? – Yes!

Working with cultural diversity places the design instructor in a space of unpredictability. Even the most well prepared teacher will not be able to see through all the cultural differences in an international collaboration. This forces the instructor to be open, adaptable and to a certain extent design the course ad hoc. In order for this openness to materialise it is essential that the instructor is a robust process facilitator.

For the students the integration of cultural diversity in the design education means that the learning process is being enhanced. The new cultural context provides an invaluable boost when the students are going to target and tailor the individual method to the foreign context. The students will be confronted with their own preconceptions about the world and thus be forced to open up and re-evaluate their own subjectivity. In this open space they will be capable of working with design methods in a free and open manner.

In connection with the students exams a colleague 'L' says that it is evident that moving the instruction to Sao Paolo has had a huge impact on the students' process and learning outcome. They have become acutely aware of the quality of collaboration, the methodical approach to the design process and the ability to visually and verbally communicate inclusions and exclusions. This assessment is supported by the students' verbal reflections.

On behalf of the student evaluations we can conclude that design students from a small and homogeneous country like Denmark can benefit strongly by going abroad. Whether students from countries with cultural multiplicity will gain the same by going abroad or whether they can simply find the experience by moving to a different environment locally cannot be answered here.

7.2. What's next

Based on these observations we would like to repeat the collaboration with FAU in 2017. But we also want to use our experiences to improve a number of issues.

We will retain the design methodological approach. It gives a solid structure to the planning of the course with the option of ongoing adjustments. And it strengthens the students in their process work and heightens their level of reflection.

We want to retain the instructor as a strong process facilitator who can navigate the unpredictable space and also discuss the students' choice of methods rather than solutions.

We want to include the Brazilian teachers to a greater extent in order to get the most out of the cultural differences in each other's teaching traditions and generally heighten the level of cultural diversity in the course.

We want to extend the course to four weeks so that there will be more time to work with the method in greater depth, to clarify the issue and also increase the focus on conceptualisation and the solution concept. And last, but not least, we want to incorporate methods that are currently not part of the school's collection of methods with particular emphasis on making the conceptualisation phase blossom.

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design thinking to co-create a shared future

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Abstract

Around the world designers are creating better communities by working with citizen groups to improve the human experience and empower the youth. INDIAFRICA is a unique people to people initiative that aims at engaging the youth in intercultural dialogue across geographical boundaries to build a shared vision for the future.

This paper presents the experience of conducting a set of five 'Design Thinking' workshops at various locations in and around Johannesburg under the 'Indiafrica' Initiative. These workshops were conducted at locations panning from townships with community centres offering different courses to unemployed school leavers, youth centre rehabilitating gangster community with digital media courses, to students pursuing higher education in management and leadership courses.

This paper further shares how during these workshops simple idea of making tea established a common understanding to address complex issues and inspire positive action. It also brought the new knowledge of expanding international networks in creating multiple outcomes that can impact across boundaries. Through these meaningful interactions/ collaborations, and a true participation of motivated youth from low-income group across countries, we can make a difference and can positively design solutions towards co-creating a beautiful future.

Keywords: building communities, intercultural dialogue, design thinking, collaboration, co-create

design thinking to co-create a shared future

Introduction

Everyone thinks/imagines and, whether consciously or not, comes up with new and improved solutions to a broad range of problems. In doing so, they question the existing and also draw upon their memory store of past experiences based on their needs, wants, values, culture, education, environment and personal experiences etc. The problems may range from simply doing homework or preparing tea to designing complex end-user experiences; nevertheless solving these broadly follow a similar intuitive approach. Also termed as 'design thinking,' this intuitive methodology leads to improved solutions, be it obtaining the right flavor and aroma of tea or finding an apt design solution for a global cause. Design Thinking comprises collaboration in order to solve the problems by finding and processing information taking into consideration the real world, people's experience and feedback (Ray 2012).

With blurring of boundaries diversity and complexity of issues has expanded and this in turn has shifted focus to concern for human interactions and communities. Designers around the world are creating better communities by working with citizen groups to improve the human experience and empower the youth. INDIAFRICA is one such unique people to people initiative that aims at engaging the youth in intercultural dialogue across geographical boundaries to build a shared vision for the future.

India and Africa have a shared history; and training and capacity building are core thrusts of India's engagement with Africa. Given Africa's overwhelmingly young population, the continent is poised to reap a demographic dividend, and India sees itself as a partner in this quest for empowerment and transformation. The heart of the burgeoning India-Africa partnership remains the kindred quest for growth, equity and inclusive development. (Chand 2014)

The Indiafrica Festival at Johannesburg was all about discovering, sharing and harnessing the innovative energies of young Africans and Indians. Each element of the festival was designed to ignite and inspire young minds to think big, think holistic and think global while working in collaboration with multiple institutions and communities in Johannesburg. (*Indiafrica website*)

This paper presents the experience of conducting a set of five 'Design Thinking' workshops at various locations in and around Johannesburg under the 'Indiafrica' Initiative. It further shares how during these workshops the simple idea of making tea established a common understanding to address complex issues and inspire positive action.

Setting the context

'Design Thinking' workshops were essentially to help the local people identify problem/opportunity areas in their immediate environment and find ways to address issues through a combined effort of young team members. The groups were encouraged to look at issues relating to Education, Society, Environment, Information Technology and Tourism.

These workshops were conducted at locations panning from townships with community centres offering different courses to unemployed school leavers, a youth centre rehabilitating gangster community with digital media courses, to students pursuing higher education in management and leadership courses. Most of these workshops were scheduled in Old Johannesburg areas, which are seen as the poorer volatile high-crime rate townships.

- Alexsan Centre, Alexsan – a mixed batch of school dropouts
- CIDA City Centre, Lyndhurst – BBA students
- Ipelegeng Centre, Soweto – Students of leadership course
- Midrand Centre, Tembisa – Film and Animation students
- Westbury Youth Centre – Students of Digital Media course

The Alexsan Kopano Educational Trust has been primarily involved in setting up multi-purpose centres to assess the development needs of the local communities in which it works and to plan, organise and implement initiatives to meet these needs. Secondly, to share their experiences and assist in the development of similar projects both provincially and nationally.

CIDA City Campus is a Nonprofit Organisation accredited by the Council on Higher Education as a private higher education institution. It is the first virtually free higher education institution in South Africa, offering holistic education to historically disadvantaged youth who would otherwise be unable to acquire higher education. The registered students qualify for a full scholarship that includes tuition, books, food, accommodation and transport. CIDA aims to transform its students into leaders of their communities who will help advance the socio-economic transformation of the country. (CIDA, 2016)

Ipelegeng Centre and Westbury Youth Centre aim to empower its youth and are motivated by the need to uplift and develop people who had no voice and were subjected to poverty and underdevelopment. Their main objective is to

equip young people with life skills that will enable them to be self-reliant and work towards the creation of a healthy environment for all.

Design thinking workshops – the journey

Collaborative workshops were conducted with the youngsters with the aim of bringing forth their hidden talents and helping them realise their dreams. The students were school-leavers between the age group of 20-30 and were aspiring entrepreneurs.

Firstly the ice breaking and opening of mind happened and according to each student's interest in various fields they were put into groups of 5 each. Students were then asked to ideate and collaborate during the span of two days and present a convincing idea to address a concern in their immediate environment on the last day of the workshop. In the Interim, they were guided and assisted through their questions and concerns. They were asked to keep in mind the current situation in India and Africa and discover spaces of opportunities. The main aim of day two was to ideate better and put forth the problems that were being faced. Each team was given stationery material and was asked to pen down their ideas. They were taught the value of teamwork and how it is necessary for them to step out of their shell to be a part of something different. Each team exhibited their problems and were motivated and supported constantly. Next, they were asked to step out of the workshop room and go 'on ground' to study the practicality of their ideas. On the last day of the workshop students presented their bright ideas.

The concept of making tea

"I know I cannot teach anyone anything.

I can only provide the environment in which they can learn..." Carl Rogers (1969)

I was excited about the workshops; however, before coming to Johannesburg I had been very strictly told by many not to venture into old Johannesburg areas, which are seen as the poorer volatile high-crime rate townships. And most of my workshops were scheduled in these areas. There were questions crossing my mind – 'will they even listen to me? 'Why should they listen to me? Who am I as a foreigner with no first-hand experience of their situation telling them what to do? Why should they believe me?

"If the students are to learn the desired outcomes in a reasonably effective manner, then the teacher's fundamental task is to get students to engage in learning activities that are likely to result in their achieving those outcomes" (Biggs, 2003).

Since many of these students had opted for this workshop without any understanding of design, getting them interested and training their minds to think in a certain way required a trigger point. Something that's easy to comprehend and strikes a chord with them all – Promptly a thought crossed – how about making tea for guests! Whatever background conditions they came from they would have surely sipped on tea if not made tea at some occasions; this should definitely work. After reaching Johannesburg I informally checked with a few people about the concept of having tea there and I was happy to hear the affirmative response.

Simon Sinek has captured 'design thinking' in a way that is simple, easy to understand and actionable – The Golden Circle – What we do, How we do it, and why we do it. Every single task, even our own actions, function on three levels:

1. What we do
2. How we do it, and
3. Why we do it.

When these three pieces are aligned, it gives us a filter through which to make decisions. Leaders and organisations with the capacity to inspire all, think, act and communicate from the inside-out. They start with their Why. When they communicate their purpose or cause first, they communicate in a way that drives decision-making and behaviour. It literally taps the part of the brain that influences behaviour (Simon Sinek 2014).

But people naturally communicate from the outside-in; they typically go from what is easiest to understand to what is hardest to understand and explain. Since they were being introduced to Design Thinking for the first time, I followed the same approach and fixed the 'What' aspect – TEA in this case. The next step was to discuss 'How' of it – How do you prepare Tea? And factors that influence it (Who? – their likes/dislikes. When? Where?). This would lead to finding answer for the 'Why.' And finally align their thinking so that they could apply it to any situation – be it big or small. And whether the approach is inside-out or outside-in?

In the cold winter morning, I started the interaction with 'a cup of tea' and how we enjoy sipping on it over different situations. The conversation was then consciously steered towards 'preparing tea for your guests.' When the students were posed this situation, they were amused and giggled. They seemed to wonder why they were being asked this question. Slowly and steadily the answers started pouring in – 'simple! Put some water to boil, add milk and add tea leaves – its ready.' Another student immediately responded – 'we also add sugar.'

Figure 1: The Golden Circle



When we ask basic questions, we get very basic replies as well. And to start with, it is a good idea not to focus initial inquiry on describing every detail. This way the questions help understand and build on the processes based on various choices and options available. Another student said, ‘first switch on the gas stove and put water in pan for boiling and then add tea leaves; we can add milk later.’ And then everyone started contributing... ‘Sugar as well, ‘what if they don’t take sugar? What about sugar free?’ ‘We can also add flavours’.

- Flavours through various condiments: cardamom, cinnamon, ginger, clove, and fennel etc.
- Tea with milk and without milk, black tea, green tea, flavored teas – cranberry, Jasmine, lemon etc.
- Tea with sugar, without sugar, with sugar free
- Hot tea or Iced tea

The next question was posed – ‘is that all or do we need to consider something else?’ Who are we making tea for? How many people? Do we have the ingredients at home? Why do we need to serve tea? How do we serve it – ready to serve or separately? How important is it to serve? Which cups/mugs? What would they prefer? Why even think about all of this?

Figure 2: How to Prepare Tea



And then the inputs, questions, considerations (number of guests, their preferences – tea/coffee, normal/green/ flavoured tea, with sugar/without sugar, strong/light, with milk/without milk, small cup/large cup? etc.) and various types & methods of making tea started pouring in.

Our mind starts to question intuitively and we act accordingly to ensure a great experience for our guests and make them feel welcomed. The care and effort that goes behind the choice of tea and engaging the guests in the tea preparation process makes it personal and special for the guest. This is the reason we can say that people don't buy What you do, they buy Why you do it and What you do simply serves as the tangible proof of what you believe.

By the end of it almost all students had confidently started questioning and contributing to this discussion. They were learning with and from each other and were scratching beneath the surface trying to find answers for 'why, how and what?' They were becoming more aware of their thoughts, feelings and actions and were managing to make meaningful connections. They started understanding important design considerations (audience, functionality, form/appearance, safety, ergonomics) and were amazed by the realisation that even the simplest of activities involved logical thinking to achieve the effective and efficient result. This discussion had definitely left a mark on them. They were being able to find answers for varied situations by equating them with the discussion on tea. And finally the 'design' gibberish seemed all so easy to comprehend – it was simple and logical – as obvious as common sense – something that they had already been applying in their day-to-day life. They were ready to persevere further and consciously develop critical thinking ability and problem solving skills.

Finding solutions

It is helpful to remember that what the student does is actually more important in determining what is learned than what the teacher does – Thomas J. Shuell (Biggs, 2003)

The conversation now steered to the common struggles that India and Africa have faced; our focus on development, health, education, empowering youth and women, building equality among all people; and, our shared aspirations for our progress. Culture describes "how things are", "how things operate" and reflects how we view the world (Kruse and Louis 2009). We looked at how sharing of examples of efforts made by people within their communities could motivate and lead way for these students in finding their answers.

They started opening up and talking of problems like the rat menace, the reverse dowry system collapsing and leading to a large number of young single mothers, unemployment, polygamy, high crime rate because they cannot afford to buy fancy stuff, and the disheartened view that there is not enough help offered by the government.

Besides making of products and systems there is convergence "toward a range of initiatives whose purpose is not to offer immediate solutions to problems, but to spark interest in these areas and show, often paradoxically or provocatively, that there are different ways of seeing and resolving them." (Manzini 2015)



Image 1: students in the process of developing their ideas

The students felt more positive and had the will to make a difference. They genuinely wanted to address the concerns. This model and discussion gave them the idea that they can start small and start making small differences, which can then multiply and impact the larger community.

This process of understanding a situation and designing an appropriate solution that better meets end-user's needs and desires is quite inspiring and magical. And sharing this insight with students, as they go along discovering and analysing the important information in an attempt to find a suitable design solution is an exciting experience.

Mobile kitchen and the thought of providing cooked meals at nominal price to the under-privileged, elderly and disabled was an exciting idea for all the participating groups at Ipelegeng Centre. This specially struck a chord as it would help many uneducated women by providing work opportunity with the use of their regular cooking skills, and on other side freeing those who are employed and had to manage both cooking and working. I could relate it to the tiffin providers in India who prepare home cooked food and deliver it to their clients – a service offered within a limited range in the local vicinity of each provider. The other big one was the 'Dabbawalas' service in Mumbai (India) who carry and deliver freshly made food from customer's home in a lunch box to their office. I narrated these concepts to the group, specially how informal and individual effort of delivering home cooked meal in office was seen as an opportunity and converted into an effective lunch delivery service which is in high demand and has grown today as a team of about 5000 people who deliver approximately 200,000 tiffin boxes every day. This sharing from across the boundaries encouraged the confidence in the team who could now envision this idea as a strong concept for providing hot fresh meals to many and in the process also create employment opportunities and build their community.

"Design thinking" is a methodology that imbues the full spectrum of innovation activities with a human-centred design ethos. Innovation is powered by a thorough understanding, through direct observation, of what people want and need in their lives and what they like or dislike about the way particular products/ services are made, packaged, marketed, sold, and supported. (Tim Brown, 2008). Each group developed their ideas, which were presented and discussed at length for the benefit it will bring for the local communities. Some of the solutions offered for issues in the immediate environment were to:

- Fight and reduce high crime rate
- Provide first-aid to the injured in the local community
- Reduce rat menace
- Create party clothing using button masala
- Address the issue of school drop-outs by up skilling their art & craft talent
- Empower youth with consequential career guidance while their minds are still fresh and hungry
- Mobile kitchen for providing cooked meals at a nominal price to the under-privileged, elderly and disabled
- Community crèches to take care of infants while single mothers go to work
- Magnetic cars to avoid accidents
- Running shoes with stopwatch for athletes
- E-learning facility for school leavers
- Relooking at professional education courses for school leavers to increase employability.



Reflections

These Design Thinking workshops were exciting community building opportunity; a community where young people make a difference – to the society, to the environment, and address issues affecting community wellbeing. The entire journey that started by discussing 'a cup of Tea' had come full circle. Simple idea of making tea established a common understanding to address complex issues and inspire positive action. Students identified the issues/ concerns/ and opportunities in their immediate environment, worked in groups to reach the core and understand the why, and then work inside-out to propose innovative ways to address these.

It was a sheer pleasure to interact with such sharp minds that wanted to make a difference and were eager to learn more. They were a lively bunch of youngsters who were intelligent, open, friendly and fun to interact with. Not even

for a moment did I feel like an outsider in their company. I must admit that before coming to Johannesburg, I had been very strictly told by many not to venture into old Johannesburg areas, which are seen as the poorer volatile high-crime rate townships. And most of my workshops were scheduled in these areas. I was concerned, but to my surprise I met some very intelligent, warm and lovely people here who also wanted to work towards changing the image of their townships. Some wanted to make their dreams real and others wanted to support their community. These groups came up with some fantastic and some practical/ doable plans – magnetic cars to avoid accidents, running shoes with stopwatch for athletes, mobile kitchen for providing cooked meals at a nominal cost, e-learning facility for school dropouts, system design to fight crime, relooking at professional education courses for school dropouts to increase employability, and many more interesting ideas. They were excited to propose these solutions and realised the potential of these ideas to impact lives across the boundaries as these concerns were the shared global concerns for bettering human experience.

These collaborative workshops were received well and the feedback from the participants was very positive. They were happy to have been a part of it and felt it was a great learning experience. They had not really undergone any such workshop that made them think and work on their ideas and convert them into business plans. This process of understanding a situation and designing an appropriate solution that better meets end user's needs and desires was quite inspiring and magical for them – it applied to any and every situation. Seeing their ideas turn into practical doable plans was very exciting. These workshops could work as stepping stone towards a larger good, especially because they wanted to do something for their society and were looking for some support through this project. Through these alliances and a true participation of such motivated youth from this low-income group across countries, Indiafrica initiative can make a difference and build a shared vision to improve wellbeing and help the youth to become the change agents. With such meaningful interactions/ collaborations, we can work towards co-creating a beautiful future.

Conclusion

India and Africa constitute one-third of the world's population. A large majority of them are in their youth. Indeed, India and Africa will have a significant part of the global youth population in this century. Their future will shape the course of this world to a great extent (excerpts from article in 'Wire' 2015).

It was interesting to note that preparing a simple cup of tea could open up the young minds to intuitive design thinking process that gave the direction towards developing communities. This helped in increasing young people's decision-making skills, self-esteem, motivation, and proficiency in fulfilling their responsibilities. These further reaffirmed that no idea is small if expended in the right way. If we get to the core of any issue and take responsible initiatives, we can create dynamic changes in the future space. It also brought the new knowledge of expanding international networks in creating multiple outcomes that can impact across boundaries. If we join hands across the world and passionately as well as systematically connect the invisible layers of intuitive thinking process around each problem of the world today, and if we make it personal and important, we can even address grave issues such as providing basic amenities to all or eradicating poverty universally. Through these meaningful interactions/ collaborations, and a true participation of motivated youth from low-income group across countries, we can make a difference and can positively design solutions towards co-creating a beautiful future. A future with shared cultures, resources, opportunity and more – a future of oneness and equality – and it can all happen with a cup of tea!

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architectural prefabrication pavilions as a site for cultural diversity

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Abstract

This paper looks at the re-activation of public spaces using large scale artefacts, within the greater Auckland region. Twelve large scale projects incorporating a culturally diverse range of second year Architecture students' projects in two vastly different locations within the urban city boundaries: Glow@Artweek Auckland.

Silo Park is the centre for urban regeneration within a former oil refinery, covered in an impermeable membrane to prevent oil contamination, and Devonport Windsor Park, an Edwardian residential area.

120 BAS students initially grouped in 37 groups, pitched their ideas for invigorating the two sites to a diverse range of people, such as City Councillors, Architect's, Artweek Auckland, Devonport Business, and Pānuku Development Auckland. The resultant pitch sees the groups merge ideas, cultural context, language and design methodologies, into twelve diverse light sculptures.

This paper would critique three projects; A Pacific Island group bases their concept around the famous Swiss book The Rainbow Fish renaming their project RainGlow Fish, using CD's as scales: a predominantly Bangladeshi group calls themselves Al- Noor, from Arabic light, and a group of Shengyang, PRC students on a joint Architecture programme, becomes the lead group for a field of fireflies, Be the fireflies after only being in the country for two weeks.

Keywords: light pavilions, live projects, cultural artefacts, pre-fabrication

architectural prefabrication pavilions as a site for cultural diversity

Introduction

These case studies follow a somewhat bifurcated route as the two sites chosen for these architectural projects realisation are dramatically different in cultural development and contextual siting, despite being part of the recently formed combined City of Auckland.

Silo Park is within the Wynyard Quarter precinct on the western side of Auckland CBD to the south side of the Waitematā Harbour. The site started life as a reclamation in the 1930's for warehousing, the fishing fleet of Auckland and most notably as a fuel storage zone, commonly known as the tank farm.¹

The 'Master Plan' was developed by Peter Walker (Walker, 1996) an American Landscape Architect in 2003, with predominantly axes to connect the site to the city; a north / south axis from the existing Victoria Park to the northern area of the reclaimed land and a west / east axis from the Wynyard Quarter to the CBD via Quay Street. This plan was modified by a local Auckland architectural practice Architectus in 2007. Of the near 39 hectares of total site area, 6 hectares is zoned to remain in marine industries; 21 hectares zoned for mixed usage residential and the remaining site is zoned as open public space. This public open space is administered by formerly *Waterfront Auckland*; however, more recently renamed as *Pānuku Development Auckland*². The prevailing architecture is that of urban warehousing and some of the oil tanks from the tank farm being remediated as gallery spaces.

Windsor Park, Devonport, is a site on the northern side of the Waitematā Harbour, largely Edwardian residential villas, as this area was settled in the mid 1800's. Due to the deep water on the northern side of the harbour this anchorage was suitable for naval vessels and hence was named Devonport. In the later 1880's the original farm land was sub-divided up and large wooden Edwardian villas were built which continues to create the colonial charm of the area. Formally a city in its own right within the North Shore city. The legislation by act of Parliament (October 2010) decreed that the former seven cities merged to form the larger entity of Auckland "super city." despite the very different cultural context of the areas and the new super city covering an area of 4,894 Km². The public open space is currently administered by *Devonport Business Improvement District*³.

How / What / Why / Impact

The premise for Glow@Artweek Auckland; (tag line; Experience light on a grand scale during Glow@Artweek) was generated out of a previous light show in the latter part of the calendar year; Art in the Dark, which closed operation in 2014 and, of course, the larger prefabrication projects generated out of the post earthquake city of Christchurch, largely generated by FESTA (Festival of Transitional Architecture)⁴ and the Architecture schools within New Zealand, which took a hiatus in 2015 after running from 2012 to 2014. Unlike the Christchurch fabrication projects which only were installed for a one-night light show, Glow@Artweek was conceived of as a week long day and night show meaning that students needed to formulate a pavilion which had a certain tangible form during the day and during the night the lighting could create a different environment, or sense of place.

Artweek Auckland 2015⁵ was the sixth year since its genesis, largely bringing together a city-wide art community across a large number of events; free art exhibitions, art talk's, art tours public art galleries etc. Glow@Artweek⁶ was created by Deborah White the CEO of Artweek Auckland and the staff from the Department of Architecture, Unitec Institute of Technology⁷.

Planning for the event was composed of Artweek Auckland brokering the meetings with the team members from Pānuku Development Auckland and Devonport Business Improvement District plus the key lecturing staff in the second year Bachelor of Architectural studies (two lead lecturers and six in total). Since the event was due to be held in the second week of October this meant largely the second semester of the year could be devoted to the project, 12 teaching weeks from July to end of October. Since the Design Studio lecturing staff were familiar with running prefabrication projects due to the involvement of the FESTA projects in Christchurch for the preceding

1 www.teara.govt.nz/en/photograph/16141/tank-farm

2 www.panuku.co.nz/waterfront-plans-win-award

3 www.devonport.co.nz/DBA-Info

4 festa.org.nz

5 artweekauckland.co.nz

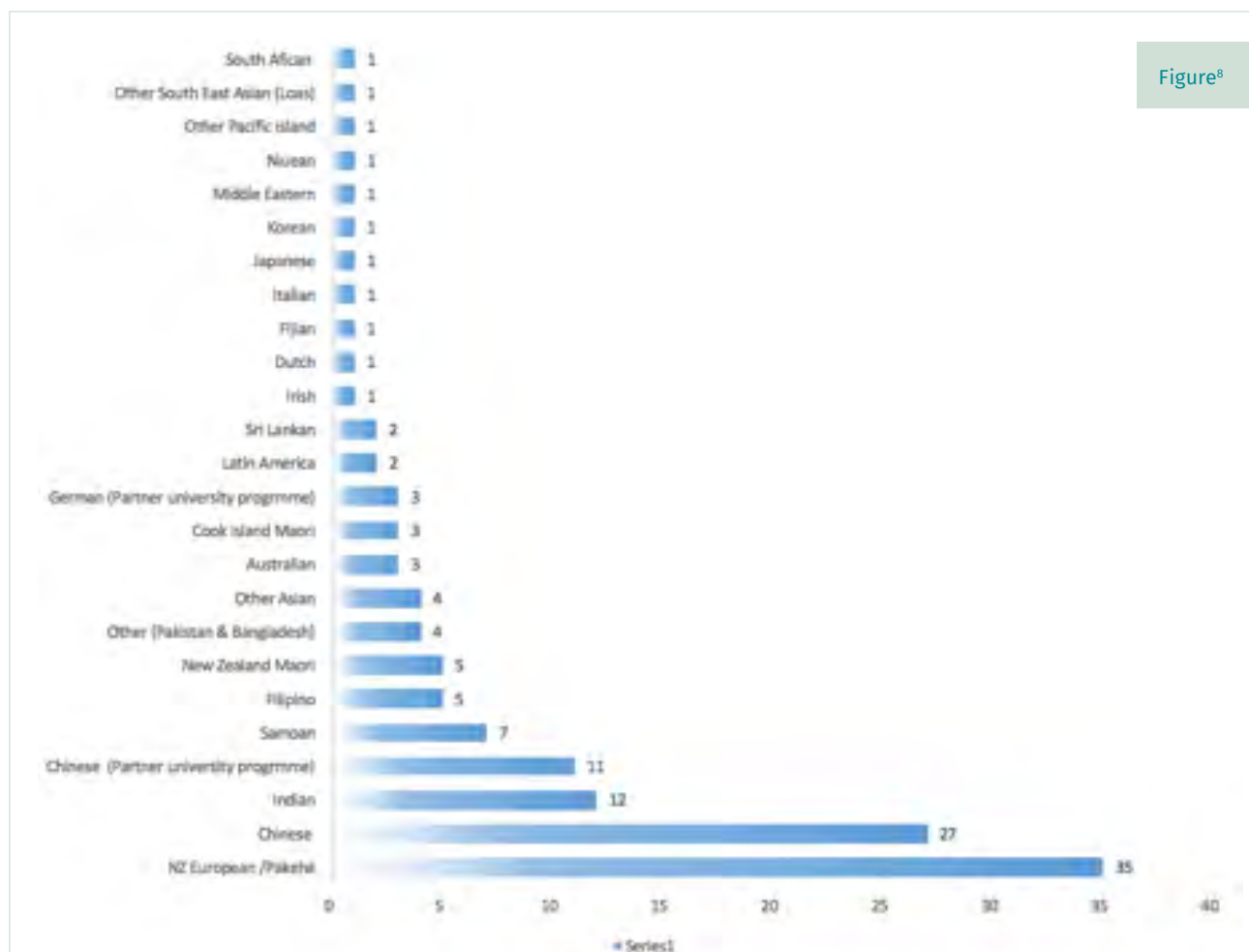
6 artweekauckland.co.nz/events/glowartweek

7 www.facebook.com/UnitecArchitectureDepartment/?ref=hl

years (2012 to 2014) it was felt that despite the large cohort of students that it was a doable project. The joint brief / project was wrapped around the context of:

Prefabricating light pavilions in and around Devonport and Silo Park Auckland. After a successful three years of designing, building and installing with zero budget and zero waste in Christchurch, in conjunction with FESTA and Studio Christchurch, the students are looking forward to design in their home town.
(promotional material written by author)

Since the brief to the students was wrapped around the concept of a zero budget and zero waste, considerable innovation was necessary to ensure that projects were buildable. The brief was given to the whole cohort of second year students (135) and they were advised to self-select into groups of three or four students, this led to some interesting grouping of students, three German exchange students who had been in the country only a few days were partnered with a Dutch permanent resident to ensure some degree of local knowledge. A larger group of mainland Chinese students from our partner university programmes decided to split into two groups, some partnering up with New Zealand born Chinese ethnicity students. This resulted in 37 discrete groups who had two weeks to design an idea of a pavilion on a yet to be determined site and pitch their ideas in a formal pitch presentation to all the core groups involved.



Figure⁸

With such a diverse ethnic banding of students the lecturing staff were fairly confident of a board range of cultural and heterogeneous ideas. The short timing of the initial presentation gave huge trepidation to the partner university programmes partly due to language and partly due to the unexpected nature of need to present and to formulate ideas to an audience of one's peers (135 students) and the jury panel (12 on the jury, a mixture of previous students involved in prefabrication projects to the external partners and external Architects)

8 Annabel Pretty, 2016.

Two weeks in on the project, students were asked to present a 5 minutes' presentation / pitch of their ideas, using whatever means possible to sell their idea to the jury panel. These ranged from videos to power points to 3D models with flashing lights. Bearing in mind that this was to be zero budget and zero waste, criteria of "is it feasible, and will it look great" were held on to.

How / What / Why / Impact

Case study – Al-Noor⁹

The four students in this group were NZ permanent residents who originally came from Pakistan, Bangladesh and Southern Asian region, their concept was based around the translation of the word from Arabic meaning "light", they designed a cloud like structure which could be strategically hung from a scaffold system known as a 'four up scaffold system', which is similar for band lighting (self-supporting structure)

Case Study – Be the FireFlies¹⁰

The four students in this group had arrived in Auckland only days before from our partner University in Shenyang from our joint BAS (Bachelor of Architectural Studies) programme. The group came up with the concept of a field of flowers, approx. 1.5 / 1.6 meters high which during the night would come alive with LEDS creating in their eyes a field of fireflies. This was a relatively low engineering solution, using 12mm Steel Rebar, plastic sheeting and some solar LED and some AC LED lights

Case Study – RainGlow Fish¹¹

These four Samoan students, drew their concept from the book The Rainbow Fish by Marcus Pfister (Swiss Author and Illustrator), often read in Primary school to Kiwi kids and very much a part of growing up here. So a play on words and the concept of sourcing CD's to create the notional scales on a fish, as the illustration in the book has distinctive shiny foil scales.

These three case studies were part of the 12 group's which were advised to move forward with their ideas, out of the 37 groups which presented. Some groups moved forward due to perceived ability to complete their project, others moved forward as groups had similar concepts and a lead group was chosen as it was perceived that they had students who could act as project managers. Roughly a lead group expanded to take on consideration of two other groups and had to decide which group had the strongest idea and to figure out how to mesh these together. From a team of four per group, it grew to a team of between 11-16 students.

Figure¹²

	Order of presentation - Two weeks in	Group Name	Blog URL	Facebook page	Instagram
LEAD GROUP	3	Al-Noor	http://noor-al-noor.blogspot.co.nz	https://www.facebook.com/Al-NoorNY/	
	17	Hazy	https://hazyartweek.wordpress.com/	https://www.facebook.com/hazyartweek/	
	13	Framed		www.facebook.com/framesofart/	http://instagram.com/framesofart/
LEAD GROUP	29	RainGlow Fish		https://www.facebook.com/RainGlowFish/	
	36	lumin8 (Seven)			
	20	Iluminación	http://www.luminacion.com/	https://www.facebook.com/pages/Iluminacion/101523299953512477/?ref=page_new_likes	
LEAD GROUP	33	Be the Fire Flies (Thirty Four)	www.bethefireflies.wordpress.com	www.facebook.com/bethefireflies	
	6	Changes (Back and Forth)	http://www.changes101.blogspot.co.nz	https://www.facebook.com/Changes3012	
	25	Lumino City	https://luminocityunitec.wordpress.com	https://www.facebook.com/Week2014LuminoCity/	

9 noor-al-noor.blogspot.co.nz

10 www.bethefireflies.wordpress.com

11 www.facebook.com/RainGlowfish?fref=ts

12 Annabel Pretty, 2015.

Lead groups were advised that they needed to resolve the following job descriptions for all the team members, and much time was spent as students discussed who had natural abilities in the various areas necessary. Groups at this point could elect / propose as to which site they would prefer. Both Pānuku Development Auckland and Devonport Business Improvement District put in bids / suggestions as to which they would prefer on their site, which largely worked out seamlessly apart from the minor issue of the Silo Park teams not being told that the impermeable membrane which was covering the site after the tank farm had largely been removed to stop leeching of the oil into the environments, was not alerted until some weeks later which caused quite some problems with council consents and siting. Fortunately, one of the groups Radiant Forest were able to move to the Windsor Park site to enable their projects as they needed to construct major trenches to hide lighting conduit, to create a forest of light trees.

Each lead group had to provide team members for each of the following roles, in some cases more than one person. Consenting and councils' drawings took up a major amount of time.

- Project Manager/s
- Fundraising
- Communication External
- Social media
- Designer
- Building
- Logistics
- Budget
- Auckland City Council Drawings
- Consent paperwork, Health & Safety internal to University, Health & Safety Council
- Sourcing of free materials

Sites – Devonport – Windsor Park – 6 teams
Figure¹³



13 Annabel Pretty, 2015.

Site Silo Park / Wynyard Quarter – 6 teams
Figure¹⁴



How / What / Why / Impact

Case study – Al-Noor

Al-Noor became the lead group; their conceptual basis being that of the notion of light. This soon reached a positive actualisation due to the sourcing of a 3D printed continuous material designed in NZ by a company called Kaynemaile; the particular product being marketed as LuxMaile, they were gifted large lengths which after testing soon understood that the material reflected LED and black lights well. Since the group was assigned to the central area of Silo Park this largely had no light pollution and thus through specific testing realised that this was a positive way to create a 'light pavilion' which would in some degree fluoresce at night. Since the 3D printed plastic is often used to wrap buildings it's natural tensile strength made this an easy material to work with, thus hanging it from what is colloquially known in NZ as a 'four ups scaffolding system' with fine wire would be easy. Unfortunately, as time wound on this approach, the project needed to change due to the vagaries of Auckland City Council permit regulations and the receiving of engineers reports, known as PS3 and PS4 with which check to the 'connectors' to the structure.

One of the more idiosyncratic issues which really pushed all the student projects and the staff involved was that despite being in the same city the procedures for building consent of a 'temporary art structure' were different on the different locations. Devonport initially had a Building Consent Exemption which made, we thought for an easier site especially as one project 'XOX' had a 9 metre scaffold structure; however, 24 hours before the "pack in" this was reneged on by council officials. In Silo Park, albeit a harder site due to the impermeable membrane (actually we could have gone 200mm into the ground) when the lecturing staff met with Pānuku Development Auckland and the assigned council inspector we managed to gain exemption on all structures providing they were under 3.5 metres. In the end, they strung them from McCallum Blocks one cubic meter, and one ton constructions blocks used form counterweighting scaffold structures. The ability for students to be flexible within their design methodologies and in particular within the design iteration, became a necessity; scale too became a constant issue and building small 1:1 sections to really prove how big a structure would become was an enlightening proposition.

Group Cultural dynamics, this particular group was compelling in that despite all the lead group having Arabic as their first language, they were incredibly centred in a Kiwi / Pākehā way; to fund raise for hire of logistics and hireage of equipment the student did a bake off; cupcakes galore. This exemplifies the process by which Bryan Lawson (p. 156) cites Herman Hertzberger (1991) suggesting the importance of gaining knowledge and experience from a diverse situation.

¹⁴ Annabel Pretty, 2015.

Everything that is absorbed and registered in your mind adds to the collection of ideas stored in the memory: a sort of library that you can consult whenever a problem arises. So, essentially the more you have seen, experience and absorbed, the more point of reference you will have to help you decide which direction to take: your frame of reference expands.

Figure¹⁵Figure¹⁶Figure¹⁷Figure¹⁸

Case Study – *Be the FireFlies*

Be the FireFlies became the lead group, for albeit a simple idea - that of a field of fire flies resting in overly large Alice in Wonderland-esque flowers – the team mates, however, were a mixture of Pākehā students who had local knowledge to source items and a bunch of Indian and Asian students. The original four were highly amused and incredibly overwhelmed to be chosen as a lead group, many times they came to seek affirmation about whether they should do this, but on every occasion lecturing staff supported them to continue and in some cases for the Pākehā students to be a little more circumspect about their abilities to provide tasks within the group. Though much has been written about group dynamics, A. Paul Hare describes the way in which a group of individuals becomes a collective group.

There are then in sum, five characteristics which distinguish the group from a collection of individuals. The members of the group are interacting with one another. They share a common goal and set of norms, which give direction and limits to their activity. They also develop a set of roles and a network of interpersonal attraction, which serve to differentiate themselves from other groups.

15 Annabel Pretty, Al-Noor Artweek 2015.

16 Annabel Pretty, Al-Noor Artweek 2015.

17 Al-Noor promotional material.

18 Annabel Pretty, Be the Fireflies Artweek 2015.

Figure¹⁹



Since this was such a relatively simple structure the hardest item for them was calculating the depth necessary to put 1.6 metre lengths of 12mm rebar in the ground so that it was not a health and safety issue in that no one could pull them out; however, the engineering team proved well up for this task. Language issues for this group were probably the largest defining factor, design wise and council drawings they were more than well-equipped and very capable however mediating the language barrier did prove tricky at times though, fortunately, having Mandarin speaker's on staff to translate some of the complex structural architectural language, helped bridge this barrier.

Case Study – RainGlow Fish

RainGlow Fish team, was a strongly connected Samoan team, their extended team members became a mixture of Pākehā, South American, Indian and East Asian. From the outset they had the desire to build a large fish structure which was capable of having the audience walk through it, made entirely from CD's which would reflect both in the day light and extensively during the night due to the reflective capabilities of the CD's when using LED lights. However, the somewhat insurmountable problem of being gifted more than 5000CD's proved relatively easy in a very connected Church Samoan Society; one call to the Church members and suddenly Abba, Self-help, and Cliff Richard

CD's abounded. This team however did struggle with the engineering of their structure by using PVC waster water conduit they soon realised that it had enough flex to make a half-semi-circle dome but with no ability to connect it to the ground due to being sited at Silo Park, this meant for some iterative design via the usage of wooden pallets to make a floor like structure or rather floor plate to connect the conduit into. This made for a highly stylised structure which works extremely well under LED conditions but which could only be described in West Auckland dialect as "fresh" (aesthetically challenged).

Figure²⁰



Figure²¹



Figure²³



Figure²²



19 Be the FireFlies promotion material.
 20 Annabel Pretty, RainGlow Fish Artweek 2015.
 21 Annabel Pretty, RainGlow Fish Artweek 2015.
 22 RainGlow Fish promotional material.
 23 Annabel Pretty, RainGlow Fish Artweek 2015.

How / What / Why / Impact

Since all the twelve teams needed to create a roster for site supervision due to the council permit rules, and health and safety issues during the 96 hours, this meant that the students had to participate with the audience to explain their projects, and why they had chosen to manifest in that particular way. Students created pairings so that during the dead of night on each site more than 6 people were staying with their projects. For Al-Noor they even brought their family to eat at night by their projects after prayer. As Keely (Froud, Harris 2015:156) in his essay states;

Whether or not I could articulate it, I felt there was something lacking in the way architecture school was communicated and perceived (inside and outside of Architecture School) A disconnect between those who made architecture (architects) and those who only got to experience it (everyone else). The citizen's role seemed to have been devalued; we had been neutered of the ability to comment, unable to engage in the debate on a level playing field or in any meaningful way.²⁴

In many of these large scale prefabrication projects, the reflective learning which takes place for the students, often manifests later in their educational years. We are repeatedly surprised when 4th or 5th year Masters' students return into 2nd year studio and talk with the current students, often citing that these prefabrication briefs / projects were the best they worked on as a team, in the whole of their Architectural educational years. No doubt partly due to the feedback from the public, giving them affirmation of their designs, partly due to their own self- learning and learning to empathise more with both the site, the design process, and their cultural differences. Of course the buzz of seeing a project through from conception to realisation, is hugely empowering, and these case studies in some part go forward exemplifying some of this negotiating of artefacts, as Aldo van Eyck states in regard to the architectural notion of "place" (Hertzberger 1991).

"Whatever space and time mean, place and occasion mean more. For space in the image of man is place and time in the image of man is occasion". "Make of each place, a bunch of places of each house and each city, for a house is a tiny city, a city a huge house"²⁵.

A good architecture programme of study should allow students to gain design confidence as an individual especially within a cultural context, and to test ideas in a supportive and non-judgemental environment, too few projects have the ability to really formulate a live project where the audience and the maker / architect can interact and give one a sense of place, both literally and metaphorically.

²⁴ Keely, T. Learning from Learning from Kilbirn; Froud, D. Harriss, H. (Ed) (2015:156) *Radical Pedagogies Architectural Education and the British Tradition*, RIBA.

²⁵ Hertzberger, H. Page 193 (1991:193) *Lessons for students in Architecture*. Rotterdam Uitgeverij 010.

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a never ending project into future design spaces

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Abstract

The Never Ending Project is an international collaboration between ESAG Penninghen, Paris, Swinburne University of Technology, Melbourne, and the School of Visual Arts Interior Design (SVAID), New York. The project was initiated in Paris, June 2014. The 2015 brief invited interior design/architecture students from the three universities to design a drone docking and control station. This paper will explore how this project offered an insight on innovative future spaces for design education and practice through the: creativity of the brief, dynamic teamwork of the international collaborators, and using various technologies to effectively communicate and transfer design ideas between continents. The difference in time zones between Melbourne, Paris and New York allowed the students to work on the project twenty-four hours a day from the 14th-20th of September 2015. The design travelled sequentially from Melbourne to Paris, then New York and the process continued the following day for six days. Every time the design reached a new destination it was adapted according to each of the university's site restrictions, respecting the differences in the design cultural identities. Innovative educational and technological practices sustained this design process and successfully expanded this six-day intensive design studio beyond the physical walls of traditional design spaces and practices to offer a glimpse of future design environments.

Keywords: future design learning spaces, drone technology, global design studio, technology and education, twenty-four hour project

a never ending project into future design spaces

Announcing the Never Ending Project

The Never Ending Project (NEP) is an initiative to explore global cultural exchange for interior design/architecture pedagogy. The NEP team experimented with using drones and technology as a means of cultural exchange for educational purposes. The Project was initiated in 2014 by Gérard Vallin from ESAG Penninghen in Paris, Dolly Daou from Swinburne University of Technology (SUT) in Melbourne and Jane Smith from the School of Visual Arts (SVAID) in New York. The project ran from the 14th to the 21st of September 2015 twenty-four hours around the different time zones between Paris, Melbourne and New York. This intensity offered the students a sense of “virtual travel” to different continents without leaving their classrooms. Students from Paris, Melbourne and New York worked as a large design team on one design project and were able to observe first-hand how different cultures and design pedagogies could inform a myriad of different approaches to the same design challenge. The project offered the students an insight into global issues as well as into design practice. Students were exposed to new ways of thinking, designing and communicating to their organisers and to their peers during this intensive week. This exposure, this cracking of the shell of one’s own prescribed notions and preconceived design ideas, is something that often happens while travelling. The project was similar to a study abroad experience, where one student from SVAID described it as:

“It was like being in an exchange program for a week,” said Jung-eun Sarah Hong. “Your drawings and your ideas would travel to two different countries before they came back to you. It was amazing to see how the design transformed and adapted to cultures and geographies as it kept circling the globe.” The end result is a futuristic and easily adaptive design that signals the use of the space and that employs sustainable materials. (The Never Ending Project: Designing for Drones Across Continents. blog.sva.edu/2015/10/the-never-ending-project-designing-for-drones-across-continents/). [12/1/2016] posted 8 October 2015, accessed 12/1/2016)

This was the impression across all three universities. Ideas travelled across continents nonstop guided by the feedback of students and organisers. The students and the organiser in Melbourne even experienced jet lag due to working between the different time zones. The Never Ending Project team developed the basic infrastructure for a new online educational platform and virtual study abroad experience. The enthusiasm and passion of the students and organisers contributed to the success of the project, which will run every year in September inviting more collaborators from different universities and disciplines. This paper will clearly delineate the stages of the first Never Ending Project and shed light on insights on process and communication tools so that they may benefit future digital studios.

The Never Ending Project transpired in stages - each with its own cultural, design and technological complexities that added to the innovation, originality and success of the project. The requirements for each stage had to be fulfilled in order to build a sturdy platform for the following stage. **Stage one:** Establishment of a strong international collaboration built on mutual trust. **Stage two:** Creation of a shared online platform, inclusive of: shared/live

Image 1: Melbourne team waiting for a Zoom meeting with ESAG Penninghen, Paris.



Image 2: NY team mid-Zoom meeting with SUT.



Image 3: ESAG Penninghen, Paris workshop preparing for a zoom meeting



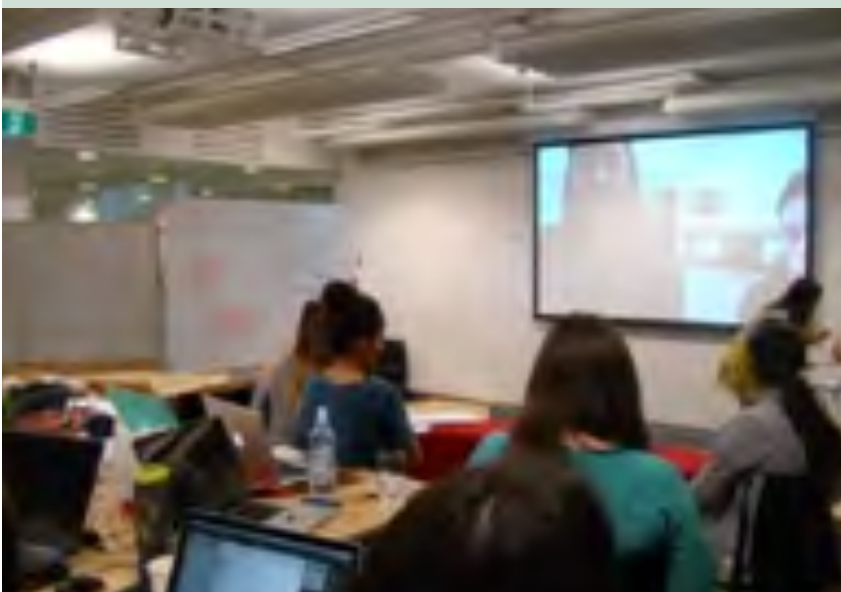
documents, data transfer, and written and visual live telecommunication. **Stage three:** Development of an innovative design brief. **Stage four:** Commencement of the six day/24-hour global design studio, supported by the online platform which enabled participants to share live ideas, meetings and studio culture between the three cities. **Stage five:** Final design outcome: The outcome was benchmarked by all three universities, with each university also assessing its team separately according to its own policies and procedures. **Stage six:** Synchronised exhibition between the three universities with shared branding of NEP. The process then recommences in September every year with a new brief. **Stage seven:** At the end of the project all students involved received certified diplomas from ESAG-Penninghen, SVAID, and SUT as a proof that they have completed this global project.

Initiating collaboration across the Seine

In June 2014 an idea was born during an ESAG Penninghen Interior Architecture and Design degree jury dinner on the River Seine in Paris. Gérard Vallin, Dolly Daou, Jane Smith, Jean Lelay and Pelayo Bustillo Macias proposed collaborating through an international global design studio. The how, why, what, when and where were not discussed then but they agreed that the geographical distance was not a restriction - modern technology would overcome this challenge. The idea from then on that started with a two-hour dinner evolved into The Never Ending Project and promises to continue for many years to come. The organisers had never worked with each other before on a teaching project and some were meeting each other for the first time. But the willingness to collaborate and their confidence in their success as educators and practitioners created an exciting opportunity for adventure and discovery similar to the experience of travelling to a new land for the first time, with a new language, culture and people. Each of the jurors returned to their home countries with the anticipation of working on a global design studio and the excitement that accompanies venturing onto new technological and educational frontiers. The project was an endeavour made possible by the universal language of design. Bolstered by common principles of design, the students were also encouraged to follow certain conventions and procedures that bridged the communication barriers and physical distance between them.

The project has been a continuous learning curve for the students and organisers to explore innovative future spaces for design education and practice. The forward momentum was fuelled by the creativity of the brief, the dynamic teamwork made possible by many forms of technology and the effective communication and transfer of design ideas between continents with strict deadlines. The Never Ending Project demonstrates how traditional studios are extending beyond the physical boundaries into cyberspace through the rapid adoption of technology by both students and educators. Readily-available applications such as Slack and Zoom mimic the culture of social media that students use in their everyday lives, which means they are much more likely to use them as they are already familiar with them and know how to use them. Through this familiar platform students were able to receive and, in some cases, respond to feedback quicker than traditional methods used in studio. The use of interactive technology provided real-time testing of methods where the causal relationships were almost immediate and clearly evident. Traditional methods were still taught - they were just taught through the framework of technology. Technology also facilitated and provided students new methods of assessment, such as using digital media platforms for peer review.

Image 4: Slack to communicate and share files.



The images demonstrate the process that students followed in order to share high resolution images and to communicate with each other. For written and visual communication students used Slack, a communications app that can be used for messaging and the organisation of shared files. For face-to-face online meetings the teams used Zoom, a video app that allows multiple users to join a virtual meeting room by logging into a meeting with an ID number. These platforms created a level of familiarity between the students and allowed them to share ideas without restrictions. The advanced and innovative technology implemented in developing the project virtually reduced the geographical distance

Image 5: Zoom meeting between SUT and ESAG Penninghen

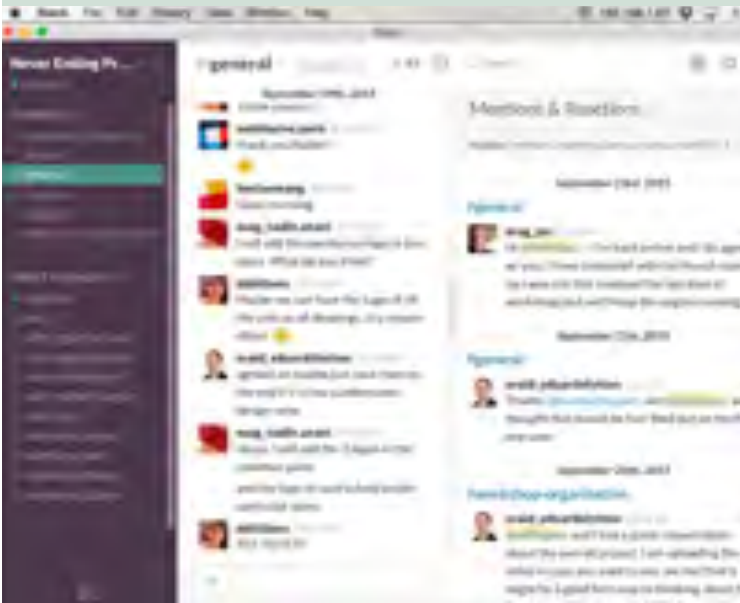


Image 6: Various communication tools such as Zoom, Slack, and Google Drive were used in tandem to accomplish tasks between teams.



Image 7: Phantom II drone flown during a studio demonstration as part of team bonding



between the three cities. The project included a year of preparation in order to establish the platform and to develop and build the framework for a global design studio. The technology provided a sense of travelling and immediacy where students were able to discover the design and linguistic cultures of the other teams through their brief chats. Students were also guided by the organisers who could provide suggestions on navigating cultural differences. A new platform for communication is being explored to improve the online live interactive platform and telepresence teleconferencing with open channels where students can see each other working at any time are also being considered.

24-hour travel

The creative process of the project began with the creativity and the narrative of the brief written and developed by Jean Lelay and Pelayo Bustillo Macias. The brief required the students to design and construct a drone docking station and control room, its corresponding brand identity, and a user interface for the control of the drone. By adapting Phantom II drone software SUT developed an online platform to support the brief for online data sharing to be controlled with restricted access by all team members.

As they were ahead in time due to the time zones, the Melbourne team kicked off the project on the 14th of September at 10.00am. After much brainstorming, SUT students proposed the first concept for the drone docking station/control room as the "third eye in the sky." The eye represented the drone camera as a surveillance apparatus while the 'third' made reference to the three universities. The students were split into three main teams: the drone cockpit, drone docking station, and the branding and visual interface. Each Melbourne student was then matched up with students from ESAG Penninghen and SVAID who had signed up for corresponding tasks using a Google document, the "Matrix of Responsibilities." Students appointed a Team Leader and a Project Manager following the same structure and work protocol of an architecture or design practice. The teams evolved and changed throughout the week according to the project requirements and according to the capabilities of design and documentation of each team member.

Image 8 + 9: SUT and ESAG Penninghen students brainstorming the third eye concept using white board and brown paper, traditional design tools.



Image 10: shows a study model built by the SVAID team used to visualise the design concept.



Image 11: ESAG Penninghen team final model of the drone docking station located on their rooftop.



Everyday for six days the teams followed the same time loop. Although each team scheduled an official start time for the project everyday, the actual work schedule for the students was closer to working nearly 24 hours a day around the Melbourne, Paris and New York time zones. Melbourne would hand over all drawings to Paris by 6.00pm, then Paris would hand-over to New York then New York to Melbourne by 9.00am (Melbourne time) and the process would re-commence the following day. The time and design constraints of the project forced students to generate many design ideas without self-doubt and to “Don’t think, just design.” They exchanged ideas, argued, discussed, and researched fastidiously, justifying their changes in their designs. The intensity and the speed in which ideas travelled between the local studios and within the studio was as much the catalyst in generating raw design ideas as much as the exchange between students and organisers. As the project occurred within strict time constraints, students were forced to not over-analyse and trust their design instincts. Drawings were generated and used by the students as design and communication tools in order to quickly and effectively explain their ideas. Students and organisers worked with each other as a team, each according to their design strengths. This teamwork played a major role in the great success of the project.

Evolution of the process

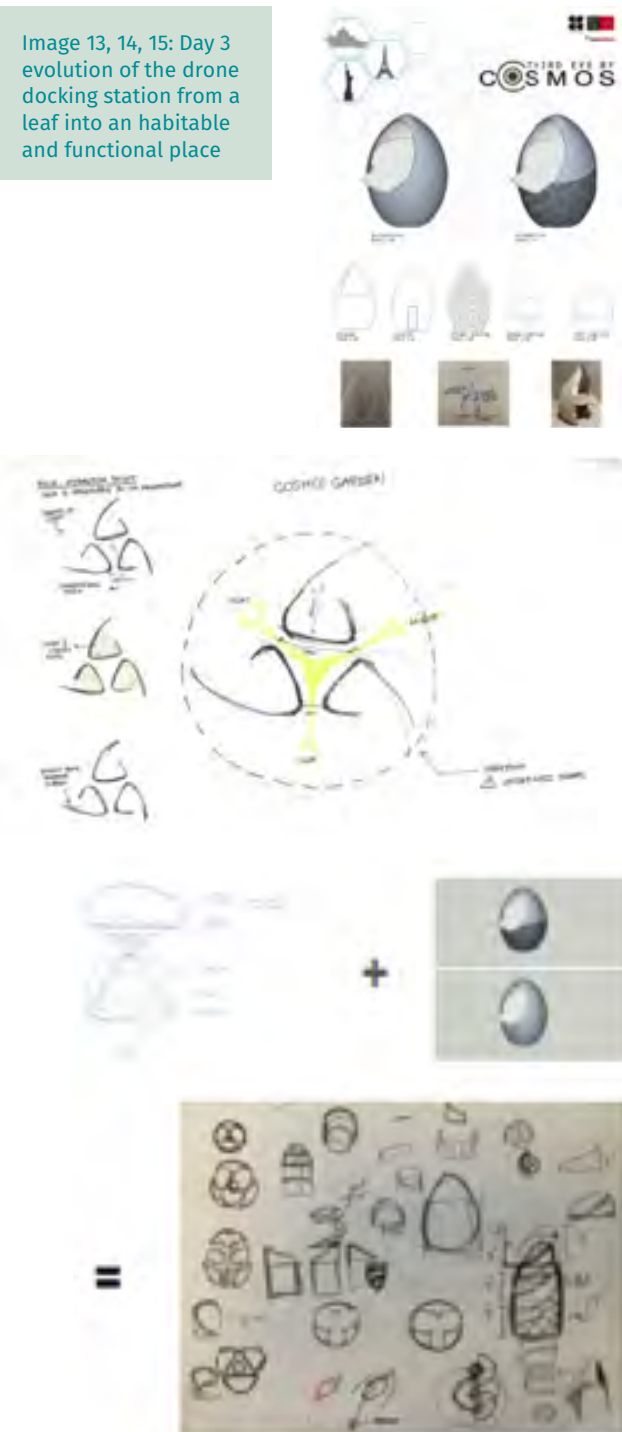
The drawings on the following page show how within 24 hours the idea of the “third eye in the sky” travelled and evolved from Melbourne, Paris and then New York. This constant evolution and honing of ideas happened everyday for the six day period. Within 24 hours students generated multiple drawings, hundreds of messages on Slack and a minimum of three Zoom meetings in order to present and defend their ideas. From Day One the students took ownership of the project and were able to design, draw and communicate as required by the project. By Day Two, the students initiated contact with each other, in their joint effort to problem solve.

The restriction of the face-to-face interaction with the team members created the need for the students to make their drawings and design legible. As the teams became more possessive and protective of their design ideas, their drawings became clearer and more detailed in order to justify their design to their international peers and to

Image 12: Day 1 and 2 evolution of the design idea from (left –right) Melbourne - Paris to New York



Image 13, 14, 15: Day 3 evolution of the drone docking station from a leaf into an habitable and functional place



keep it unchanged. Usually in a 12-13-week face-to-face design studio educators encourage and urge students to make their drawings legible, however students usually ignore this request as there is no real need for them to do so other than for assessment purposes. The intensity of the hand-over process everyday, which the teams called “check-in time” triggered this practice and encouraged new design methodology amongst students and organisers.

The exposure by the students and organisers to new design approaches within this team context and the desire to work together created a healthy evaluation of one’s own approach and design thinking. Strengths and weaknesses were constantly assessed. Priorities were re-evaluated in order to meet goals. As students had to start their day by unpacking what they had received from the previous team, critical thinking was reinforced throughout the process. Individuals gained knowledge of global issues: Learning by observation of what works in other teams and cultures; team dynamics; time-zones differences; the restrictions of language and working around and learning French, Australian and American slang. The second-hand learning was invaluable, as the effects of a decisions could be seen to cascade down through the process, as shown in the images above. After such a process, students had learned yet another way to do something, another skillset, or, at the very least, had gained another perspective, which they could implement into their toolset or fold into their broader design understanding. Even when there were differences, individuals were prompted to re-evaluate their own relative design process. For example, some members from the SVAID team gave the feedback that based on their design education background at SVAID, they felt that some of the other teams were already dipping into the Design Development portion of the project by providing more detailed sketches during the Concept portion of the project. For them, the Concept portion represented research and discussion with great emphasis placed on all voices being heard during pitching and the development of early sketches of ideas. For SUT and ESAG Penninghen concept and design were more closely interwoven together and the practice of presenting more realised sketches during the Concept portion of the process was not uncommon. In the end, it seemed that the design processes between the schools were more similar than different. Though there were differences in methodology and terminology that arose from educational backgrounds, it seemed that design seemed to have its own language that transcended or superseded any of the major differences.

The strength of The Never Ending Project was its fluidity and the willingness of the team members, organisers and students to shift and embrace this flexibility as part of the NEP process. This process reinforced student’s design thinking where differences could be appreciated and provided a broader

understanding of design and how other people approached design problems. This in turn, opened people up to new ideas and perspectives in general. Students agreed that they have gained a valuable “real world” experience that simulated working on a professional global design project with similar design practices and standards. The overall exposure to other methodologies invited self-analysis and comparison. The shift in perspective for the students in the adaptation of their drone docking/control station design into different climates and cultural contexts allowed the students to gain cultural and climatic insights into city sites that most of the time are only accessible by travelling to those cities. Students had to research, transmit and evolve ideas between different geographical locations based on each city’s cultural context, taking into consideration materiality, climate, site restrictions, history and accessibility (See the images below). For example, while the drone docking/control station at SUT was designed to be built on a big open green space at SUT campus, at ESAG Penninghen the docking station had to be located on the roof of a historical building and in New York on the rooftop of an SVAID school with strict accessibility rules and considerations. This created a great challenge for the students who within a very tight deadline had to research light material and think about how the docking station could be adapted and accessed to suit all three sites. Through research, discussion and tools such as Google Earth the students were able to “travel” virtually to the three sites in order to understand the cultural and historical context. This experience is similar to a real-life project where similar challenges would be resolved within tight time frames and deadlines and creativity is a must to solve problems.

Image 16: Adaptability of the drone docking station at SUT, Melbourne



Image 17: ESAG Penninghen, Paris



Image 18: SVAID, New York



Digital Studios

The daily challenges that students faced in this intensive studio created a sense of comparison and a healthy competition amongst the teams, which set a high standard from the first hand-over. The students and organisers

were motivating each other to perform better at every hour and to compete against themselves. Every minute the studio structure evolved according to the needs of the global team and the project. Students were encouraged not to become emotionally attached to an idea and to be open to the ideas of others, which could push an idea into an entirely unforeseen different perspective or compound creativity through collaboration. In Melbourne the organiser used the metaphor of a gift:

When you receive the drawings from New York every day I want you to think like you are opening a gift; It is exciting and you do not know what you are getting.

With this in mind everyday students received the drawings which then were handed to Paris then from Paris to New York as the process continued nonstop for six days. The use of technology made it seem as if the teams were working within one studio even though they were spread across three continents. Once students received the drawings they would evolve and develop the design and send them back. It was normal for designs to return completely changed and interpreted by other teams, with certain design traces serving as unexpected launching points for new directions for other teams. Whereas in traditional studios students resisted strongly feedback to change their design, the inevitable nature of change built into the process began to foster feelings of anticipation from receiving the drawings back the next day. One could not be too attached to their ideas. One student from SUT said:

I want to see how New York is going to evolve our design.

The design transformation and exchange had become game-like and served to enrich the team dynamics.

The use of technology expanded the physical presence of the studio room beyond continents to include different educational practices from three different universities, programs, continents, and cities. Design studio was no longer restricted by its own silo or own practice - it began to mimic the design practice of today that no longer works only on local projects but engages technology to work on international projects. Each global team followed a different approach to the design which had to adapt daily. However, the NEP provided stable guidelines that required all teams to update the logbook (documentation of the day's events), checking in for face-to-face meetings on Zoom and sending drawings and messages on Slack everyday. These three rules were unchangeable. Anything else that occurred around these tasks and the times set for them was flexible. The project promised to be complex, however there was an agreed upon attitude by the organisers embracing a sense of experimentation and a sense of "We will work it out" during the actual process that dealt with challenges as rich learning experiences. Students were given a sense of autonomy; they took charge of the project from the first day and dealt with these issues through the art of communication. The students were given ownership of the project, pushed by the limitations in communicating with the other teams and having to present and defend their ideas constantly. Each team responded and adapted to the design and methodological challenges in their own different ways, which led to the adaptation of the project and design process. The team from ESAG elevated the standards for the project with their rigor and effort. The SVAID team constantly sought to adapt and synthesise ideas from all teams through their design. The team from SUT proved that a sense of humour and enthusiasm smooths the wheels and makes what may be formidable communication challenges approachable and manageable. By introducing humour SUT team were able to bond with each other and with the global teams in Paris and New York. Every day the organiser would encourage the teams to participate in a humorous exercise, sometime initiating this exercise herself.

Image 20 and 21: Melbourne team working the drone



The Never Ending Project

The Never Ending Project implemented innovative educational and technological practices, which sustained this design process and successfully expanded this six-day intensive design studio beyond the physical walls of traditional design spaces and practices to offer a glimpse of future design environments. The implementation and use of technology facilitated and shaped the collaboration through various telecommunication channels, without which this project would not have been possible. The shared time constraints and intensity and volume of the exchange of ideas, the use of the differences in the time zones to stagger work, and the “face-to-face” online meetings that approximated telepresence softened the interaction between the team members and served to give an ultimately human contact to what could have been a very cold project. Running for the first time, organisers worked with the students on a day-to-day basis and they introduced and implemented different teaching conditions and methods to keep up with the design process. Much as the students worked endlessly and had to adapt on the fly, a support structure had to be built dynamically to facilitate the design of a docking station/control room between three cities and that followed the sun around the globe. Much attention was given to bringing in the dynamic of design practice and international collaboration into the playful and serious activities as well as the adaptation to different design cultural, climatic and historical identities. The transfer and sharing of information (both for students and organisers) proved to be elemental in the success of this collaborative project between the three universities. The project was a learning experience to students and to the organisers. Through continuous communication and collaboration the Never Ending Project team aims to dedicate even more resources to the Never Ending Project, ensuring needed support from design professionals and educators with a dedicated time for this project. Technically, as a pedagogical experiment, as an exposure to other cultures and ways of approaching design and work, this Never Ending Project 2015 proved to be a platform for a new process of digital learning in design. The end result was a design of a drone control room and docking area documented and ready for construction and, more importantly, the promise of a platform that can be used for even more and richer collaboration and the exploration of new educational techniques and strategies.

Image 22: The design energy at ESAG-Penninghen.



Image 23 and 24: Consultants and organisers gave feedback and support to what was ultimately a project led and executed by the student teams. In the end there was much cause to celebrate at the end of the finish line.



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Images 2, 6, 23, 24 by Lucas Thorpe. Image 10 by Adele Schelling. All other images by the authors.

social intersections – social media spaces as sites for creative pedagogies

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Abstract

Social media is pervasive in the lives of both students studying and those working in the creative industries. The mass socialisation of digital and online communications has meant that content is authored, curated, critiqued and reconfigured by a mass of users. Through the collective efforts of the users – posting, liking, commenting and sharing – connection and collaboration takes place. This paper focuses on the hyper-layered nature of social media use by students studying on Design courses at a university in the UK. It explores data across public accessible social media sites – twitter, Instagram and Pinterest, and views them as sites of creative productions. Visual analysis of students' social media Profiles is presented and compared with those from the creative industries to explore the social intersections of creative production spaces. Social media spaces are sites of creative production, where the two ecosocial systems of trainee and trained converge. The relationship between the trainee designers studying in a university and the trained designers in the external industry is changing. There is a context collapse between creative learning, production and working practices. I present these digital spaces that connect students and creative industries through their hyperlinked ecosocial environments and explore what this could offer as a creative pedagogic approach.

Keywords: digital spaces, social learning, social media, creative production, pedagogy

social intersections – social media spaces as sites for creative pedagogies

Introduction

This paper presents the findings from a small scale study of interior design students and the way some of them use social media sites within their university study. These findings were there compared to data, which explored the way in which interior design professionals and interior companies use social media sites. The data used was from the social media sites Twitter, Instagram and Pinterest and these sites were used to explore the ubiquitous and hyper-layered nature of social media usage by a sample of undergraduate students. This paper takes the approach to using visual analysis to compare images posted across the three sites and across interior designers at different stages of their career to explore similarities and differences.

Context

The hyper-layered nature of social media use by university students

Digital technology is now pervasive and ubiquitous in the lives of undergraduate students. Wireless networking across the campus accessed via mobile devices, podcasting of lectures to iTunesU, online learning through Virtual Learning Environments (VLE) to communicate and collaborate synchronously and asynchronously with peers and lecturers and social networking sites (SNS) to hang out in, learn, discuss, document and deconstruct the university experience. Within the UK two-thirds (66%) of online adults say they have a current social networking site profile (Ofcom, 2014). Social media sites are used for making friends, organising social and academic engagements, managing on going relationships between friends, to support academic study through peer support, to play and as a liminal space in between all of these activities (Stirling, 2015). That said social media use by young people can be complex - As Danah Boyd (2014) titled her book on the topic - 'It's Complicated'. Young people no longer use one social media site on its own. Research into these complexities has begun to unpick the 'hyper-layered' nature of social media use (see, for example, Berriman and Thomson 2015; Hodkinson 2016) and understand the way social media sites are used concurrently and alongside each other. This view of the hyper-layered is taken in this paper to explore how different sites are used alongside each other.

Students' use of social media sites has been seen across both the academic and social contexts. There is not a clear distinction between the social and academic uses (Stirling, 2014) and as such, the blurring of boundaries between social and academic contexts becomes a taken-for-granted aspect of university life. Marwick and Boyd's (2011) notion of 'context collapse', offers a helpful way to conceptualise this behaviour. They argue familiar social Facebook practices can be seen in a person's work and social identities and that these two separate 'contexts', collapse together within the use of social media. Timmis (2012) suggests, there are many benefits to this collapse of the formal/informal divide, with activities and interactions taking place in the informal transferring to the formal.

Design pedagogy

Learning and teaching in design schools, has for many years followed the master-apprentice model whereby the students learn from 'masters' of their disciplines both in the university setting and beyond. This more recently has picked up on the university 'employability' agenda, of which the vocational design courses are well placed to engage with through professional enhancement projects and industrial work placements - there is a symbiotic relationship between industry and the university interior design 'studio'. The creative pedagogy of an Interior design course includes 'studio' teaching whereby students are taught in a similar manner to replicate the experience of practicing designers by following a client brief and gaining feedback from tutors, peers and external professionals. Critiquing forms part of the studio culture and is an essential tool in interior design teaching, which is informed by architectural pedagogy (Oh et al, 2013). This is informed by the 'experiential' learning approach, that is, learning through doing and reflecting (Kolb and Kolb, 2005). The culmination of a student's time at university can be described as a 'passport to practice' (Tovey, 2015) and this passport is a design portfolio of works completed when the student is at university. More often this portfolio includes a digital portfolio in the shape of blogs, *issuu* digital booklets and these are often linked to a student's social media sites.

A social media site as a space and a place

Research into social media sites sees the terms such as virtual, online and offline used very often interchangeably. I find these terms unhelpful - when researching digital spaces, I want to draw attention to the real and lived experiences of space. Massey (2005) proposes space and place are both "concrete, grounded, real, lived" (2005, p.185). The digital spaces of the social media sites, Twitter, Pinterest and Instagram are not "out there"

and unreal but geographically grounded in our real lived experiences and attention should be paid to them as such (Stirling, 2014). The spaces are bounded and yet free-flow, data can move between them. Massey (2005, p.184) describes spatialised social practices, which are both open and closed as the “sum of our relations and interconnections”. Interactions on a social media make places for users.

Creative production stories-so-far

Massey (2005) proposes we can conceptualise space as “always under construction... a product of relations-between, relations which are necessarily embedded material practices which have to be carried out, it is always in the process of being made. We could imagine space as a simultaneity of stories-so-far” (p. 9). These conceptualisations of interrelations, multiplicity and space being “under-construction” have influenced my thinking when coming to understand the social media sites and the practices, which go on there. I view social media sites used by students as places for creative production. Creative production in these places includes curating, connecting and collaborating images of interior schemes, architectural details and translating and transmitting interior design knowledge.

Research approach

Research questions

1. Do interior design students use social media sites differently within their social and academic lives?
2. Do interior design students and those employed in the interior design industry use social media sites differently to each other?

The sites and participants

Three social media sites – Twitter, Pinterest and Instagram were used as research sites. Twitter is an online social networking service that enables users to send and read short 140-character messages called “tweets” (Twitter, 2016), Instagram is an online mobile photo-sharing, video-sharing, and social networking service that enables its users to take pictures and videos, and share them via other social media platforms (Instagram, 2016) and Pinterest is known as a digital mood board to discover, collect and store images (Pinterest, 2016).

The participants were all studying on a BA Interior Design course based in the north of England. A purposeful sample of interior design students was taken from across the first and third year students - only those with open, publicly accessible social media profiles were sought. I looked across the whole cohort but focused only on those with what could be described as heavy users of social media. That is not to say all students use social media in this manner but I wished to explore those who did. The second element of this research looked at social media profiles from Interior Design professionals and companies. The sample consisted of four participants from each group:

- First year student
- Final year student
- Design professional
- Design company public profile.

Methods of analysis

An interpretivist approach (Creswell, 2012) was taken to the data collection and analysis. The sixteen profiles selected were observed over a week period in January 2016. The postings over the previous six months were examined and screenshots were taken of postings, which included content thought to be about interior design. These might be coursework activities or design inspiration. Content analysis was applied to this sample to achieve a descriptive account of what each participant was posting. The screenshots were taken so that a visual comparison could be made across the postings, between the three sites and sixteen participants. The interaction ‘stats’ (provided by each social media site) were noted on the last day of the observation period to allow for comparison of the amount of interactions between users.

Data

The data is presented in two sections; the first is a range of tables, which present the users interactions or ‘stats’ from their public profile (these are different for each site). One participant from each of the sample groupings is presented. The second is a visual study – ‘*Stories so far*’ – of the three different sites and same four different users. Screen shots of typical postings are presented side by side to enable comparison across the users.

Comparing the social media stats

The design professional and the design company have been using Twitter since 2009 (the site was launched in 2006 (twitter, 2016)). The third year student has been using the site since 2010 (see table 1). When these three users are compared the 3rd year student has tweeted many more times than the professionals – 7992 compared with 2891 and 2446 but the design professional and the design company have many more interactions through followers and those they are following. The design company has the most followers at 6310 and this could be due to the public nature and reach of the company profile.

Table 1: Comparison of users twitter account interactions

	Twitter				
	Member since	Tweets	Following	Followers	Likes
1st year student	2013	768	253	108	319
3rd year student	2010	7992	331	330	1255
Design Professional	2009	2891	522	666	43
Design Firm	2009	2446	1343	6310	655

The stats show the interactions on Instagram (see table 2) is similar across the sample with all but one user posting between 100-200 times. The design professional posted 2050 times since the account was open, which is many more times than the other users. The design company has much fewer followers (435) than their twitter account showing much less interactions taking place on Instagram. This could also mean that the two accounts are not linked.

Table 2: Comparison of users Instagram account interactions

	Instagram			
	Posts	Followers	Following	
L4 student	118	167	224	
L6 student	222	105	207	
Design Professional	2050	437	243	
Design Firm	161	435	116	

Pinterest use is mixed across the four users with the first year student and the design professional being the ones with the most interactions at 2000 and 3600 Pins respectively. The numbers are way in excess of the third year student at 132 Pins and the design company at only 84. The design professional and the design company have the most followers – again this could be because of the public media profile.

Table 3: Comparison of users Pinterest account interactions

	Pinterest				
	Boards	Pins	Likes	Followers	Following
1st year student	23	2k	61	45	94
3rd year student	9	132	0	2	54
Design Professional	45	3.6k	54	196	204
Design Firm	16	84	0	252	26

Stories so far – a visual study of social media intersections

The images presented here are examples of the types of content each group of participants posted. They are presented grouped by in social media site; Twitter, Instagram and Pinterest.

Twitter

1. Screenshot of first year student twitter post



2. Screenshot of Design Professional twitter post



3. Screenshot of Design Company twitter post



Instagram

4. Screenshot of first year student Instagram post



5. Screenshot of first year student Instagram post



6. Screenshot of Design Professional Instagram post

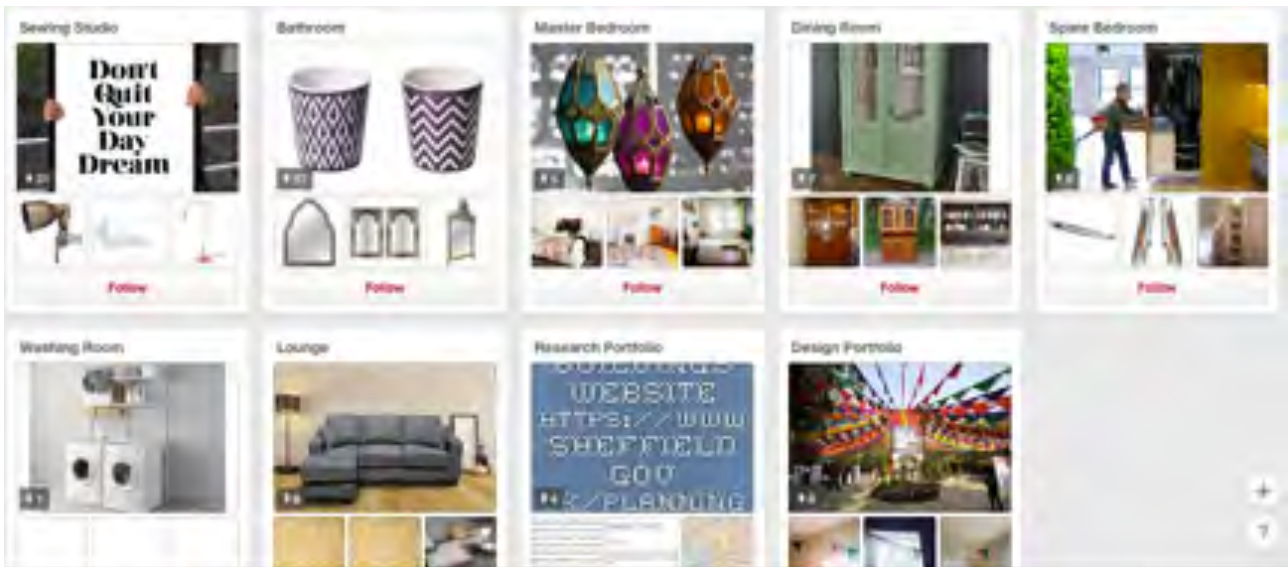


7. Screenshot of Design Company Instagram post

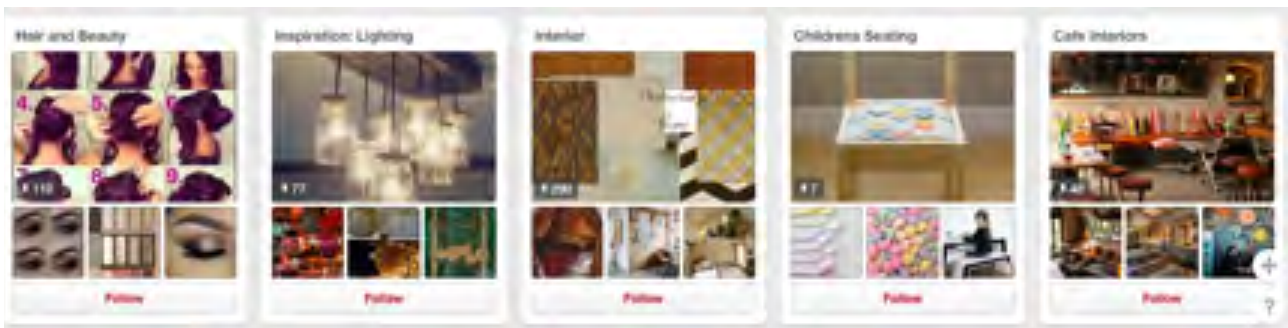


Pinterest

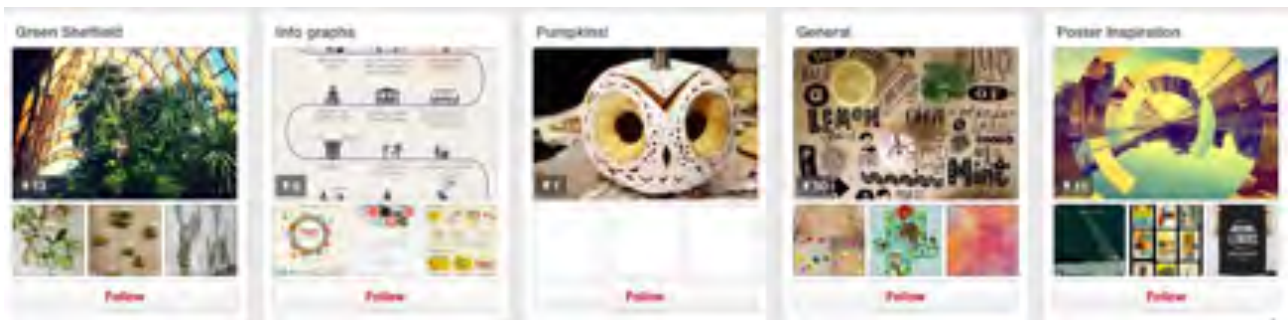
8. Screenshot of first year student Pinterest Profile



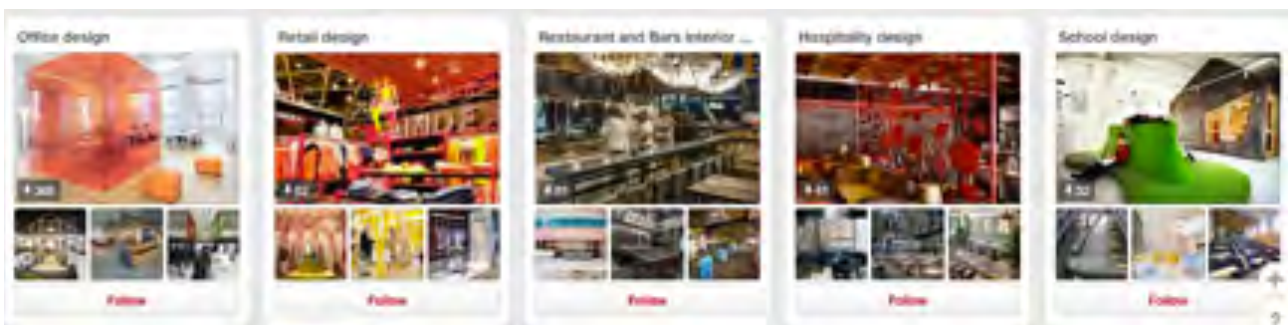
9. Screenshot of first year student Pinterest Profile



10. Screenshot of third year student Pinterest Profile



11. Screenshot of Design Professional Pinterest Profile



12. Screenshot of Design Company Pinterest Profile



Stories so far – visual analysis

Across all the participants there was mixture of images that typified examples of work and play. Students across both levels had posted examples of their design university course work on Twitter and Instagram. These ranged from images of sketch models to perspective drawings and renders of proposed design schemes. On Pinterest none of the students posted work they had created but they did name 'boards' based on their coursework – 'Design Portfolio' and 'Research Portfolio'. Inside these boards were 'Pins' of images and websites that could be seen to be linked to their project work. Many students received feedback on these postings in the form of 'likes' and comments on Instagram. Work was hash tagged with the tag #interiors this allows other who search for interiors to see the Twitter or Instagram post.

The design professionals tended to post about completed jobs on twitter and Instagram (as opposed to the work in progress that the students posted). For example, a winning design scheme, from a job pitch. This often would be tagged with the company Twitter/Instagram account that they work for showing an expanded network reach through the social media site interface. They would also hashtag their work with #interiors or #design.

The design companies posted a mix of work in progress (on site) and completed jobs and these were often linked to features in the interior design professional press (and their related social media coverage). The Pinterest accounts often were 'Pins' of supplier's products or media coverage of the company's completed projects. The Twitter and Instagram accounts were linked in all cases, meaning that images posted to Twitter were first

posted to Instagram and the link is reposted on Twitter. Out of the three social media sites, all users used Pinterest least. This is in line with the popularity of the site on the Alexa, web traffic rank (36, compared to 24 for Instagram and 9 for Twitter, (Alexa, 2016)).

Discussion

The preliminary findings of the use of social media sites by interior design students is presented under two themes – the first describes the context collapse and expansion of their social media places and the second describes the social intersections between interior design students and design professionals.

Context collapse and context expansion

The interlinking of social and academic postings by the students is not surprising given previous work in this area (Stirling, 2014). What is of note is that across all the three sites there was a mix of social and academic postings by students. And this was also the case for the postings by professional designers and even the design company profiles. This reinforces the idea that social media sites are spaces of the context collapse of personal and professional identities within the interior design industry. The always-on nature of digital technologies and social media sites means that access to friends and peers is not time-bounded by face-to-face meetings in the university. The digital places are where an interaction through a like or a quick comment can encourage peers to develop a design or keep working towards a deadline. The 24/7 feedback offered by peers could influence learning and teaching practices. In the UK, the current three-week turn around for feedback on assessed work seems an age in a space where a notification pops up on a smart phone and demands attention.

As well as contexts collapsing the data showed the ability of Twitter and Instagram to expand the contexts within which the students could present themselves and their design work and get feedback from different audiences. Social media sites are places that have the potential to be an extension of the university design studio. The posting of a design scheme render to Instagram could receive comment from a peer, another designer in industry, a user or other stakeholder.

The social intersections of creative production spaces

Student design work is no longer simply viewed in the privacy of the university design studio. Social media sites are a place students can, if they wish, broadcast their design ideas and design schemes to a wider audience. The university ecosocial system is made up of social interactions between students and staff and students and students (Lemke, 2000). And the wider ecosocial of the interior design industry is made of interactions between designers, clients, building owners and users. Social media spaces are sites of creative production, where the two ecosocial systems of trainee and trained converge – the university and the interior design industry. These digital spaces connect students and creative industries through their hyperlinked ecocsocial environments. It is the mix of social and academic lives, which makes the ecosocial. The use of social media sites are already embedded within the learning and teaching at the university where the sample of users was gained. For undergraduate students the use of social media is an everyday integrated practice. Are design firms looking to recreate that authenticity within their social media profile? In a recent interview with design firm owner – he mentioned he knows what he is meant, “to do with his social media accounts” but has yet to do it. Further follow up interviews with both students and designer firms will be undertaken to get a view from the users of their social media use. Are students learning to present ‘suitable’ professional identities within the social media sphere or are the design companies learning to present ‘suitable’ social media identities? (Fisher, 1997). The digital passport to practice now needs to include managing a range of social media accounts.

Conclusion

This study presented the findings of how interior design students used three social media sites – Twitter, Instagram and Pinterest within their university studies. Their profiles showed there is a context collapse within the places of Twitter and Instagram, between their social lives and their design work. The further analysis of design professionals and interior design companies showed that both interior design students and interior design professionals and companies share their creative productions through posting on Twitter and Instagram. (Pinterest was used the least by users in the sample). Feedback is gained in the form of comments and ‘like’ interactions and through the collective efforts of the users – posting, liking, commenting and sharing – connection and collaboration takes place. These connections have the potential for users to expand their places of creative production into the digital sphere. Social media postings can be viewed as performative (Ashley and Tuten, 2015) and these findings question whether the performance (on behalf of the companies) is learned from the students or vica versa. There is potential for social media sites as a performance place of creative production to unsettle the traditional hierarchies within the master apprentice design pedagogy as the students can expand the reach of their work beyond the university design studio.

Beyond social media sites

This small-scale comparative study shows that there is scope for further research in this area. Not least to move the research site beyond the digital space (there was not scope to do this within this project). This paper presents work in progress on this theme and further visual comparative analysis of a larger sample of students and design companies is planned, along with interviews with the social media users to help understand the complex nature of the hyper-layered use of social media use and particularly to discuss with users how they Pinterest as currently this appears to be disconnected from the other sites.

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design fiction: a countermeasure for technology surprise

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Abstract

What is the future of design? Design practice, research and thinking have advanced to impact an interdisciplinary array of new and complex problems. Concurrently, design is converging with technology, and artificial intelligence could soon confront challenges formerly the domain of humanity. How will these shifts affect not only design but also society and culture?

Design is inseparable from culture. Prown (1993, p. 1) asserts that we can study material culture. “[...] that human-made objects reflect [...] the beliefs of the larger society to which these individuals belonged.” And Bell (1976, p. xv) describes culture, “[...] as an effort to provide a coherent set of answers to the existential predicaments that confront all human beings in the passage of their lives”. If culture strains to provide answers to our existential questions, and design exert influence on that culture, do designers grasp their roles as contributors to culture, society, and behaviour? If we can gain some insight from our material past, can we also gain insights from the future?

Design fiction asserts that we can approach future artefacts and speculations to study the possible ramifications from decisions made in the present. This paper proposes that the use of future scenarios and methodologies such as design fiction should become part of design education to address these needs.

Keywords: design fiction, design education, speculative design, design future

design fiction: a countermeasure for technology surprise

The emerging future of design

Over the past century, the design profession has evolved and expanded. Muratovski (2016, p. 3) describes the change from the designer as a stylist to a problem solver, and eventually a business innovator. Today he identifies a “paradigm shift”, with design as an essential component of the corporate agenda. The design field is now defined as a way of thinking, applying intellect to problem solving through rigorous methodologies and practices. In the evolution from making to thinking, design has broadened beyond the industrial application to address a variety of human-centred social, cultural, and environmental issues. “Design today is no longer about designing objects, visuals or spaces; it is about designing systems, strategies and experiences” (ibid. p. 31). But as for the future, Muratovski calls for more research:

The emergence of design as a strategic resource for business and social innovation has all the characteristics of a megatrend [...] However, as this megatrend is just emerging, the question is what kind of developments we can expect to see in the coming years (ibid. p. 28).

Indeed, this is the question. Where is design going and how will it evolve? We do know that design is converging with technology. While designing for print continues, the call has been surpassed by the need for graphical user interfaces (GUI) and Smart Technology solutions. Hand-held screens are now the predominant means of viewing information. Computer-assisted visualisation and prototyping techniques, including 3D printing, and animated, architectural fly-throughs, are now staples of the design process. If we look at the future with lenses from the past, we are tempted with visions of computer-assisted models and simulations quickly materialised through gestural interfaces across virtual space, extracted from our mental conjuring. This technology-is-our-friend imagery evokes the sentiments of unlimited potential and unfettered creativity. But this is not the nature of paradigm shifts. When we talk about the explosion of Big Data, we still think in familiar modes, of the designer as a skilled visualiser who organises and finesses more palatable ways of viewing the information. Our approach is to ask how to hone our current skill set to solve emerging problems. In fact, Big Data, the fuel of Artificial Intelligence (AI), decision-making engines capable of predicting highly specific outcomes, may end up replacing old paradigm designers.

“Seemingly benign...”

It is the nature of technology to spawn new paradigms which can cause a ripple effect on careers, society, culture, behaviour, privacy, and security to name a few.

It is of particular importance to design and designers. Technology will change the things we design, the spaces we design, the way we see and consume information. It is important to understand what these changes could be, how they could affect our lives and our careers so that we can prepare for them. Roberto Poli (2015) describes Anticipation (a new field of study), in this way: “A weather forecast in itself is not anticipatory [...] Watching a weather forecast and as a consequence taking an umbrella before going to work is instead an anticipatory behaviour.” So it is more than merely looking at what might happen, it is about taking concrete actions or making practical preparations if it does. Perhaps it means that if the oceans rise, our houses and buildings should be able to float. Anticipating catastrophic changes to our environment requires design thinking, but what if Artificial Intelligence (AI) replaces the need for designers to specify things like typography, or lighting, colours, materials, user interfaces, or ergonomic recommendations, tactile preferences or other details that currently require design expertise? Can AI replace the practice of design? What if Human Augmentation replaces the need for personal cell phones, laptops, tablets, or displays in the physical, material sense? What if Virtual Reality replaces the need to visit the museum, the opera, a retail store, or the designer’s office? A confluence of other technologies will further influence and converge with these ideas, such as nanotechnology, biotechnology, and genetic engineering.

There is also the consideration of unintended consequences that can cause new and unexpected problems: printing 3D guns, using drones for vandalism, cell phones to invade your privacy, GPS to track you, or online shopping to steal your identity. According to Kurzweil (2005), “We are not going to reach the Singularity in some single great leap forward, but rather through a great many small steps, each seemingly benign and modest in scope.”

At one time we could consider these things as science fiction fantasies, but that is no longer the case as many of these technologies are well on their way to becoming part of everyday life and the rate of development is not linear but exponential. Do designers need to think about these eventualities? Will we adapt in reaction to them or design in anticipation of them? Will our designs have unforeseen consequences? Can design thinking anticipate and mitigate the unintended from the intended? Are designers trained for this?

While designers now embrace the importance of sustainable design, how many think about the behavioural, social, or cultural repercussions of objects, spaces or communication? Whether or not the designer is fully aware of their reciprocal effect, design and culture are inseparable. Jules David Prown (1993) cites Peter Gay's book *Art and Act* examining the three historical causes that bring an artefact into being: craft, culture, and privacy. Craft refers to the traditional way that things are taught to be done or made. Culture reflects that "People are a product of their time and place. The third causal factor, privacy, refers to the individual psychological makeup of the person who made the object [...] (1993, p. 3). In this case, we could consider this to be the designer. Prown sees artefacts as historical; things that happened in the past but exist in the present. This is the purpose of the study of material culture:

[...] namely, the manifestations of culture through material production [...] to understand culture, to discover the beliefs—the values, ideas, attitudes, and assumptions—of a particular community or society at a given time (Ibid. p. 1).

What culture will we confer from the material of the next two decades? Or will the material give way to the virtual and the implantable? If we accept Bell's definition of culture as our means to answer the deepest mysteries of existence and meaning, then design plays a role.

These are the issues and implications of our design future. How do we prepare designers? If material culture can glean purpose, meaning, motivations and values from a historical artefact, can we also look at future artefacts and speculations, via design fiction to study the future of design and our designed future? This paper proposes that design fiction and speculative design are means to envision, question and contemplate the future as part of conventional areas, and perhaps a longer list of interdisciplinary studies not heretofore commonly associated with undergraduate design education, such as sociology, psychology, and business. Such a curriculum could be part of a new touchstone for design education preparing students to anticipate a shifting design future and successful careers in this unknown.

Defining design fiction

Design fiction has a multitude of interpretations and methods. For the purpose of this paper, I will frame it as the convergence of four fields or areas of thought. The first is science fiction, which differs from fantasy in that it anchors the narrative in science. For this I will use Robert Heinlein's definition: "...realistic speculation about possible future events, based solidly on adequate knowledge of the real world, past and present, and on a thorough understanding of the scientific method". The second is Critical Design. Dunne (2013, p. 34) describes it as, "...more of an attitude than anything else, a position rather than a methodology. Its opposite is affirmative design: design that reinforces the status quo". The third is conventional design that includes the more recent "design thinking". Brown (2008 p. 86) defines it as "[...] a discipline that uses the designer's sensibility and methods to match people's need with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity". Finally, there is the study of foresight. Saffo (2007, p. 122) defines it: "The goal of forecasting is not to predict the future but to tell you what you need to know to take meaningful action in the present." Together these activities form a design fiction hybrid. Most practitioners agree on Sterling's (2013) definition of design fiction: "The deliberate use of diegetic prototypes to suspend disbelief about change." Sterling admits this definition is heavy-laden. Herewith I cite his explanation in full:

Deliberate use' means that design fiction is something that people do with a purpose. 'Diegetic' is from film and theatre studies. A movie has a story, but it also has all the commentary, scene-setting, props, sets and gizmos to support that story. Design fiction doesn't tell stories -- instead, it designs prototypes that imply a changed world.

Suspending disbelief' means that design fiction has an ethics. Design fictions are fakes of a theatrical sort, but they're not wicked frauds or hoaxes intended to rob or fool people. A design fiction is a creative act that puts the viewer into a different conceptual space -- for a while. Then it lets him go. Design fiction has an audience, not victims.

Finally, there's the part about 'change'. Awareness of change is what distinguishes design fictions from jokes about technology, such as over-complex Heath Robinson machines or Japanese chindogu ('weird tool') objects. Design fiction attacks the status quo and suggests clear ways in which life might become different. (Sterling, 2013)

We base this process on narrative, and it reminds us that all design is future-based (we design things that do not yet exist.) But the narrative emphasis does not revolve around the prototype: "We can put the designed thing in a story and move it to the background as if it were mundane and quite ordinary — because it is, or would be. The attention is on the people and their dramatic tension, as it should be" (Bleeker 2009, p. 37).

Application to design education

Design affects people

Students are asked to consider through speculation, future motivations, and ethnographies, reverse engineering the elements of discovery that are part of discerning material culture from the past. The student can begin with the culture, observed from the influences that sculpt current beliefs into cultural practices, or start with the device, service, or space and ascertain what value system might predicate such an instance. Regardless of the starting point, design fiction urges scrutiny of not only the material manifestation but also the psychological, behavioural, societal, and ethical motivations behind it. Perhaps more importantly, are those that arise because of it. The narrative, through these explorations, becomes further grounded in human behaviour. The narrative is a story. Stories are about people. People have challenges, beliefs and existential questions. How does the design influence this? By examining the possible within the context of individuals involved in everyday life, we can glimpse the ramifications of our design as well as question the designer's pretext for our creations. In many ways, this seems essential to the design process, but the benefits exceed an examination of our motivations for design.

Logical succession

I advocate a brand of design fiction formulated from logical, technical succession. From foresight studies, Coates calls this "plausible reasoning":

[...] the single most important way in which one comes to an understanding of the future, whether that is working alone, in a team, or drawing on other people [...] is through plausible reasoning, that is, putting together what you know to create a path leading to one or several new states or conditions, at a distance in time (Coates 2010, p. 1436).

Plausible reasoning in foresight is similar then to the "perceptual bridge," that Auger (2013, p. 12) insists upon to create a successful speculative design project: "In effect, a design speculation requires a bridge to exist between the audience's perception of their world and the fictional element of the concept." My process requires a rigorous investigation into current technological trends, emerging technologies and areas of potential convergence. An example of convergence would be the host of consumer devices that have converged over the past 20 years. The calculator, the phone, still camera, movie camera, GPS, game console, television and music player are now in one device: the Smartphone. Convergence can also take place between technologies. Biometrics and automobiles, nanotechnology and communication, robotics and artificial intelligence are just a sampling of potential technological convergence. Surveying and staying abreast of these developments, reading forecasts and observing current trends, behaviours, and consumer appetites, students and designers can begin to plot trajectories and anticipate through logical succession, plausible futures. This future logic as foundation to the narrative carries significant weight to help suspend Sterling's disbelief. When design fictions are conceivable and realistically executed they carry a greater potential for making an impact and focusing discussion and debate around these future scenarios. The process is valuable not only for anticipating technological directions and intersections but also the behaviours they engender or exploit. This deliberate emphasis on people goes beyond expected habits and preferences, as students are encouraged to look at the subsequent changes to culture. In a recent class discussion, undergraduate design students noted that in a world where autonomous vehicles replace personal cars, our culture would be losing a sacred right of passage, the teenager learning to drive. Would a design fiction from 2005 that envisioned the idea of a population – in every conceivable social and private setting – consumed by the perpetual flow of information on a hand-held screen, have prompted us to question the cultural impact of the mobile phone?

The interconnectedness of things

What of the repercussions? While technology is chasing after the ultimate in Virtual Reality (VR) what ripples emanate from achieving it? Rightly we question a moral justification in light of the design efficacy of the AK-47. Will a similar issue arise when affordable VR becomes the opiate of the people? Such questions also encourage students to think about systems and the interconnectedness of things. Ideas that seem efficient and practical at accomplishing a particular task or producing the desired experience can often spawn complex systems. Allenby and Sarewitz (2011, p. 38) describe this as Level 1 and Level II technologies. Their example is the jet airplane. For getting from Point A to Point B, the technology, "[...] very effectively meets our requirements (that's Level I), but it is embedded in a larger system, the air transport network, that is itself a complex socio-technological system, infinitely less predictable and more complicated than the jet airplane itself". The latter is a Level II technology. Systems can be quickly observed (but less quickly mapped) in a whole host of existing and emerging technologies. Will a proliferation of personal, commercial, and security drones create new Level II system of complex interconnectedness? Acknowledging that systems are complex also emphasises the need for interdisciplinary collaboration as crucial for addressing or mitigating the effects of multivariate systems.

The anticipatory mindset

The intention of design fiction narratives is to provoke discussion and debate and encourage individual foresight and participation in the examination of how the future could be impacted by our decision-making today. I do not imply that design students are not thinking about the future, but that their future concerns may be centred in the areas in which they perceive some level of control. The future of the family, work, finances, food and shelter might be the leading candidates. I posit that these pressing realities hold sway over the futures that “happen to them.” I include in these passive futures global economic markets, climate change, wars, famines, shortages, and a host of multi-disciplinary technological innovations. Kurzweil (2001) proposes *The Law of Accelerating Returns*: “We won’t experience 100 years of progress in the 21st century it will be more like 20,000 years of progress (at today’s rate).” Nelson (2010, p. 282) states: “[...] the emerging strategic conditions of the 21st century require us for the first time in history to develop the capacity to engage consciously in the evolution of existing human cultures, including their most fundamental frames of reference”. According to Allenby and Sarewitz “[...] as technological evolution continues to outpace the grasp of human intent, we have little time to waste. These are the questions of our time” (11). If Kurzweil’s prediction is only partially correct, we should expect an increasing number of technology-driven, changes that could have transformative effects on society and culture. By fostering a mind-set of anticipation, students can appreciate the importance of staying abreast of emerging technologies and parsing the possible connections between design and culture and better preparing them for career navigation and adaptability if there are fundamental changes in the design profession.

Conclusion

Technology is an elusive broad-based term that has become inseparable from design and increasingly difficult to anticipate. If technology grows exponentially, as the evidence supports, will it be unpredictable? We see the uncertainty compounded by the infinite ways in which technologies converge. The convergence of cognitive science with nanotech and genetics or biotech with infotech or robotics and artificial intelligence can have sweeping reverberations to human life on this planet. It is incumbent upon design education to make future designers aware of this undulating future landscape and how this can affect the way they work and live. The field of design fiction is still emerging, gathering practitioners only since the early years of this century. Since then a myriad of approaches have been undertaken, and there is an increasing variety of methodologies and applications. The approach for my studies borrows from the constructs of science fiction, critical design, conventional design (including design thinking) and foresight studies to bring cultural legibility to representations of the future. Exercises in future narratives and the resulting prototypes enable students, through a structured process of speculation, to examine the potential ramifications for people, culture, and society as well as the designer’s motivations. Through a rigorous process of investigation into current trends and emerging technologies students gain an understanding of logical succession. The resulting plausibility in design fiction narratives renders the future scenario more believable, thereby increasing realism and believable context. It also makes more legible the implications for human behaviour. Future speculations further require the designer to examine the nature of systems and the interconnectedness of things as well as the potential for abuse and unintended consequences flowing from our technological and digital breakthroughs. Finally, emerging from undergraduate design education with an anticipatory mindset can prepare students for more focused post-graduate study or greater adaptability for reasoning our abstract future.

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conference papers academic and professional strands

SUSTAINABILITY

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Sustainability, overcoming the disconnect. *T. Ramage*

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sustainability, overcoming the disconnect?

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Abstract

If Sustainability is such a good idea and noble goal, why aren't we doing it? The primary reason is that most of us do not have a context for being either sustainable or unsustainable. We have a mental image of how the world works, but we do not see/recognise any immediate, or future, harm directly caused by our lifestyle. And therein lies the disconnect. While there is no inherent desire to be unsustainable, the cumulative, collective and continuous impact of our actions and activities generates the harm. Our actions demonstrate that we do not actually believe that all things are connected. Functionally, we are a goal directed species on a process oriented planet and our operational preference is for linear and disconnected procedures on a planet dependent upon cyclical interconnectedness.

Ultimately achieving sustainability is about changing personal and social consciousness. It is about shifting from thinking in silos to systems thinking. That is why the potential for becoming sustainable lies in art and design as those fields provide us with the means and capabilities to see, think and feel differently as well as act in a manner that provides us quality of life in the context of 1 planet living.

sustainability, overcoming the disconnect

Sustainability is a process seeking a dynamic balance between culture, population, ecology, economy and resource use relative to the rate of resource generation, availability and renewal. It is systems based, synergistically astute, feedback sensitive, holistic, cumulatively/collectively/continuously responsible, while operating on the principle of the triple bottom line and the “long now.” At its heart, Sustainability is the recognition that we live a “cognitive ecology.” Sustainability is the way by which we accept the responsibility and repercussions of our actions. It is a measure of personal, cultural, and planetary accountability. It is responsive to, and responsible for, the viability, vitality, adaptability and resiliency of the local environment, the local culture, and the economy. Ultimately, Sustainability is about maximizing the synergy of connectedness, and thus resolving multiple problems simultaneously.



Nobody used fossil fuel energy to come to CUMULUS to shrink polar bear habitat, starve penguins or increase asthma attacks in children. In our behaviour we do the act, but in our minds we do not do the deed.

So if sustainability is such a good idea and noble goal, why aren't we doing it?

In part it is because we – artists, designers, scientists and storytellers – have not yet presented a compelling enough vision about the needs and benefits of Sustainability relative to the life altering changes that humanity will inevitably face between now and 2030. We have not provided the clarifying frame of reference or created the visual story that will allow people to be truly cognisant of the impact that humanity's cumulative, collective and continuous actions have on the planet and its other inhabitants.

For example, the UN estimates the world will need at least 50% more food, 45% more energy and 30% more water by 2030 (UN Secretariat, 2012) to meet the needs of the 8.5 billion people (UN General Assembly, 2015) who will inhabit the planet - 59.9% of which will be living in urban areas. The concern is not just about the numbers but the reality that our unsustainable models of growing food and generating energy cannot scale up to meet the projected demands in the time allotted.

The solution to these issues will not be found through the scientific process or the inventions of technology. While both will play a role, neither area is inherently focused on problem solving. Science uses a reductive methodology so that a problem or a puzzle can be better understood. Technology provides us with new tools, but it is the scale and type of application of the tool that determines whether it is boon or bane – not the tool itself. The solutions will come from individuals who are intrinsically holistic thinkers, who can communicate effectively and evocatively as well as being individuals who are innovative not just inventive. In essence, the solutions will come from artists and designers, and others who are also creative and systems based thinkers. Achieving sustainability will require reconceptualising and recontextualising the methods by which we provide food, water and energy while understanding that these primary needs are interdependent and interconnected not separate entities. Only then can we design integrative processes that become more mutualistic and symbiotic rather than competitive.

In regards to meeting the U.N. projections, we must acknowledge that climate change, global warming and extreme weather events will alter what crops can be grown where and when – as well as increase the variability in crop yields. Shifts in rainfall patterns will increase the demand and dependency on ground water for irrigation while simultaneously altering groundwater recharge rates. Changes in moisture levels and temperatures will also cause shifts in species makeup of agricultural pest and competitors. There is also the question as to how quickly agriculture can identify the new crops that



Collaborating with natural systems

can be profitably grown in a given geographic area while developing the economic and informational infrastructure to support the large-scale changes in farming as needed. The double jeopardy is that increased reliance on the current model of industrial agriculture leads to an increasing release of greenhouse gases which will trigger an increase in the rate of climate change, global warming and habitat loss while exacerbating extreme weather events. Rather than solving a problem, the expansion of industrial agriculture will yield more risk and liability to the food supply.

The current agricultural system is also very inefficient. While the yields of crops have grown significantly from the 1950s, we need to remember that people do not eat “crops” they eat “food.” So how well does our food system work? In 2009, 32% of the food produced in the world was lost or wasted (Lipinski et al, 2013). The EU estimates that 100 million tons of food are wasted annually (EC Staff, 2015). In the US, farming accounts for 10% of the energy used. Farming also uses 50% of the US land and 80% of the US freshwater. Yet 40% of what is produced is wasted (Lipinski et al, 2013). That 40% loss not only represents a tremendous misapplication of resources, but much



Agriculture will change from crop to diet



And from being horizontal to vertical

of the loss ends up in landfills where its decomposition generates methane which a potent greenhouse gas contributing to climate change.

The inefficiency of our food supply does not stop at the shore's edge but continues into the arena of fisheries as well. It is estimated that 40% of global fisheries is by-catch – fish and shellfish that are caught and discarded because they are not marketable. That translates into 63 billion pounds per year (Keledjian et al, 2014). A recent FAO report also indicates that stocks have overfished to a greater extent than previously estimated. Information had indicated that global catches had peaked at 86 million metric tons in 1996. But a more targeted and detailed review of fisheries data indicates that the 1996 peak was actually 130 million metric tons with an annual decline of 1.2 million metric tons (Pauly & Zeller, 2016). The decline in the catch is due to a loss of fish populations, not a reduction in fisheries effort. Corals, shellfish and fish are also being negatively impacted by the increase in ocean temperature and ocean acidity caused by global warming and the anthropogenic release of excess CO₂, as well as by reduction in water quality from pollution.

The planet operates in a framework of interconnected systems and integrated feedback loops whether our species wishes to acknowledge that or not. To meet the nutritional needs

of the human population in 2030, our food/nutrition production and delivery system will need to be significantly redesigned. Growing food will need to shift from crop based to diet based, from an industrial format to a regenerative model, from distant farms to local ones, from horizontal agriculture to vertical agriculture, and from exterior to interior growing systems. The advantage of these systems is that we reduce the need for petroleum-based pesticides, herbicides, and fertilisers while reducing the energy needed for food production and transportation. Sustainable agriculture will also reduce food loss during transportation and allow food waste to be used to either make compost or generate fuel. Shifting to vertical agriculture reduces water demand and shifting to interior agriculture allows for greater climate control, especially compared to exterior farming. Similarly, tank-based aquaculture and aquaponics will become key methods for providing fish. Both will reduce pressure on already impacted wild fish stocks. The tank format reduces overall water demand as the water can be cleaned and recirculated rather than constantly drawing down and/or competing with other water sources and needs. Additionally, fish waste in a tank system does not become a pollution issue as it can be processed as a fertiliser or as an energy resource.

The necessary shifts in energy production are just as profound. Currently there is a tendency to conflate the discussion of electrical demand with fuel type – oil, natural gas, coal, nuclear, hydro, solar, wind, tidal, biomass or waste to energy. These are classic examples of thinking in silos, of seeing issues in isolation and of trying to solve the problems of the future by tweaking the mechanism of the present. In sustainability we need to examine the efficiency and the effectiveness of the solution we want to try in a holistic manner. In sustainability we have to evaluate the application of the proposed fix using a systems approach. Overall, the centralised energy generation and transmission approach to delivering electricity is very inefficient. Approximately 58% of the energy generated in the power plant is lost in the transmission process. Not to mention that coal, natural gas, oil and nuclear fuels do not generate electricity. They generate heat that is then used to boil water to create steam to turn a turbine that generates the electricity. Given the projection that 2/3rds of the world's population is projected to experience water shortages by 2025, why would we continue running the risk of exacerbating the problem of water availability by

expanding power plants and agriculture methods that compete with humanity for an increasing limited resource? Agriculture and hydro-thermally generated electricity are the two major water-consuming businesses on the planet. Conversely vertical agriculture needs 70% less water to grow the same yield as horizontal agriculture (Despommier, 2011). Solar and wind power do not need water to generate electricity. Plus solar and wind power can be effective and efficient in a distributed energy format. So part of the change to sustainability for energy will be the shift from centralised processes that generate and transmit energy to a distributed system that captures and stores energy at the site of use. Combine that with insulation and energy retro fits on buildings, smart technology, L.E.D. lighting, and environmental design and the individual demand for energy can be significantly reduced.

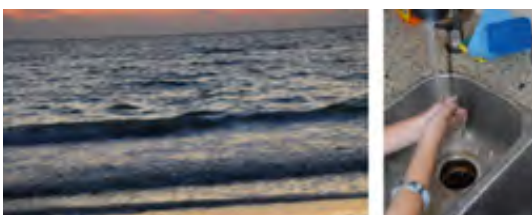
Another example of not facing the future with a sustainable mindset is the continued production of the internal combustion engine. Fundamentally it is at its maximum developmental efficiency. Trying to improve miles per gallon is now about changing the aerodynamics of the vehicle and moving to composite material to reduce the weight of the car. Focusing the discussion on the entity of the car or fuel efficiency ignores the larger systems implication of automobile dependent transport. Globally, 15% of CO₂ emissions are from transportation (Centre – BioDiversity), of which cars are a significant portion. Also, vehicle exhaust is a major contributor to urban air pollution. And poor urban air quality is linked to the rising rate of asthma, increased heart attacks, decreased sperm count, increased miscarriages, increased number of low weight babies and decreased female fertility. Sustainability will not be achieved by minor improvements to the automobile. Sustainability requires that we redesign the transportation system with a shift from a car centric mindset to a multimodal approach. Sustainability also requires changes in transportation be coupled with a retrofit of community design to reduce the need for vehicle transportation while enhancing opportunities for citizens to walk, bike, access effective public transit, and use other forms and formats of conveyance.

Additionally there are personal perceptions that thwart a connection to Sustainability. On a daily basis at the individual level there are no triggers that make one think about Sustainability. On a daily basis we operate in an economy of products, unaware of the ecology of resources that makes them possible. Going about our regular routines we are more likely to see retail outlets rather than sources, grocery stores rather than farms, gas stations rather than oil wells and lawns/landscape rather than missing habitats. There are no second by second environmental indexes publicly posted that allow us to know the value of water, air, habitats and environmental services equivalent to the Dow Jones, the FTSE 100 index or the Nikkei. There is no Index of cumulative and collective chemical releases or a Green Infrastructure/Building Composite index. We have no access to information on the net effect, positive or negative, that we as a species are having on the Life Support System upon which we depend.

We cannot use information we do not have, nor can we evaluate the importance of the questions that are not asked. The adage is that 80-90% of the life cycle cost of a product is designed in before production takes place. The environmental impact of the product is then a multiple of the life cycle cost relative to the popularity of the product. As designers and consumers, how good are the questions we ask? Do we accept or verify the validity of our assumptions? What priorities do we put on the answers we are provided? When looking for a smart phone or a laptop how many of us ask about the actual recyclability of those e-goods. How many of us confirm that child labour, slaves, war lords and “artisan” mining (mining by hand) were not involved in the acquisition of the materials needed to make our e-products? How many of us question why the charger for the e-product is always on rather than only drawing current when the phone or computer is attached?



We operate in an economy of products, while dependent upon an ecology of resources.



Water is probably the most viewed, used and touched resource that is mentally invisible.

We have never been taught the need of operating with a planetary perspective even though we currently live at a global scale. We have a mental image of how the world works, and that perspective does not see/recognise any immediate, or future, harm directly caused by our lifestyle. I can go to the local coffee shop and buy a coffee and a muffin even though there is not a coffee plantation or a decent wheat field within a 1000 km of me. I turn on my desk lamp without considering that the bulk of the emissions from the closest power plant will stay in the atmosphere for generations and that its fuel was millions of years in the

making. Nor do I mentally scale up the implications of turning on my desk lamp to include all the desk lamps that will be turned on in the world in the next 24 hours.

In the developed world, water is perhaps an even better example of our inability to see connections and systems and flows. Water is probably the most viewed, used and touched resource that is mentally invisible. We do not think of water collectively or cumulatively. How much water one used yesterday has little relevancy to how one will use water today. How one uses water is a separate issue from how one's neighbour uses water. Similarly we do not connect the water needed to provide our food with the water used to provide our electricity with the water we use for health and hygiene and the water we use for recreation and landscapes. Most of us could not tell anybody the location of the actual source of the water that comes through the pipe. Even fewer could tell anybody how much water is actually available and what its recovery/recharge rate happens to be.

In general we do not like droughts and yet we do not seem to like rain. Rain causes traffic problems and events to be cancelled. We do not connect rain with our drinking water supply. Nor do we connect storm water runoff with the water quality of local surface water. But our disconnection with water does not end there. Most of us do not think about where the used water goes until it does not flow properly. Most buildings are still based on a one pipe, one use model of water. We have one pipe that brings

water to the building and one pipe that takes it away and in between the water is used once and this discarded. In many communities that means that potable water is delivered to the house and piped to the faucets and the toilets. It is not uncommon for the toilet bowl to use more potable water in a single flush than many people drink in a day. In the US that means many communities fight fires and water lawns with drinking water; hardly the most sustainable approach to the use of a critical resource. It is our habits and assumptions that increase the probability of a water shortage. However, when we take an inclusive system and sustainable approach to water, we can find

processes that greatly reduce the likelihood of a water shortage. If we utilise a green infrastructure/bioremediation approach to waste water treatment, we can clean wastewater so it is not only safe for discharge, but actually treat it to meet potability standards, with the added benefit that these more biologically complex treatment methods can remove pharmaceuticals from wastewater. More than 200 pharmaceuticals have been found in the aquatic and terrestrial environment, some of which can act as hormone mimics in people and wildlife. If we include grey water plumbing capabilities in building design, we can match water quality to the intended use. If we use cistern catchment options and/or green roof and living walls on buildings we can also reduce street flooding. Plus the green roofs and living walls provide buildings with insulation, green space while reducing the urban heat island effect.

We can design communities to promote water shortages or we can design communities to mitigate and avoid water shortages. One of these options is sustainable and one is not. We need 50% more energy in 2030 than today. But today we use an unsustainable system that wastes 58% of the energy it generates while receiving public subsidies and releasing greenhouse gases. We need 45% more food in 2030 yet continue to support a production process that wastes billions of pounds of food annually. We need 35% more water in 2030 yet continue to permit a linear process of one pipe, one use then dump/discharge/pollute to fulfil the demand of a critical resource.

The aforementioned examples show that there are solutions to the planetary issues we face – and they are planetary. We are all down wind and down stream from somebody. Issues of climate change, global warming, resource demands and

pollution are not contained by boundary lines drawn on a map, they are pervasive and manifest in the air we breathe, the water we drink, and the food we eat. Functionally we believe and act as if everything is connected, or we do not.

In current practice, we act as a goal-oriented species on a process dependent planet. Our operational preference is for linear and disconnected procedures on a planet dependent upon cyclical interconnectedness. On the whole, we



We do not see or make connections. Mentally, every type of water, and every water use is isolated from each other and from us.



Ultimately, Sustainability is about maximizing the synergy of connectedness, and the reality that there is only one place in the universe that can support human life.

tend to think in the context of the present on a planet that operates on a time scale of Nano-seconds to billions of years simultaneously and synergistically. We believe in the concept of infinite growth regarding human endeavours on a planet of finite resources. Our current operational paradigm is out of sync with the dynamics of the planet and thus disconnected from the path to Sustainability.

In our daily lives how often do we consider and remember that the Planet on which we live is, in fact, the only Planet upon which we can live? Sustainability is about maximizing the synergy of connectedness. Complex systems grow to a certain scale at which time they need to restructure, redesign and redevelop themselves to maintain and maximise efficiency, effectiveness and viability. Humanity is at that stage. The issue is not “can” we solve the problems, but “will” we solve the problems. The solutions are available, but will we make the emotional investment to change our behaviour and our thinking so that we act as a responsible species, not just an inventive one. Sustainability is the functional manifestation of our maturity as a species. As such, our failure to address the disconnect we have with the life support system we need is not a viable long-term strategy.



“Though no one can go back and make a brand new start, anyone can start from now and make a brand new ending.” Carl Bard.

“We are the ones we have been waiting for”

Hopi Elders.

the square mile project

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Abstract

Square Mile took as its starting point the idea that people when connected with their immediate environs will look, learn and care about how that place is designed governed and maintained. The project invited local artists to work with environmental scientists to map their square mile through arts – film dance, photography etc. An international artist in residence then came and, using the material generated by the local people, created an artistic intervention to sit alongside the work and uploaded this onto the internet. The project was carried out in 6 cities internationally and 6 cities in the UK.

We took the view that an artist's response to the environment is fourfold – firstly as commentator, raising awareness and debate about the issues through art; secondly as facilitator working with people to investigate issues through art and to posit solutions; thirdly by leading practice with innovative solutions and fourthly through providing the alternative to mass consumption and consumerism. The Square Mile creates the platform for artists to work in each of these four ways to create innovative, sustainable practices to enhance the sense of place. In This Place allows further investigation and analysis of this work.

Keywords: arts, communities, sustainability, international, cultural, environmental, neighbourhoods

the square mile project

Background and summary

The Square Mile project was conceived as a participatory arts project that would galvanise local people around the common theme of sustainability. It would bring them together and allow them to explore through art, their different cultural approaches to the issues of environment, waste, bio diversity and overall sustainability that were of interest in their neighbourhoods.

The project took place in 6 UK cities and 6 overseas cities all linked through a website Square Mile. The idea was to share approaches and ideas, to have access to thoughts, celebrations and solutions to problems.

The project was innovative in its approach. It was conceived as a set of protocols and values rather than a project with a template that was replicated in 12 cities. The project allows for in-depth study of the effectiveness of various interventions and the role and efficacy of cultural intermediation in the field of sustainability.

With regards the protocols, the organisation of the square miles involved:

1. A consortium approach. Visiting Arts provided the lead and the guidance, local authorities the local intelligence and access to networks, local arts councils knowledge of the arts scenes, environmental agencies for input into selection of scientists and identification of local issues, local arts organisation for support in accessing arts networks and providing the venue for events, local delivery agencies for on the ground intelligence and to ensure legacy and longevity.
2. Co-creation. The identification of issues to explore and the selection of local artist, international artist in residence, the scientist and the scope and pattern of activity were all agreed in discussion with the partnership/consortium and, in particular with local people involved in the programme.
3. Parity of esteem – the project actively encouraged voices from all members of the partnership, and beyond, to be heard and to feed into the planning, the delivery and the final showings of work.
4. Sharing values – the project was keen to hear solutions from Delhi to Bradford and to break down negative stereotypes including the idea that the solutions to problems were more likely to come from the UK.

The Project drew on extensive research and consultation with partners across the UK and skilled in working in different and diverse community settings. The advice given informed both the protocols, above and the way the project worked.

The partnerships for each of the UK projects involved VA, local authorities, a local delivery organisation (sometimes this was an arts organisation or in the case of Smethwick it was an urban regeneration agency), a community liaison agency or officer, a local artist, an environmental scientist, and international artist and community members. This broad based constituency both added to the reach of the project through the respective networks and also allowed for a very diverse set of approaches. In terms of intermediation, the breadth of disciplines made the project very flexible and, at its best, able to be responsive to new conditions or demands.

The project defined clear objectives:

- To enhance access to participatory arts and environmental action across social groups
- To encourage a sense of shared futures within communities and across borders
- To inspire learning through creative and cultural engagement and expression
- To build contact, dialogue and trust within and between communities
- To challenge negative perceptions of different cultures and faiths.

This guided all involved in the delivery of the project and also guided the participants who signed up to the project because they wanted to benefit from these objectives. In this way the interface of the community participants and the people working on the project became more porous and could become more of a genuine two way learning process.

The activities in the project included projects to attract community participation, engagement activities in the neighbourhood; workshops and skills development sessions; communication with local media; a showing of work/celebratory event. The project was monitored through initial benchmarking surveys, mid programme surveys and post programme surveys. Each of the partnerships was surveyed to get the variety of perspectives that were part of the project.

It was concluded that critical to the success of the project is allowing enough time for the project to develop at a pace that suits the community – and in particular to be sensitive to the rhythms of the partners. For example the environmental scientists preferred not to work in winter when there was less activity and community participants react to school holidays, half terms, existing community activities and festivals. Ideally the project would be more able to expand and contract to fit all these needs rather than have defined timeframes to complete the work.

Also critical is to build on existing work in the neighbourhood. Where the square mile project was used to create a cultural infrastructure from scratch, the project floundered. The nature of the project is developmental rather than breaking new ground. Or, it could be the vanguard project to identify new ways of working.

In some of the projects the international artists integrated well and there was parity of esteem across the artists/scientists involved. Where this happened the community participants also had a rich experience of the different cultures and ways of working. In other projects there was a subtle but strong sense that the international artist was the lead artist and this created an unintended hierarchy.



How did the square mile come about?

Square Mile was conceived after a process of reflection between 2005 and 2007 when Visiting Arts was undergoing a process of review and re-evaluation. It took as its starting point the need to make its work more relevant. In particular, it did not feel that it was reaching the young diaspora communities with programmes that were relevant to them

and would engage those young people. And yet, it felt, Visiting Arts was very well placed to do this as it worked with artists and cultural players from across the globe and could easily prioritise places of interest to these young people, such as Pakistan, Afghanistan, Iraq, Iran, Yemen, Somalia etc. It was clear that there was a need for a greater understanding in the UK and where the UK young diaspora could benefit from contact and interaction with the dynamic, creative and complex narratives from artists of those countries as a counter balance to the narrow, single narrative that was largely available through propaganda and internet sites.

Visiting Art set up a series of round table discussions to which it invited eminent thinkers, producers, academics and policy makers who were involved in the field – including: Baroness Lola Young, academic and writer; Hilary Carty OBE, consultant; Piali Ray, SAMPAD; Samuena Seshier, ACE; Gaylene Gould, Bernie Grant Centre; Pawlet Warner, Akademy; Nigel Blackmore, National Museum and Galleries Wales; David Tse, Theatre Director; Igor October Gallery; Dr Ali Fisher, Director Counterpoint British Council; Anjum Shabbir, Cohesion Development Manager, Government Office for London; Sandra Vacciana, Arts Development Officer, Southwark Council; Leah Whittingham, Arts Development Officer Lambeth Arts, Lambeth Council. Three meetings were held and a series of questions were asked:

The series of round tables resulted in a clearer idea of the issues involved –

- Work with good partner organisations. Be aware of what has already happened and avoid the syndrome of targeting communities that are always “having projects done in them”
- Information sharing: find good, innovative and effective ways of finding out what is already happening – adding value to that, as well as own initiatives
- Look at replicating successful approaches in other cultural sectors & learning from non-cultural sector
- Timetables – respect other people’s and be flexible with our own approaches
- Expand springboard for community organised events: what’s happening, where it’s happening and who’s doing it

The final round table meeting resulted in a paper “Communities, Creativity and Sustainability” that formed the basis of the Square Mile project and informed a good deal of the approach.

The idea was to create a programme that people could get behind rather than one that would cause division or competition. There is a strong consensus on the need to improve the environment. Where we get our water from? How do we get rid of our waste? why do no birds sing here anymore? So it was agreed that we would create a programme that asked people to map their local square mile through art and investigate the bio diversity of the locality, the cultural diversity of the neighbourhood, who had moved in and who had moved out and the aesthetic or spiritual diversity of the square mile – the architecture, the open space, if there was a gallery, what was shown there, a mosque or a theatre etc. Arguably the big issue of the 21st Century were all looked at here – cultural diversity and fear/intolerance of other cultures; migration, climate change and changing economic models.

Who was involved? And why?

Building on the advice of the round table, we started by approaching strong partners. Local authorities were key players as they touch all people in the community whether to collect their rubbish, provide schools or collect taxes.

They have very deep roots into communities and collect a great amount of data. Our approach was to contact the environment, regeneration or social cohesion departments rather than the culture departments. This proved to be a good strategy as the culture departments are often seen as the poor relation both in terms of budget and in terms of influence since culture is not a statutory provision.

The strategy was to develop an internal meeting of officials from within the local authority, regeneration, environment, social cohesion, culture. Officials from the culture department often complimented us by saying that the fact that they had been invited to attend by the bigger spending departments put them in a stronger position than usual when they typically would go to the bigger departments asking for money.

In some cases, the local authorities were very familiar with the kind of work that we were suggesting - mapping, artists in residence and intercultural programmes. In this case they asked us what the “added value” of working with Visiting Arts might be. We were able to outline the network and the international dimension which proved to be very attractive. In other cases, the approach was new and attracted a good deal of attention and enthusiasm. In one particular case, we referred to the Urban Living programme a three year funded pathway project which was specifically focused on a community in Smethwick. The project fitted extremely well into the aims and motivations of the Urban Living project and, in fact, they had already worked with artists and community mapping projects. Again, the added value of our proposal was the ability to attract artists from the diaspora and also to create the network of communities within the UK and internationally.

The local authorities identified the communities that they wanted to work in. Different criteria for selection were offered for example neighbourhoods that had specific needs, areas with little arts/leisure provision, areas with a political profile etc. Most authorities chose to develop diverse neighbourhoods as they thought these would both offer the richest material to work with and also benefit most from the programme and show real benefits.

The local groups then chose themes to work on that informed the choice of artists and environmental scientists.

Then finally the groups decided on the kind of international artist and both the artistic discipline and the country of origin. These were very different in each area;

1mile ² Bradford	1mile ² Edinburgh	1mile ² Smethwick	1mile ² Waltham Forest
Delivery: Delius Arts Centre Clare Lamkin	Delivery: Collective Gallery Kate Gray	Delivery: Hybrid / Ulfah Arts Samina Zahir / Shahida Aslam	Delivery: Francis Bowman ACME
Local Artist: Yan Preston (photography)	Local Artist: Zoe Walker and Neil Bromwich (multi-media)	Local Artist: Melanie Tomlinson (illustration / metal work)	Local Artist: Rayna Nadeem (film / digital arts)
Ecologist: Charlotte Gray Ethno-botanist	Ecologist: Sam Harrison Open Ground www.openground.eu Cathy Bell & Heather McHaffie Royal Botanic Garden http://www.rbge.org.uk/	Ecologist: Wildlife Trust for Birmingham and the Black Country Nicky Simpson Paul Stephenson www.bbcwildlife.org.uk	Ecologist: Groundwork Annie Chipchase
International Artist: Chen Hang Feng Shanghai (installation / performance / mixed media)	International Artist: Mrityunjay Chatterjee & Sreejata Roy Delhi	International Artist: Arif Mahmood Karachi (photography)	International Artist: Zhifeng XU Shanghai (architecture, site-specific)
Local Partner: City of Bradford Metropolitan District Council, Bradford Ecovarsity	Local Partner: Edinburgh City Council	Local Partner: Urban Living	Local Partner: Waltham Forest Borough Council

1mile ² Delhi GMT+5½	1mile ² Dhaka GMT+6	1mile ² Johannesburg GMT+1	1mile ² Karachi GMT+5	1mile ² Shanghai GMT +7	1mile ² Tehran GMT+3½
Delivery: Khóí Latika Gupta http://khojworkshop.org/	Delivery: Britto Arts Trust Lipi (Tayeba Begum) http://www.brittoarts.org/	Delivery: JAG Antoinette Musha Neluhani	Delivery: Nukta Art Niliofur Farrukh www.nuktaartmag.com	Delivery: Shanghai eARTS Felix http://www.shearts.org	Delivery: Kianoosh Vahabi
Local Artist: Aastha Chauhan (audio / video)	Local Artist: Mahbubur Rahman (photography, installation)	Local Artist: Anthea Moys & Kyla Davis (site specific , storytelling, live art)	Local Artist: Arif Mahmood (photographer), Shazia Zuberi (ceramist), Adeeluz Zafar (educator), Nameera Ahmed (new media), Shahana Rajhani (art critic), Fraz Majeed (sculptor)	Local Artist: Ying Yi (sound)	Local Artist: Bijan Moosavi Mahmoud Bakshi Moakhar Mehrdad Afsari Neda Razavipour
Ecologist: Chintan Bharati Chaturvedi http://www.chintan-india.org/	Ecologist: BELA Rizwana http://www.belabangla.org/	Ecologist: The Greenhouse Project www.greenhouse.org.za	Ecologist: Shehri www.shehri.org IUCN Pakistan Shirkat Gah Urban Resource Centre www.urckarachi.org	Ecologist: Professor Shen Ji	Ecologist: Plan4Land
UK Artist: Kelder Free & David Brazier (landscape, site-specific)	UK Artist: Sarah Khatun-Miah (photography)	UK Artist: Friction Arts (multi-media)		UK Artist: Richard Layzell (digital, media, performance)	UK Artist: Andrew Dodds (multi-media)
Local Partner: British Council	Local Partner: British Council	Local Partner: British Council	Local Partner: British Council	Local Partner: British Council	Local Partner: British Council

The local authorities linked these aims with their own targets according to the National Indicators. These are common standards and targets set by national government to be delivered by local government and measures to monitor progress and success.

To enable participation in the arts and inspire learning for communities and artists through creative projects	ENG NI 11: Engagement in the arts ENG NI 110: Young people's participation in positive activities
To promote biodiversity and sustainability through increasingly people's understanding and sense of value of their shared local and global environment	ENG NI 197 Improved local biodiversity ENG NI 188 Planning to Adapt to climate change SCOT NI: Reduce overall ecological footprint
To improve understanding between people of different cultures through increased dialogue and trust within and between communities	ENG NI 1: % of people who believe people from different backgrounds get on well together in their local area ENG NI 2: % of people who feel that they belong to their neighbourhood SCOT NI: Increase the percentage of adults who rate their neighbourhood as a good place to live

All partners were surveyed to find out a range of attitudes and behaviours and motivations. Results showed that the participants most frequently cited motivation was “the opportunity to meet new and different People” secondly was the desire to take action to improve their local environment. The local artists generally already had backgrounds in socially engaged practice. In this project, many were inspired by working with ecologists and also learning and responding to new discoveries about familiar neighbourhoods. The international artists were drawn to the project because it offered an in depth relationship with communities which chimed with their practice but offered greater opportunities for research and reflection. The ecologists were probably the most enthusiastic groups as this approach was very new to them. They were eager to gain knowledge of how people behaved and how changes in behaviour might be possible.

What was done why and how?

Each element of the partnership was involved in engaging the community and attracting participants. The work programme was agreed in advance through discussions with the community and was tailored to each section of the partnership. As examples, the local delivery organisation was tasked with:

- Creating a communications strategy to reach the local people through schools, community groups, local and hyper local media, shop windows etc.
- Holding public events in easily accessible places
- Recruiting in an open and participatory way

1mile² – engaging participants

After discussions with the community, a call was put out for a local artist and an environmental scientist. A selection committee was drawn up comprising members of the community groups, the regional arts council, Visiting Arts specialist staff, local authority officers etc. A contract was drawn up with the local artist and a work programme agreed.

The work programmes varied a great deal in each Square Mile as the programme was tailored to the needs and interests of the local people and the artists and environmental scientists practice:

- Each project delivered different events through discussion with participants and according to the different and varied context. Despite the variation, a general pattern emerged.
- A typical project attracted around 100 participants the work programme included:
- A launch event at a local community or arts venue;
- A series of guided walks with the scientist and the artist
- Workshops engaging local people that either built on the existing provision or arose from discussions to meet a need or area of investigation that had emerged from the walks
- An ecological/environmental intervention – often photographs/film and video of aspects of the square mile of scientific interest
- Discussion groups
- Practical “making” workshops for the community groups
- Celebratory events showcasing work
- Local media involvement
- University and arts institutions involvement
- Post event evaluation interviews/surveys and reporting

What tensions arose during the process/problems or opportunities arose? How were they managed?

The ecologists said that the time of year (typically winter months) was a barrier to success of the project. People were less willing to come out and explore the environment in the winter and some of the species were hibernating or hard to find.

Delivery partners expressed a desire to create stronger connections with other projects in the Square Mile network. Where this didn't emerge, the relationship between local activity and the larger programme was not fully exploited.

The on line elements of the programme were not fully exploited and each project used the website in different ways. Sometimes the imperative to upload material detracted from the activity and caused resentment. Better, faster and newer technology obviates this as does the ubiquity of smart phones and familiarity with the internet. At the time of the project this was still very underdeveloped.

Specific ecological impact

75% of participants specifically valued the opportunity to become more aware of the diversity that already existed in their neighbourhoods: *“There are lots of places I haven't explored yet myself...It's only now with this project that I've had a chance to see the canal. I didn't know it existed and I was wow, all this is here!”*

At the same time they were keen to learn more, such as in Bradford: *“I like the idea, it's good to focus on the area and the focus on food within that, that's an idea I'm interested in, and mapping food and documenting places.”*

Participants became more aware of what they would want to do to make their neighbourhoods better places to live. In Shanghai, conscious of the effect of pollution on their environment, including the state of the rivers, many noted this as a problem to be tackled. All participants wanted to make their neighbourhoods cleaner and greener, whether this was planting wild flowers on wasteland in Waltham Forest, stopping people spitting in Shanghai streets or teaching people how to grow food in Johannesburg and Bradford.



Guerrilla gardening, Waltham Forest

What factors contributed to this happening?

The enthusiasm of people to learn more about their own neighbourhood was well tapped in all of the projects, as the numbers of people attending public events demonstrate. In most square miles there was a diversity of activities and a good range of possible routes into the project.

Ecologists noted the value of the artists' role in making environmental issues more accessible to participants. This emerges in participants' website contributions as well as their feedback in interviews and questionnaires. Most of the international artists also valued the specific focus of the 1mile² brief in encouraging them to engage with participants in a particular context and this guided their approach; *"For me personally it has been the invitation...to focus on cultural diversity, biodiversity."* (Richard Layzell, Shanghai)

While the criteria for success did not necessarily change during the project, the methods of delivery did. The willingness of artists, ecologists and local teams to be flexible in their delivery contributed to the success of this stage of the project. Artists were willing to explore a wide range of working styles particularly when met with circumstances that may have challenged their expectations. These resulted in a rich diversity of responses that has been recorded through the wealth of visual and written material on the website and on people's individual blogs.

One important outcome is the number of local artists who expressed an active desire to: *"engage more with ecological/environmental issues in my work in the future."* The collaborations between the local artists and ecologists were a particular success. In Smethwick, local artist Melanie Tomlinson worked closely with ecologists from the Wildlife Trust for Birmingham and the Black Country to design and integrate the creative and ecological aspects of the project. She noted that participants were *"interested in exploring and learning about their local area"* and that the Wildlife Trust's activities *"opened everyone's eyes to what was on our doorsteps"*.

All the ecologists were surprised by what they were able to discover by focusing on a single square mile. *"Although knowing some of the 1mile² open space quite well, it was still surprising to get a more detailed view of the area."* (Paul Stephenson, Smethwick)

In Bradford, focusing on the streets, parks, markets, waste land and university campus that made up the square mile allowed Ethnobotanist Charlie Gray to reinforce *"the connections between ecology and people"*. Through the project she was able to engage people from a greater number of cultural origins than previously and *"gain some understanding of their sense of themselves as people of diverse origins within the same square mile and their connections through plants"*.

The cultural and social diversity of the neighbourhoods had partly been expected but the ecological diversity of what might have seemed unpromising at first sight often came as an added bonus: *"The biodiversity of the place is astounding. So is the cultural divide between two communities residing there. The waste picker community and the others."* (Chintan, Delhi)

The ability of the ecologists to inspire new learning for both artists and participants around this diversity emerges strongly in their feedback, as does their recognition that art can help communicate the message acknowledging *"the capacity for artistic interventions to engage people with ecological issues."*

Their contribution to the *"deep mapping"* of the neighbourhoods clearly informed the creative responses of the local and international artists as well as the richness of the images and text placed on the website. Especially strong are those pieces that highlight the uneasy juxtaposition of the local and the global environmental issues in many of the square miles.

Across all the square miles, ecologists noted the enthusiastic interest participants took in discovering and learning about their neighbourhoods and there is a sense of people becoming more open and sensitive to their surroundings. In the UK this often focused on sharing 'lost knowledge' about the connections between people and plants: *"elderberries as an ointment for skin treatment, tap birch and drink the sap in the spring time and use lime flowers as a relaxing tea"*.



How, if at all, does the fact that this was an initiative involving ecology make a difference?

The idea for the focus on ecology was to create something that everyone could get behind regardless of age, ethnicity, cultural awareness, education etc. This provided a platform for work that could easily then be taken on to improve the local economy. There is a great potential for a programme like this to spawn small businesses and spin off activity that can contribute to the local economy as well as taking away negative impacts on the economy through vandalism, anti-social behaviour etc. The fact that these positive economic impacts were implied and incidental rather than explicit is the strength of the project.

The community in Bradford is now working with the local authority to create a community space to continue this work. They have identified a building that they want to lease and convert into a community work space. This is having a very positive impact on that community both socially and, eventually economically. This project was particularly successful in “difficult” areas, where there is often “intervention fatigue” after waves of short term pilot projects researching how improvements can be made. It particularly demonstrated the value of genuine co-creation rather than being a passive recipient or “being done to”. This was most successfully evidenced by the Bradford Community who invited Hang Fen back into their community three years in a row.

The Bradford project was also the most successful in terms of the relationship with the ethnobotanist that worked closely with the artist creating a seamless set of interventions. Experience in other projects that are only cultural and attempt to “help people” develop skills and confidence through culture can fall into the trap of creating barriers between cultures as people fiercely protect their ethnicity and identities through culture. The neutral space of the environmental enquiry created a safe space for exploration where cultural differences were either put to one side, or, in a positive way, were used as examples of an approach that could bring insights. An example is the fact that Hang Fen was from the village in China that made the Christmas decorations that were seen in the streets and houses in Bradford. His story of the village and how that village’s culture operates was seen as a positive contribution to the understanding of the environmental debates that were opened up by the community rather than a threat in any way. This meant that other cultures represented in the group also contributed stories of different approaches to the environment through their cultures. This had the effect of increasing understanding of each other’s’ cultures through the exploration of the environment.

The shortcomings of the project appear to be in operational issues – the timeframe, the planning, the engagement process, communications failures and the underdeveloped, underpowered website. In terms of concept, the project has shown that the idea of introducing a “third” element (environment) as a catalyst to look at cultural issues works well. The results show that the artists as cultural intermediaries had an influence far beyond their own practice through their engagement with the consortium of partners and through the collaborative co creation methods.

are we ready? visual memory and catastrophe

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Abstract

This paper explores how visual artefacts might be used to ready densely populated cities threatened by catastrophic events in Australia.

The City of Melbourne recently became a member of the prestigious Rockefeller Foundation's 100 Resilient Cities Network. The Melbourne-based authors perceived disconnect between twin notions of readiness and resilience in their hometown where risk was perceived as low. They felt there was limited collective visual, auditory or tactile memory, or experience of catastrophic damage or loss of life on which to build robust resilience.

As designers and image-makers, they were interested in investigating if visual cues in the form of cultural artefacts could help build readiness and resilience in the city's four million people as a model for future sustainable urban development.

Case study analysis was used to compare and contrast how developed and developing communities use artefacts to build resilience, especially when limited or no electronic communication is available. Findings suggested visual cues repeatedly reinforced through cultural artefacts have been successful in making some communities more ready and resilient than others.

In concluding, the authors discuss how artefacts might be used to build capacity and sustained long-term resilience among Melbourne urbanites in the face of future natural and man-made catastrophes.

Keywords: urban infrastructure and catastrophe, sustainable readiness and resiliency, sensory artefacts and memory

are we ready? visual memory and catastrophe

1. Introduction

We are all hostages to electricity

(Leslie 1999)

This paper is a preliminary exploratory investigation into human readiness and sustained long-term resilience in densely populated *urban*¹ places. Emphasis is placed on the possible degradation of personal resourcefulness and resilience of *urbanites*² in the face of potentially catastrophic power outages.¹ A scenario-based case study uses the city of Melbourne Australia to illustrate urbanites over-reliance on fragile power grids, and includes a brief history and analysis of the local habitat and climate. Investigative research methodology [Section 3 *Research*] is used to uncover possible reasons for urbanites perceived lack of readiness and resiliency. *Findings* in Section 4 present a patchwork of frameworks in diagrammatic and schematic form that represent graphically and in writing contexts and situations. This opens up discussion in Section 5 exploring and describing the likely physical and emotional impact a sudden and widespread outage might have on urbanites in situations largely out of their control, paying particular attention to how and why Melbourne's urbanites might behave in the described scenario. *Strategies* [Section 6] set the stage for the future development and design of sensory artefacts and memory cues to communicate readiness and resiliency messages, and highlight possible benefits and limitations. Preliminary analysis suggests habitual human behaviour is the biggest barrier to readiness because we don't think it will happen to us. The investigation thus attempts to tentatively address the question: *What role can designers/artists play in making urbanites ready and resilient in the face of catastrophe?* In concluding, the authors discuss broadly how cultural artefacts might be adapted and used to build capacity for readiness and sustained resilience among Melbourne's urbanites in the face of natural and man-made disasters.

The impetus for the investigation came from the Melbourne-based authors' first-hand experiences of potentially catastrophic events in the USA: One lived in the aftermath of the catastrophic 'Loma Prieta' earthquake in San Francisco (1989) and the other was a survivor of the 2003 Northeast Power Blackout. As survivors and communication professionals, they perceived disconnect between twin notions of readiness and resilience in their hometown where risk of catastrophic natural events was considered low. They felt there was limited collective visual, auditory or tactile memory or experience of widespread damage or loss of life on which to build robust resilience, especially among a growing population of young urbanites.²

In this paper, *sustainability* describes the capacity or resilience of Melbourne's urbanites to endure and respond to a temporary energy disturbance in their urban ecosystem, specifically their ability to withstand and 'bounce back' after a temporary electrical outage and, with improved ability and effective planning, to withstand future impacts. From an emergency services perspective, resilience building involves legislating, improving, partnering and *scenario* modelling– a technique they use to model individual and community behaviour and raise awareness of possible outcomes that can be integrated into effective decision-making and response. (Schwartz 1997) In this paper *scenario modelling* is used as a radar or sensor on localised readiness and resiliency.

Case study – Melbourne, a city unfamiliar with catastrophe

Melbourne is the coastal capital of the Australian state of Victoria and currently home to 4 million plus people. It is mid-size city known for its stately 19th-century buildings and tree-lined boulevards and where life is 'threaded by culture, education and intellectual pursuits'.³ In size and character it has been compared to Boston USA, and



¹ In this study, *urban* is broadly defined by the number of residents, the population density and the provision of public utilities and services, such as electricity.

² *Urbanite*: Someone who lives in a city or enjoys the type of life in a city. Cambridge Advanced Learner's Dictionary & Thesaurus, Cambridge University Press.

¹ Criteria: Major outage is unplanned and affecting at least 1,000 people for a minimum of one hour. MCLINN JAMES, 2009. *Major Power Outages in the US, and around the World*. Available: paris.utdallas.edu/IEEE-RS-ATR/document/2009/2009-06.pdf

² SALT, B. Lifestyle Choice. *Weekend Australian*, October 17-18, 2015.

was recently ranked 'the world's most liveable city', fifth year running.⁴ Melbourne is Australia's fastest growing state capital and, according to a recent Australian Bureau of Statistics report, is on track to be Australia's most populated by 2056.^{5 6}

Mid-sized cities, like Melbourne, account for a small but growing proportion of the global urban population.^{7 8} In a global climate of uncertainty (terrorism, climate change, population growth) this puts increased pressure on local governments, policy makers and urban planners to make them sustainable for living. In 2013, the prestigious Rockefeller Foundation in New York invited Melbourne to become one of the first members of its 100 Resilient Cities Centennial Challenge. The Foundation is spreading US\$100 million across a selected network of cities to 'help them absorb the increasing shocks and stresses of our modern world'.⁹ This type of international recognition is seen locally as an important building block to making Melbourne a distinctive, world class, vibrant and liveable place, and has incentivised local government and the private sector to build resilience to disruptions to essential services in the form of assets, systems and networks 'necessary to maintain social and economic wellbeing'.¹⁰

The cost of housing, migration and growing numbers of single households is driving the social trend towards urban living in Australian capital cities¹¹ and greater Melbourne is now home to more than three quarters of the state's population (Australian Bureau of Statistics 2013). Rapid growth has increased the possibility of utility outages significantly affecting vertically populated places, here and elsewhere, that are sustained by complex systems of infrastructure and technology fuelled primarily by electric power to provide shelter, contact, energy and water (Little 2010).¹² Electric energy allows modern urban life to exist, and urbanites living and working in high-rise buildings are increasingly reliant on functioning systems of energy infrastructure to eat, wash, heat, cook, light, work, travel, communicate and remove waste from living spaces.

With this dependency comes risk that a single cause, cascading or escalating outage



Figure 2
Daytime population - City of Melbourne. City of Melbourne Research Report, 2013
www.melbourne.vic.gov.au/council/melbourne/melbourne-profile/facts-facts-about-melbourne.aspx

Figure 2: Daytime population - City of Melbourne (845,000)

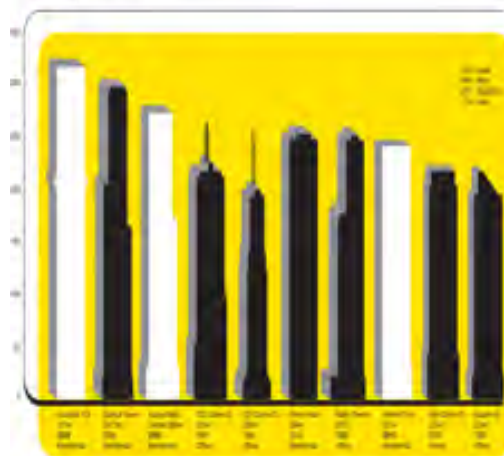


Figure 3
Ten tallest buildings in Melbourne
Source: EIA
www.eia.com.au

Figure 3: 10 tallest buildings in Melbourne (over 150m)



Figure 4
Power Outages in Victoria affecting electricity
www.emv.com.au
www.emv.com.au

Figure 4: Major Power Outages in Victoria

3 XENIA HANUSIAK, November 15, 2011, Melbourne Boston | Sister City. Available: www.smh.com.au/it-pro/let-us-embrace-my-sister-boston-for-we-march-elegantly-to-a-similar-drum-20111114-1nfc.html [January 1, 2016].

4 Global Liveability Ranking 2015 - The Economist Intelligence Unit. Available: www.eiu.com/public/topical_report.spx?campaignid=Liveability2015 [December 11, 2015].

5 Victoria population by density, in Australian Bureau of Statistics report 3218.0 - Regional Population Growth, Australia, 2012-13. Available: www.abs.gov.au/ausstats/abs@.nsf/Products/3218.0-2012-13-Main+Features-Victoria?OpenDocument

6 Melbourne on track to be most populated city as people flock to Victoria: Australian Bureau of Statistics - ABC News (Australian Broadcasting Corporation). Available: www.abc.net.au/news/2015-06-26/australians-flocking-to-live-in-victoria-in-record-numbers/6574858

7 The global population living in mid-sized cities nearly doubled between 1990 and 2014. (UNICEF - World Urbanization Prospects, 2014)

8 SALT, B. Lifestyle Choice. *Weekend Australian*, October 17-18, 2015.

9 Melbourne to take on Rockefeller Resilient Cities Centennial Challenge - City of Melbourne 2013. Available: www.melbourne.vic.gov.au/AboutCouncil/MediaReleases/Pages/MelbournetotakeonRockefellerResilientCitiesCentennialChallenge.aspx [December 10, 2015].

10 STATE OF VICTORIA (EMERGENCY MANAGEMENT VICTORIA), 2015, Critical Infrastructure Resilience Strategy. Available: fire-com-live-wp.s3.amazonaws.com/wp-content/uploads/EMV-CIRS_Web1.pdf

11 Does size matter? - Population projections 20 and 50 years from 2013. 4102.0 - Australian Social Trends, 2014. Australian Bureau of Statistics. Available: www.abs.gov.au/ausstats/abs@.nsf/Lookup/4102.0main+features82014

12 It is interesting to note that the standard of living or more specifically the human development index, which is a measure of wellbeing, has been shown to be proportional to electricity use (Pasternak 2002).

triggered by aging materials, inadequate maintenance or other natural or man-made causes can interrupt and disrupt daily life for days and possibly weeks. The increasing scale, size, height and density of offices and apartment buildings makes them especially vulnerable to potential widespread utility outages because they often happen without warning and can put urbanites at risk of threats they may not anticipate or foresee. For example, Australia's capital cities are experiencing hotter, longer and more frequent heatwaves.¹³ Victoria had its hottest day on record on 7 February 2009 reaching 46.4°C (115.5°F). The temperature was almost 20°C (37°F) higher than the mean average summer temperature of 25.8°C (78.44°F).¹⁴ Without air conditioning, life in Melbourne's growing number of modern glass-fronted apartment blocks would have been unbearable that day.

It has been estimated that by 2050 66 per cent of the world's population will be living in urban places. As the world continues to urbanise, sustainable development challenges will be increasingly concentrated, among other things, on having reliable infrastructure (World Urbanisation Prospects, United Nations 2014). Reliance on electric power and its reliability raises broader questions around the likely impact of a catastrophic outage on urbanites in situations largely out of their immediate control—and how they might respond. With no memory of past events, how ready will Melbourne's urbanites be in the event of a single cataclysmic infrastructure failure, possibly triggered by a catastrophic weather event, such as a freakish summer heatwave, or caused by infrastructure decay or malfunction, or act of terrorism, involving widespread physical and/or mental discomfort for a period of days or weeks?

Dimitry Orlov in *The Five Stages of Collapse: Survivors' Toolkit*, describes a nightmare scenario where after weeks or months without power urbanites should cease to believe in the notion that “the services shall provide” and lose faith in its remaining institutions. The government should become irrelevant as it proves incapable of providing for its citizens ‘who have lost trust in one's fellows and in the goodness of humanity, respectively.’ (Orlov, 2013) ‘Only when

they [urbanites] are left in the dark by blackouts do their baseline existential conditions of near complete power loss become glaringly obvious’, concludes Timothy Luke in *Disrupted Cities* (Graham 2010: 68).



Figure 5: Common artefacts affected by Power Outages

2. Background

Place impacts the way we generate ideas, create and design memory.

A feature of urban places is the illusion that urbanites are switched on 24/7 to the Internet for communication (email), plugged into entertainment (films, TV,

video games) and connectivity (social media), and wired for a lifestyle of entertainment (sports stadiums, theatres, music venues, restaurants). It is common for urbanites to speak in such terms when describing what is worthwhile about their habitat. They have come to consider water, gas, sewer, rail, road, telephone, radio, television, lighting and digital networks as part of the natural ebb and flow of daily life, and rarely think about the responsive systems and technology backstage generating, transforming and transmitting electrical pulses, anticipating our every need, until they malfunction or are disrupted or disturbed. Only when loss of power interrupts daily life, as Luke (2010) asserts, are our assumptions of always being switched on challenged.

Having electrical energy suddenly withdrawn can be tremendously disempowering – both literally and figuratively. The unforeseen suspension of daily life deeply disrupts our motorised, mobilised, mechanised routines. With temporary disruption comes a new kind of physical and emotional vulnerability because we have very few

¹³ STEFFEN WILL, 2015. *Quantifying the Impact of Climate Change: Extreme Heat in Australia*. Climate Council of Australia Ltd.

¹⁴ Climate statistics for Australian locations: www.bom.gov.au/climate/averages/tables/cw_086071_All.shtml

or no real alternatives. (Luke 2003; Koppel 2015) Power outages don't require us to build shelters, evacuate to higher ground, meet at an assembly point rather just to wait it out, and this can be lonely and isolating.

Urbanites cannot anticipate how they will feel in a major and prolonged citywide power outage caused by widespread power grid system failure and utility malfunction that halts relationships, disrupts transport and/or temporarily shuts down all requisite networks. Events such as the Northeast Power Blackout in August 2003 that plunged New York, Pennsylvania, the Midwest and much of Ontario Canada into darkness for 30 hours demonstrated large numbers of people can survive a reasonable period of time without power. (Powell 2004) Most high-rise buildings and offices had practiced evacuation plans, procedures and drills that they put into action. Survivors in New York described an almost party-like atmosphere the evening the North American power grid surged out of control with little to no warning. New Yorkers found their way home or to shelter, figured it out for themselves, got on with it, dealt with it in their own way, and stuck it out (Graham 2010). A course of action based on the belief that it is temporary, someone will fix the problem soon, power and order will be restored, and life-as-we-know-it will continue. During recent catastrophic weather event in US residents were told to stay safe and wait it out, putting responsibility on residents not services, again proved people are capable of engaging in rational adaptive action even when they are frightened (Luke 2010).

3. Research

As stated in the *Introduction* (Section 1), this research is exploratory. The authors had observed first-hand readiness and resiliency behaviour in events in the USA where outages are more common. Based on their respective experiences they had some idea of how urbanites behave – and emergency services expect them to behave – in catastrophic situations, but they could not anticipate how Melbourne's urbanites with little or no experience might behave in a similar scenario.

They attempted through research to find a correlation between notions of readiness and resilience and the degree of that relationship. Desk research revealed the temperature of debate around urban growth and readiness and resiliency from an urban planning, government policy and emergency service perspective at community level in Australia, and more generally other developed and less developed countries and cities (Smith 2012). Historic case studies of iconic moments of infrastructural disruption provided an holistic view of how man-made infrastructure is constructed, and how disruption is imagined, represented, and contested, and the hidden politics of energy consumption in contemporary urban life (Powell 2004; Luke, Little, Graham 2010; Greer 2013; Jacobs 2013; Koppel 2015). Little was found on the development of personal resilience and people's trust in their own capacities. A theoretical framework of resilience behaviour in the hypothetical scenario was modelled and built from analogous social behavioural literature (Harland & Wilke 1999; Parrott 2007; MacDonald and Ewing 2012) and is presented in Section 4 [*Findings*].

One of the core assumptions challenging readiness and resiliency, the authors' concluded, is the belief 'it won't happen to us'. In the following section they consider the unforeseen causes and motivations behind this belief. At its core, they argue preparedness is a very human problem that possibly requires a very human solution.

4. Findings

How ready are we?

Preliminary research supported the idea that for an urban society to be ready and resilient it needs

(1) a population willing and ready to respond to and adapt to stress and adversity, and (2) a responsive physical or emotional trigger.

(1) Readiness

A key insight drawn from research was that on a personal level Melbourne's urbanites are likely to dismiss readiness appeals despite repeated warnings, because of the undesirability (distress) and the judgments involved (Parrott et al. 2007). A major power outage in Melbourne is most likely to be disruptive rather than damaging to daily life and, based on their own experiences, the authors believed that threats to daily routines they cannot anticipate or foresee would make them feel immediately *powerlessness*, and thereafter lonely and isolated as they wait for power to return (behavioural responses are discussed further in Section 5).

(2) Triggers

Informal investigative interviews with a small random sample of urbanites³ and stakeholders (local government, emergency services) revealed general emotional biases invoking different worldviews and personal motivations to act. The authors broadly segmented them into two groups and hypothetically modelled their anticipated behaviour in the described scenario:

1. The *Anxious* or *worried willing* would feel constrained by conflicting information from government and services and a sense that they are not empowered to act. Interviews revealed some young urbanites in this group role-play or gamify worst-case scenarios in the form of apocalyptic movies, video games and

online survivor blogs – paradoxically using electronic devices that would be disabled in a real outage. It is interesting to note too this group has so far put most pressure on power companies and governments to upgrade and modernise (Jacobs 2013).

2. The *Impulsive* who think it won't happen to them and they'll deal with it when it does and who have insufficient experience or memory of catastrophe might initially view a power outage as inconvenient rather than personally traumatic. Their most likely first course of action would be to defer to emergency services rather than take personal responsibility or control of a situation.

What differentiates worldviews is how both groups *appraise* the hypothetical scenario. Thinking that leads to an appraisal of a potential threat is characterised by an assessment of the situation and its implications for the wellbeing of oneself and the things one cares about. When faced with complexity, Iyengar and Lepper (2000) assert, people are likely to resort to simple choices or habitual behaviour based on familiarity, citing studies showing reduced levels of experimentation and a reversion to a core repertoire of familiar behaviour. A test case is rural communities under threat of bushfire in Australia, said a critical incident counselling provider in interview: 'Rural communities have no advantage over city communities in terms of readiness and resilience because they never think it will happen to them either.' Psychologist Daniel Kahneman (2011) in his best-selling book *Thinking, fast and slow* similarly concurs that we do a lot less evaluative thinking than we imagine.

It is easy to assume that emergency readiness is important to everyone, but as Parrott (2005) asserts, it is an emotive issue. People can construe events in more than one way, and may choose to select interpretations that are consistent with the way they wish the world to be. There are also likely to be differences between claimed behaviour and actual behaviour, Harland & Wilke (1999) assert, people will say one thing and do another because they actually *want* to behave more like others think they do. So how *anxious or impulsive* urbanites are in terms of appraising a situation and how habitual their behaviour can have tactical consequences on the strategic approach and techniques communication designers adopt (Rossiter & Bellman 2005). These behaviours, the authors believe, have the potential to direct urbanites attention and action toward or away from seeing, hearing or acting on potential readiness messages.

5. Discussion

What role can designers/artists play in making urbanites ready and resilient in the face of catastrophe?

Action is an essential part of any readiness system: If a warning is sounded, and no one takes the action that the warning was intended to trigger, then the warning system fails. Electricity has become so normalised and taken for granted that talk of outages that might happen in the future is back of mind, and stern warnings about readiness can appear banal, boring and tedious (Graham 2010: 7). Common sense assumes that urbanites, by definition, are information-seekers who evaluate information and its sources before making decisions, but research into crisis behaviour generally supports the idea that people don't necessarily behave as expected in regard to their own emergency readiness (Luke, Little, Graham 2010; Greer 2013; Koppel 2015).

The weakest link in readiness in the Melbourne scenario, the authors' hypothesised, was human behaviour. Readiness and resiliency depends first and foremost on what is going on in urbanites' heads. Life-saving smoke alarms, for example, have been available since the mid-1950s, but getting Australian homeowners to install and maintain them is an ongoing challenge.¹⁵ We take out insurance to cover events we never expect will happen – and we generally don't go about our daily routines thinking about a power outage.

Complicated problems are often not open to simple solutions. The most obvious would be to encourage urbanites to be less dependent on electrical energy, but a peculiar feature of urban places is the assumption of always being switched 'on' and connected. Nowadays we think and act modern and a future without energy would be a conceived retreat back to pre-modern darkness and drudgery (Luke 2010). Dead power sockets, inert appliances and black television and computer screens drain the requisite flow of energy needed to power personal energy (Graham 2010) and sustain a participatory 'just in time' culture that attracts people seeking to prosper in vibrant energetic cities, like Melbourne. Fear of imminent apocalypse or catastrophic events can be personally *decompensating*¹⁶ and has little positive to offer urbanites, especially a generation of young urbanites raised in a culture of 'always on', and who social demographers and behavioural scientists say do not readily respond to punishment cues or nightmare scenarios and are increasingly aware of the bias of selective scrutiny of evidence to nudge people to do what they think would be in their best interest (Thaler & Sunstein 2009; Iyengar & Lepper 2000).

³ Note: Sample size was useful for predicting behaviour and supporting a theory of how urbanites might behave but not large enough to prove a causal relationship between attitude and behaviour.

¹⁵ Less than one in 20 Melbournians are properly maintaining their smoke alarms to protect against serious malfunction, according to new research.

Most don't maintain smoke alarm, Victoria University report, 2012. Available: www.sciencealert.com/most-dont-maintain-smoke-alarm

¹⁶ In this scenario, the word *decompensation* is used describe the loss of ability to maintain normal or appropriate psychological defenses, sometimes resulting in depression, anxiety, or delusions.

Beating people over the head with alarmist scenarios and predictions of 'what might happen' has generally made people feel anxious and fearful in ways they are incapable of hearing and don't want to, and resulted in fatigue even among the *worried* (Roosevelt & Petrich 2014). The recent climate change debate provided the sternest test of gloom-and-doom messaging with its overwhelming focus on the prospect of climate collapse. The public at large has been numbed by conflicting evidence and climate change advocates have since been forced to re-evaluate their communication tactics (Shireman 2015; DuPont 2015)¹⁷.

Making visible the negative or dramatic impacts of a potential outage may not be the best communication strategy. In the words of Dimitry Orlov (2013): 'More and more, it's starting to seem like the sensible approach is to get out of the awareness-raising business entirely and focus our energies instead on providing practical guidance to those who are willing to hear it.' Actions that have a clear and tangible outcome are more likely to appeal.

Learning how to be ready and resilient has traditionally been an educational process and typically entails repetitive steps and learning through different scenarios that ensure durable cooperation among communities. Where events are non-routine, risk is perceived low and there is limited collective visual, auditory or tactile memory or sensory experience of catastrophic damage or loss of life these lessons may not be reinforced, remembered, refreshed and passed on.

Positive behaviour support (PBS) has emerged as an effective approach to disseminating behaviourally-based modes of information delivery. (Johnston et al. 2006) Positive 'go' appeals causing surprise, anticipation, amazement and astonishment (compared to emotion opposite 'no go' associations of anxiety, fear and nervousness) (Plutchik 2001) have been found to communicate a sense to be, feel, or do good. Positive reinforcement is increased, say Rossiter & Bellman (2005), because it turns on an emotional appetite for rewarding consequence.

In summary, provoking fear and anxiety may result in a short-term knee-jerk response but may not be a sustainable messaging strategy long term. Fear is an emotional response to threat, and different people fear different things and behave in different ways. (Rutherford & Bowman 2009) No threat evokes the same response in all people (anxious/impulsive) (Rossiter & Bellman 2005) and in a climate already charged with fear, Latour and & Rotfeld (1997) assert, it may not be the best strategy to use.

6. Strategic direction

Memory's images, once they are fixed in words, are erased. (Italo Calvino in *Invisible Cities*, 1978)

How can we ready urbanites for a catastrophic event that has never happened – but could happen – and of which they may have no experience or memory?

As mentioned in the previous section, feelings of personal loneliness and isolation caused by disconnection are likely to be the most immediate emotional response to a catastrophic power disruption in a densely populated place like Melbourne. Based on accumulating evidence and scenario-modelling, the authors theorise contrived 'crisis conviviality'¹⁸ described by author Stephen Graham in *Disrupted Cities* (2010) created through artificial memory could be one strategy to decrease loneliness and isolation and get urbanites ready to act. They also argue if urbanites felt more personally ready they may actually *want* to behave in a more resilient way.

Material artefacts are often used as memory cues in catastrophic scenarios to make communities ready and resilient, especially when limited or no electronic communications is available (Morinière 2013). Cultural artefacts, such as flags, ribbons, drums, clicking tongues, and repetitive rhymes, like '*Get Down Low and Go! Go! Go!*' (Country Fire Authority, Australia) in print and electronic media campaigns, create knowledge through group interaction that is passed on with little or no explanation.

Contemporary designers frequently use borrowed artefacts as associative memory cues to augment informational design solutions, for example, a roulette wheel to indicate degrees of fire risk on 'Total Fire Ban' days in Australia (1982). In 2011 Melbourne's Yarra Tram released a herd of skateboarding rhinos onto Melbourne's city streets for a well-heeded pedestrian safety campaign. Using the comparison that a tram can weigh up to 50 tonnes, about the same as 30 rhinos. The 'Beware The Rhino' posters used a unique rhino 'hero' to deliver the safety message in an unexpected, memorable and importantly - a non-authoritarian way.¹⁹

¹⁷ A survey by the CSIRO confirmed a nearly decade-long trend showing steady decline in those who believe recent climate change is caused by humans. Conversely, climate change scientists are becoming more convinced that humans, not natural variability, are responsible. The fact many of those surveyed more than once by the CSIRO during the past five years have changed their positions is an even more telling indicator of the confusion. (DUPONT, 2015. *Terror and a climate of fear. The Australian*, 21).

¹⁸ Conviviality in this context is the ethos of harmony with self, with other urbanites and with one's urban environment in a crisis situation. The notion embraces learning from the crisis environment, embracing and contributing to it rather than exploiting it; passing on what is seen as worthwhile about it to future generations. (Illich, *Conviviality* (1973).

¹⁹ Helsinki Melbourne wins Gold Davey Award for Yarra Trams 'Beware The Rhino' campaign, November 4, 2011. Available: www.campaignbrief.com/2011/11/helsinki-melbourne-wins-gold-d.html [March 13, 2016].

The concept of a third type—*boundary negotiating* artefacts—sits uncomfortably within the definition that exists within a web of standardised processes because disorder is treated as a special case. (Lee 2005: 390) In the Melbourne scenario, a power outage is a special case because it is non-routine. Replicable and repeatable sensory mechanisms (visual, auditory or tactile) could serve as partial or complete memory representations and models of what is being produced. Associative memories do not accurately describe the details but are vague and adaptable enough for us to discover things for ourselves.

The conference theme ‘In this Place’ taps into the zeitgeist and challenges the creative thinker, artist or designer to add something new, and to take a different view than the engineer, or architect, in creating awareness and altering people’s perception. Artists and designers are increasingly using non-routine or *boundary negotiating* communication models to generate ideas, create and design. Olafur Eliasson (*The Weather Project* 2003), Martin Andersen (*Solspeil* 2013) and Bruce Monro (*Field of Light* 2016) used solar light as a boundary negotiating artefact to comment on society and its issues and to sustain practices of positive advocacy and activism. The reason audiences tend to respond to them is that they treat us and speak to us as people not victims, casualties or future liabilities. We understand our role is to buy—or buy into—something, and given enough information we can make choices that are right for us.

7. Summary of the next stages

Opening debate and challenging the status quo.

The designer’s role is subsidiary to the *identification* of the area of problem-solving activity. Identification in this paper extended only to problem-seeking and problem-identification and this came with its own built-in restrictions. Due to the timing and scope of the paper, development became a staged process and we are aware that our work is only partially complete. We have gone some way to making a correlation between attitude and behaviour [Sections 3-4], mapped the tensions and complexities between personal readiness and resiliency [Section 5]. Developed a theoretical framework of readiness behaviour in a hypothetical scenario and moved our thinking incrementally in a way that has yet to be tested. It is not a precise or detailed model, but it is meant as a starting point from which to ask further questions and develop a workable strategy for the future development of artefacts as sensory triggers. The authors acknowledge the scenario may not be unique to Melbourne nor the implications limited to young urbanites or power outages alone, but are important steps forward.

8. Conclusion

Building readiness and resilience memory cues through critical design.

A catastrophic power outage hasn’t happened in Melbourne and the capacity or resilience of a generation of young urbanites to endure and respond to a temporary electrical disturbance is untested. Shifting or altering (not even changing) perceptions, attitudes and collective memory, the authors acknowledge, will be challenging. There are no ready answers, but as MacDonald & Ewing (2012) concur cognitive influence nowadays is more likely to come from irrational, emotional cues rather than rational evaluation.

The authors have gone some way to mapping the problem and creating a theoretical framework for a design response. Relationships between readiness and resiliency have been visualised and information synthesised in graphic, pictorial and diagrammatic form and intersecting boundaries of fine and applied arts, urban planning and policy making, science and technology. Positive messaging and ‘go’ appeals—as examples show [6. *Strategic direction*], could potentially be a ‘very human solution’. Associative memory cues in the form of *boundary negotiating* artefacts that have been used extensively in contemporary art could also be more widely adopted to provide a means for both anxious and impulsive groups in crises situations to participate in the personal management of their situation by creating a temporary close-knit ‘micro-neighborhood’ to compensate for power loss and to stave off feelings of loneliness and isolation.

Beyond the key objective, the future challenge for the authors as artists/designers—and others—is to develop concept designs for artefacts in visual, auditory and tactile form that those living in Melbourne—and possibly urban populations elsewhere—will want to see, hear and act on. Artefacts developed through critical design that can trigger a choice change in attitude from ‘it won’t happen to us’ to ‘it might happen to us’ and embed memories of events yet to happen in ‘go’ signals to stave off the feeling of potential powerlessness when they do. Irrational, emotional cues, like those of Eliasson, Andersen and Monro, that repeated and revisited over time have the capacity to positively change how we feel about the human ecosystem and our place in it as a real and tangible model for sustainable urban development. Persuading us through less traditional messaging channels to make readiness choices that are right for us rather than traditional rational adaptive actions. Trusting our own abilities and capacities for sustained conviviality in the face of possible threat.

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solar horse

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Abstract

I am a visual artist interested in innovation and winner of many awards. My work has been seen nationally and internationally. This project shows a sustainable approach that creates an educational legacy.

I designed a gateway feature for the East Midlands. The site is an old grassed coal mine facing the M1. The locale was severely affected as a result. I proposed a solar panelled pit pony 220m wide with an LED perimeter changing colour with the wind.

The solar horse, connected to the National Grid, would create an annual fund used to maintain the artwork and local good causes like helping local colliery bands with their equipment, outfits and rehearsal spaces. The community which once benefited from the earth now benefited from the sun via an artwork on their site. Poetically, and conceptually reconnecting the emotive heart of the community.

The project was shelved when the HS2's route was announced to go through the site.

The key principle is transferable. A site specific response that is sustainable and educational, and that benefits a wide community by creating a poetic and practical legacy.

I'd like to present the project with images and speak about the relevance of this connected and sustainable approach.

Keywords: award winning artist, sustainable approach, educational and creative legacy, utilise site specific character, poetic and pragmatic, benefiting local community, site specific sustainable approach relevant to any site

solar horse

Introduction

- This talk will cover one of my 'sustainable' projects and its context.
- It is a very personal presentation.
- It covers the Solar Horse project context and the historical context of my thinking.
- I show how consideration of a communities past and present, shaped this project.

My practice

I was brought up by my Irish poet father and German dancer mother who both told me not to get a job. Imagination, exploration of the world, optimism and mischief were the language of my childhood. I didn't know it at the time (nor did my parents) but I was being hot-housed to make artwork in the public realm. The freedom to roam with my mind, fuse worlds and politely decline existing compartments were encouraged.

The openness and fluidity of this upbringing was counterbalanced by my desire to understand the sliding scale of truth and what things form the basis of a universal truth at this moment in time? I have come to the conclusion that everything is under review. Having said that, there are principles still standing which inspire me.

The second aspect of my childhood which created a strong influence on my practice was our rural poverty. We lived basically. One log fire in a thatched cottage and no plumbed in loo. No regular money coming in from my creative parents but food from the local farmers' field pilfered at night. A one pellet policy when a pheasant entered the garden. My father, one rifle, one pellet, one pheasant. The pheasant had a chance and so did we. My father had the yips and we ate a lot of cabbage, potato and carrots. The winter brought frost on the inside of my bedroom window with its extraordinarily beautiful patterns, morning after morning a new fractal arrangement created. A masterclass in evolving geometry.

We skinned rabbits and gathered wood from the wood around us. We lived with animals in the thatch of our thatched cottage. I was brought up to understand nature, the seasons and respect fellow creatures, life's force, to listen to the voice of nature and converse with it.

The form of the human mind is part of the form of nature. Human seasons, psychological seasons, natures' seasons, hand in hand.

I have been making artworks in the public domain for 20 years. Everything I make is site specific and a fusion of the site architecture, site light, site history, desire of the client, desire of the community and my own spirit. A chef of the arts! I drink up information from science journals, books on engineering, mechanics and the internet like a man who has just returned from a 3 year walk in the Sahara. The information forms a volcano of stuff that swirls inside me waiting for the right artwork to re-introduce itself into my consciousness. I have a mobile library in my head where items haven't been seen or visited for decades and then might lurch forward and become a central element for an artwork. My greatest fear is brain damage. The prospect of not accessing my cerebral library is terrifying. The prospect of writing down each principle that excites me is utterly daunting.

Key points

- The mixture of poverty, culture and living with nature created the platform to create with a respect for and understanding of nature.



Image 1: Jo as a boy



Image 2: Frost on the window

- As a result I look at nature and listen to nature. The language of nature is the language of human beings.

The first law of thermodynamics

The first law of thermodynamics states that energy can be transformed from one form to another, but cannot be created or destroyed. One sentence, one short sentence, but when I first came across this statement it hit my brain like a depth charge. I knew that I wanted to work with this principle in my artwork but needed to find the right circumstance to do so.

I am passionate about the arts and committed to work that dances lightly with people's spirit and treads carefully on the earth. For some time prior to the Solar Horse commission I had been thinking about how I could utilise the first law of thermodynamics. One of my dreams is to build a house where the energy from one person would be harvested and harnessed as they went about their business and is then used for all the household requirements. The energy within opening cupboard doors, drawers, doors, windows, walking, sitting, making a cup of tea, tea itself would all be harvested. Harvested, that is the pivotal word.

Inspiring energy harnessing and harvesting projects from around the world

Solar Impulse

Attempting to fly around the world in a solar powered plane is an inspiring idea. The plane is called Solar Impulse, has a wing span of 72 metres and contains 17,000 solar cells. Very exciting. The team are currently trying to fly day and night around the world harvesting the energy that is pulsing around us. What a great statement they are making. The Solar Impulse pilot, explorer and psychologist Bertrand Piccard said "I want to achieve the impossible. I am elated by that". Commenting on flying around the world using solar power he said "This is a real paradigm shift in the world of energy" (Guardian 25.7.2015). Fantastic.

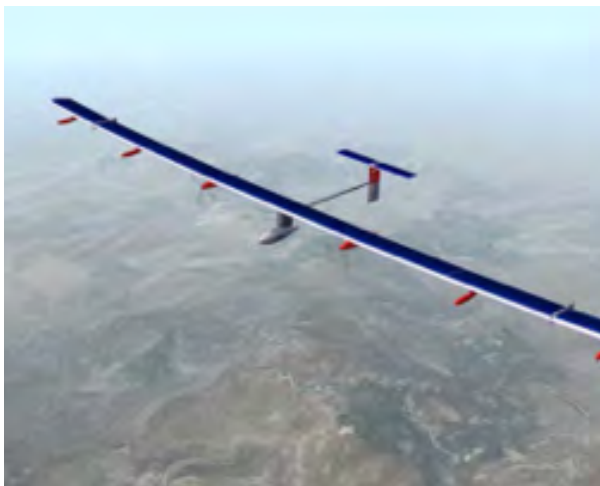


Image 3: Solar Impulse plane



Image 4: Seville solar plant

He also spoke about what is required to integrate a sustainable philosophy, "for this we need political courage and pioneering spirit" (solarimpulse.com). Another short sentence that packs a punch and is directly transferable to supporting and investing in sustainable artistic projects.

Spain's mirror farms

When I saw images of the mirror farm just outside Seville in Spain I felt a deep glow inside of the appropriateness and wonder of the scheme. Harnessing and harvesting nature. It simply makes sense. 600 mirrors that rotate and focus the sun's rays onto a receiving tower to generate a turbine and create power for 153,000 homes. What struck a deep chord with me was the careful integration with nature, a light touch. It was a year later that I wondered whether it could do more.

Elephant friendly honey

The desire to have a smart alliance with nature is a fantastic goal. I keep studying the language of nature so that I can try and eloquently converse with it within my art projects.

When attempting to protect farms in east Africa from elephants, it would seem that nothing short of a giant reinforced fence or a chasmic ditch could safely keep the largest land animals on Earth away without causing harm. Building such barriers around every field is impractical, and the interactions of people protecting their crops, frequently leads to accidents or even death of both farmers and elephants. But zoologist Lucy King had a much smaller idea: bees.

Elephants are terrified of bees because when the insects sting the inside of their trunks, the pain is excruciating and there's little they can do about it. The sound of

buzzing alone is enough to make elephants leave an area immediately. Lucy King wondered whether a string of suspended beehives located every 10 meters around a field might be enough to keep elephants away. A pilot program in 2009 proved widely successful and soon The Elephant and Bees Project was born.

There are now active beehive fences in Kenya, Botswana, Mozambique, Tanzania, Uganda, and Sri Lanka. Not only do the fences help pollinate crops and safely deter elephants, they have also become an additional revenue

stream for farmers who harvest the honey and sell it locally, a wonderful example of interspecies landscape engineering. A great example of listening to the language of nature and hearing what it says.

Gravity powered light

Designers Martin Riddiford and Jim Reeves created a gravity powered light for areas where communities currently use kerosene as their fuel. The light has an integrated drive belt and bag (to be filled with rocks or dirt). The bag of rocks/dirt slowly moves down and creates sufficient energy to power an LED light. When the bag reaches the bottom of its reach it simply needs lifting up to the light again to allow gravity to do its thing. The bag of rocks/dirt takes 30 minutes to gently drop the length of the drive belt and therefore creates 30 minutes of light. This means that education and other activities can continue safely after darkness free of charge. Brilliant.

The GravityLight was built to supply cheap, effective lights to remote villages and areas in developing countries that often have to go without reliable power sources. Low wages and expensive light sources means that once the sun goes down, everything goes dark or you have to rely on biomass fuel burning.

Burning Kerosene for lighting purposes produces 244 million tonnes of carbon dioxide annually, according to the team. Using biomass fuel can result in inhaling dangerous smoke, and this can cause lung cancer, eye infections and burns if something goes wrong, as well as costing money many can ill-afford.

Each light costs less than \$5 and carries on working free of charge smartly utilising gravity, another energy that surrounds us day and night.

Since the thermodynamic depth charge went off in my head I look to harness energy within an artistic design. The ethos is simple. Good sustainable artistic design dovetailing with nature. The right spirit, sustainable and exquisite poetic vision are central to my designs where possible. 'Where possible' implies a lot because no public artwork can exist without a team being involved to make it happen. It isn't just me that needs to be committed to knitting together public realm issues with that of nature and our fundamental sensibility as human beings, a sensibility that relates directly to nature, it is the whole commissioning team.

Key points

- Our collective creativity and unity with nature is key
- Political will can make a big difference
- Central to our progress in this direction is always striving to improve education



Image 5: Elephant friendly honey



Image 6: Gravity light

East Midlands Gateway competition.

Artistic alliance with nature and the local community.

In 2012 I won the commission to create a Gateway Artwork to the East Midlands located at junction 29a on the M1. 29a opened in June 2008 and is where the old Markham Vale Colliery once stood. Now an Environmental Centre has been built there. There was a significant accident at the mine in 1973 when the brakes on a lift shaft carrying men down to the coal face didn't stop the cage which crashed to the floor killing 18 miners and seriously injuring another 11. This was preceded by an explosion in 1938 which killed 24 men. Following the 1938 disaster a fund was set up to help the local community. The colliery was finally closed in 1994.

The challenge here was to do something significant for the historically poignant site and offer a visual symbol to the 150,000 drivers a day on the M1 as they enter (or depart) the East Midlands, showing people that this is Markham Vale, this is the East Midlands.

The local community in Markham Vale once made their living from this patch of earth, from this environment and the mine's closure impacted massively on the families here. The Environmental Centre is the hub of a regeneration scheme in Markham and I wanted the artwork to dovetail with this ethos. The opportunity to reconnect local people with the site and create good news stories each year for different local communities was a tempting opportunity and called to me like a Siren.

The scale needed to be big to cope with the long swoop of the M1 near the site. Bolsover Castle is situated about a mile and a half north east of the M1 and Markham Vale is between the two. I was advised that the historic view from Bolsover Castle must remain untouched. Although this piece needed to be big, if we built vertically we ran the risk of affecting the view from Bolsover Castle and also incurring considerable foundation costs. Rather than building upwards I decided to use the North Tip which was a grassed slag heap facing the M1 in a south westerly direction. The direction of the North Tip slopes away from Bolsover Castle.



Image 7: Markham Vale context

Voices in my head reminded me of the inspiring sustainable projects I had come across. This was an ideal time to dance with the first law of thermodynamics and have some fun. I remember reading about a new product that was being developed, a photovoltaic spray. I thought that this could transform our environment so that objects/buildings/vehicles could be sprayed with these cells and then be connected to the National Grid. I started thinking about solar cells as an artistic and architectural medium.

When working on a project I completely immerse myself in the site's spirit. I have huge respect for the subconscious and feel like it is a private combination of Alan Turing's code breaking machine and the vast filtering gills of a Blue Whale. When I wake up in the morning I keep my eyes closed, check that I am still alive, count my limbs and then listen to what my subconscious says it has done with the previous 8 hours.

The creation of energy is central to this site – from its coal mining past to its eco-friendly future. I wanted to straddle these two areas in a visually and conceptually coherent and poetic way.

I was fully absorbed by this project and the powerful and subtle layers within it. Another good night's sleep and 15 minutes of unfettered communication with my subconscious led me to consider making the artwork itself harvest energy. Not two separate elements where there were solar panels on top of an artwork like traffic signs for example. To make the piece from energy harvesting components seemed a streamlined way forward. I considered alternative energy technology and wanted to combine technologies. I wanted to use something tried and tested but also something cutting edge that was more unusual and could be a great way of engaging positive discussion about alternative sustainable technology. Making a free standing piece from solar panels was possible but the size,

foundations and visual impact blocked this avenue. By sitting the piece flat on the south westerly facing hillside it meant that we could make a large-scale piece with good visibility, particularly from the M1, no obstruction to the views from Bolsover Castle and we'd keep the budget for the artwork rather than for the foundations. I thought about the nature of solar panels giving energy, I thought about the nature of coal giving energy. Poetic synergy was forming.

By creating the artwork out of solar panels and connecting to the National Grid it meant that we could create a fund (like Markham had done in 1938) that went to local good causes - every year, year after year. The local community would once again be connected to and benefit from the very land that was the heartbeat and soul of the community. But, this time, instead of going from the surface of the earth down to harness energy, the idea was to go from the surface of the earth upwards to harness energy. Nice poetic symmetry. Here was the poetic heart of the project in my mind.

Ok, so, a large solar panelled image on the gently sloping slag heap surface which was mainly grassland. For the image I considered objects and items connected with mining life and I thought about the spirit of this Derbyshire community. I have lived in the East Midlands for 30 years and as an outsider I have a built a view on the various spirits within the East Midlands. There appeared to me to be a matter of factness about the Derbyshire communities around Markham combined with a wonderfully powerful spirit.



Image 8: Coal mine horse



Image 9: Horse size – 220m

During investigation into the history of Markham I encountered so many memories about people and families. I wanted to respect these memories. I spoke with the Derbyshire County Council Record Office and talked to an archivist who told me about the pit horses used at Markham and a reference they have to a corn account book of 1911-12 and a record of an 18 year man, Arthur Brown who was a 'pony driver' who was killed in the 1938 tragedy.

My sleeping partner, the subconscious, worked hard and suggested that the solar panels needed to be in the form of a horse/pit pony.

I went on site with my fabricator and the Markham Vale regeneration team. They staked out the size of the horse whilst I stayed next to the motorway and checked the right scale from that vantage point 1500m away. As it turned out it was 220m wide. It fitted the grassed hill well and had good visibility for drivers.

The image referenced the site's history. It would be beautiful, eye-catching and would relate to the wonderful history of white horses on the UK hillsides.

But this would be a dark horse which I felt was a good reflection of the spirit of Markham, never to be underestimated. The large dark horse would be a massive icon and locating marker for people. The symbol of the solar horse on the hillside, always harvesting clean energy for the future, for the site, for local communities, was wholly appropriate and would capture people's imaginations and help with regeneration.



Contextual information - hillside horses



white horse of uffington, oxfordshire



white horse of westbury wiltshire



white horse of osington, dorset

Image 10: White horse context



Image 11: Solar horse model

From darkness into light. Poetically and conceptually a powerful union. So there it was, my subconscious and I were agreed... a large solar panelled horse would capture the right spirit of Markham Vale. A positive message is sent out clearly from this image constructed in these materials. Yes, a coal mining past, yes, environmentally sensitive, yes, a business savvy future and yes, we are proud of that.

The next challenge came, how to make the solar horse from solar panels without the rectangular solar panels making the visuals of the horse look pixelated. I explored the micro structure of coal and when I saw the chemical structure of coal and the series of hexagonals indicating its form I thought that hexagonals would be the perfect shape for a unit.

They could easily fit together in modular units to allow the creation of the soft curves of the horse. I worked closely with my fabricator and we developed a solar brick where the solar panel would be housed within a hexagonal rubber brick. Here was another opportunity. I researched recycled rubber and found a company that supplies cast-able rubber pellets from recycled vehicle tyres. Perfect! The solar bricks would be made from tyres and connect nicely with the M1 vehicles.

Minimal concrete foundations would be required and I found a company, (Novacem) who have created an eco-friendly cement which is carbon negative.

Image 12: Modular solar brick

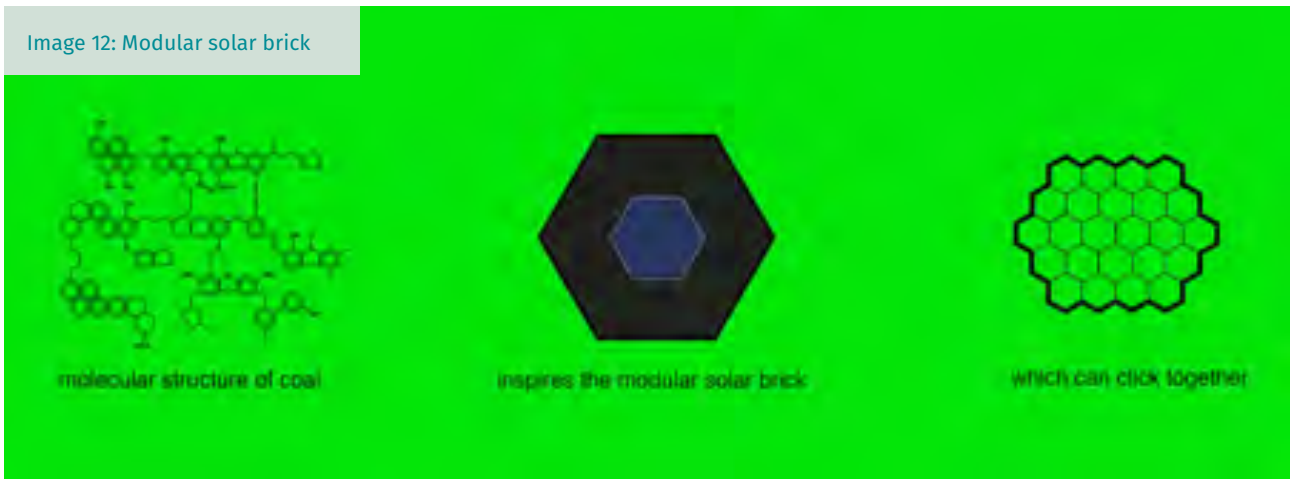


Diagram showing laying of components. The interior bricks are locked into position by the edging bricks. The edging bricks are thunderbolted onto the concrete path.



Image 13: Solar brick construction-a

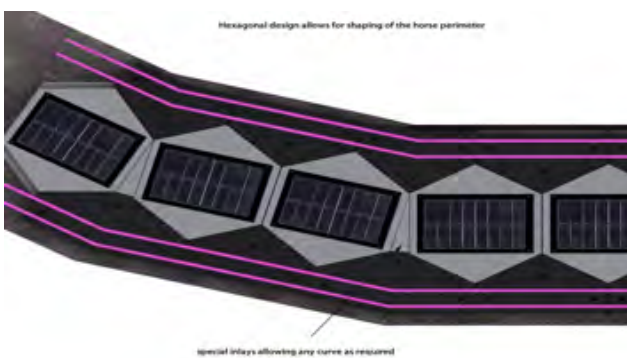


Image 14: Solar brick construction-b

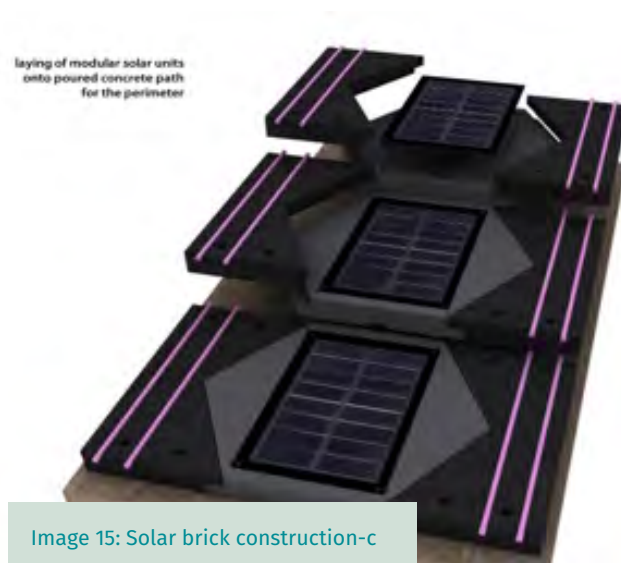


Image 15: Solar brick construction-c

But what do people see at night time? What sort of entrance to the East Midlands is it for those M1 travellers after dark? I decided to make the outline of the horse into a continuous line of LED's connected to an anemometer so that a linear perimeter drawing in light of the Markham horse would slowly change colour as the wind speeds vary. Another connection to the nuances of the site.



Image 16: Nighttime outline of horse

The swooping line of the M1 meant that there wouldn't be distracting visual surprises. The perimeter colour changing lighting would be programmed so that the changes were gentle and not inappropriately distracting. It would be safe and the Highways were happy.

There was also an opportunity to experience the solar horse from different viewpoints and we planned on making picnic area at the top of the North Tip above the horse. There are amazing views from here. People would no doubt love the walk to a picnic destination, somewhere to sit, enjoy the views and a flask of tea. This created a second energy harvesting opportunity.

The floor here could be made from a series of piezo crystal floor panels. These panels generate a supply when walked on. Rather than creating a substantial supply it would make the point about utilising energy, harvesting energy. A principle at the heart of Markham as it was and as it is.

I explored what sort of solar panel to use. People might walk around the site, rather like people walk around the White Horse of Uffington and therefore that meant that they might walk on the solar panels.

My subconscious and I slept well again and in the morning I was thinking for the first time in my life about luxury yachts. In particular, that they have solar panels on their decks. I thought that they must be designed to allow people to walk on them and of course they do. The solar panels have a textured



Image 17: Piezo crystals

fluorocarbon surface. I found a company in Wales who make these.

To make a solar horse 220m wide we would require 41,000 solar bricks which would generate £37,525 pa.

Planting

The visual power of the hillside around the solar horse could be made even more dramatic by planting different types of bulb. This would create a gentle but massive visual impact as the seasons progressed and different flowers would come to bloom throughout the year. Here is an opportunity to change the colour of the hillside surrounding the horse perhaps 4 times in the year, one per season.

Example.

Spring: crocus.

Summer: daffodils. dianthus.

Autumn: cyclamen, autumn crocus.

Winter: snow drops

Summary

The Solar Horse wouldn't be a mining memorial, but it respects this significant aspect of the site. Importantly it also embraces the forward thinking sustainable growth that is occurring at Markham Vale emphasising an environmentally astute path forward. The piece generates; a principle at the core of old Markham and the new Markham Vale. The horse will generate enough supply to create a LED line of light around the perimeter of the horse, creating a beautifully dynamic image and transforming the horse at night – but significantly it would create much too much supply for that purpose. Selling the surplus electricity back to the National Grid creates an income to be invested into maintaining the artwork and crucially, back to local community good causes every year. The circle is complete.

So now the piece was established, how it would look during the day and each evening and through the seasons, how it would work technically, how it would be made from eco-friendly materials and how it would create funds to support good causes locally each year. I was happy.



Conclusion

Then government announced the confirmed route for the HS2 connecting the south to the north and unfortunately for this project, it is planned to go right through the Markham Vale site – between the M1 and the Solar Horse sloping field on top of a 9m high embankment obscuring the view of the field and horse. The project died a death immediately.

Although this specific project didn't go ahead it gave me the opportunity to explore the concept of sustainable artwork that can pay for itself and pay for good causes every year. I drive by solar farms now and think about their format, about potentially how beautiful they could be. I think about the photovoltaic spray and my imagination does cartwheels at the creative potential that it will bring. I look at piezo crystals and keep thinking about how we can utilise them in extracting energy during our day to day movement.

That crucial first law of thermodynamics is the key, no energy disappears. We live in a world that is constantly changing so here is the opportunity for creative minds to work out ways to harness and harvest all this moving energy in poetic and artistic ways, not just a pragmatic solutions. For example, pragmatic solutions that produce energy and profit for the minority and create visual vandalism in our environments whether that is rectangular solar panels bolted onto roofs or solar farms gridded out to maximise space rather than consider their visual impact. Instead I consider it my and our responsibility to contribute beautiful, integrated energy harvesting schemes that create energy, opportunity and good education for all.

My personal dream? Amongst other things, I would love to use energy from the torrent of gravity, not to push or drop something else, but as an energy source itself. To develop a plug that can be sited in the bottom of any building like extracting sap from a tree. A democratic force that is as strong in every square inch of Botswana as it is in every square inch of New York City. To make a non-profit making company, where the money from this device, directly helps improve education. To create a body of visionary educationalists, and be able to financially implement their vision, and really make a difference to education around the world.

an exploration of the social functions of public art

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Abstract

Through this paper, we present our analysis of the social function of public art. As a form of theoretical research, we consider various perspectives on what different works of art do in societies. We believe that public art is a form of education related to the sustainability of cultures. When groups erect works of public art in their communities, they are typically created with lasting materials to enable that group to project their ideas and beliefs to future citizens. The question of which people or events within the history of a society should be monumentalised is controversial as Levinson (1998) noted.

Keywords: public art, theoretical inquiry, social aspects of art

an exploration of the social functions of public art

As the concept of a 'public' space is changing (Kohn, 2004) and with the restrictions that came about in many cities in the United States with regard to the Occupy movement (Shyong, 2012), it is crucial that we think about the democratic nature of public spaces and the role that art plays in these spaces. Thus, we are interpreting the concept of sustainability for the Cumulus conference in a broad manner. Though sustainability certainly relates to environmental impact, we believe that it can also relate to issues of education and culture. As we take the view espoused by Bailyn (1960) that education is the transmission of culture across generations, public art is a form of education that is related to the sustainability of cultures. When groups erect works of public art in their communities, they are typically created with lasting materials to enable that group to project their ideas and beliefs to future citizens. The question of which people or events within the history of a society should be monumentalised is controversial as Levinson (1998) noted. This becomes increasingly complex when the public art was created to revere a regime or a particular political agenda. When the regime changes, this brings into question how the culture will address the work of art and its message that may now be contrary to the government. Building a deeper understanding of various forms of public art, particularly public sculpture, can assist communities in developing sustainable futures, in part, through their public art.

The main goal of this research is to build a framework to assist in understanding the various ways that works of public art function in societies. Rather than a rigid typology, the flexible framework can assist in understanding the wide variety of public artworks and how they alter, shape, and enhance the public spaces where they are placed. By first describing the concept of public art and then finding ways to apply this description, we are building a conceptual framework.

Theoretical perspectives

This research is a theoretical exploration, informed by reading and viewing works of public art. We build on the work of John Dewey (1896) and Maxine Greene (2001) particularly as related to how humans interact with and are connected to their environments. We believe that space and place have significant meanings that are contested and continually constructed, influencing belief systems. As schools are increasingly governed by state and national curricula and goals, the importance of the local is being lost and frequently student learning has little to do with their locale. We pull from the ideas espoused by Pérez, Breault, and White (2014) that place is an integrated context for interdisciplinary learning. Within the context of changing cities and demographics, it is important to understand how public spaces contribute to communities. When we consider the works of public art and what they mean to the people in the vicinity, we can use that as a starting point for a locally-based curriculum. We agree with Pérez, Breault, and White (2014) when they speak of the need to re-envision public spaces and rethink the relationship to curriculum and aesthetics. Richardson (2010) noted that:

Thus, public space is understood as a continuously transforming and transformative complex social configuration, the form of which is always contingent upon an ongoing exchange between personal use and public decorum. These exchanges and the alternative territory they produce can function pedagogically. (p. 21)

We also view public art as a positive feature in many urban communities and look to theories of Asset Based Community Development, a means of neighbourhood renewal that looks to a community's existing assets instead of focusing on deficits and bringing in outside services (Kretzmann & McKnight, 1993). Kretzmann and McKnight urge that all assets be considered including individual talents of community members, community associations, local institutions, and physical resources of the geographical location.

Mode of inquiry

Throughout this theoretical inquiry, we utilised concepts maps and created a series of different visuals to help understand how works of public art function in societies. We began by carefully reading and reviewing previous work in the field related to public art (Alexenberg & Benjamin, 2004; Anderson & Conland, 2013; Geiger, 2006; Richardson, 2010; Russell, 2004; Wildemeersch, & Von Kotze, 2014) and others who address public space (Bailyn, 1960; Ellsworth, 2004; Kohn, 2004). After reading their works, thinking about various motivations for creating and displaying works of public art, we began formulating an understanding of public art, though there is not a consensus on how to define it (Cartiere & Willis, 2008). Most scholars are in agreement that public art is defined more by the dynamics of its interaction with its audience's collective mindset (Knight, 2008; Miles, 1989; Cartiere & Willis, 2008) than its component anatomy. Thus, our working definition is that public art is work that is freely available in a public location that allows for public viewing and debate. It may function as a meeting place, a symbolic representation of a person

or place, and has an element of interactivity in that people are able to engage with it in various ways. While often permanent, it can also be temporal and may be related to a particular event. In general terms, public art is intended to elicit some type of response from the public – perhaps admiration, nostalgia, anger, or playful joy.

After developing this working understanding, we created a series of concept maps that built upon the previous ones as well as the work of others. Our working understandings include the following social functions of public art:

Referencing/remembering the past

Commemorates a person (e.g., Lee Monument – Richmond, Virginia, USA). These works tend to be representational, grand in scale and materials, and often take the form of equestrian sculptures. They usually represent someone the society deemed a hero and may or may not be historically accurate. They typically relate to the collective memory of the group in power.

Tells multiple or hidden tales. (e.g. Henry ‘Box’ Brown monument – Richmond, Virginia, USA; Shoes on the Danube – Budapest, Hungary). These works make previously hidden stories visible. Frequently, they undermine dominant notions of an event or the past. Henry ‘Box’ Brown was an enslaved man in Richmond, Virginia. Working with two other men, he mailed himself to freedom in Philadelphia, Pennsylvania in 1849 while hidden inside a small wooden box. This clever means of escape contradicts many dominant notions of enslaved people not having a significant amount of agency or resistance. [See s-media-cache-ak0.pinimg.com/originals/c8/af/38/c8af3872742302cfbe882079faa22c64.jpg]

References the history or culture of the place from a previous time. (e.g. Gateway to the West, St. Louis, Missouri). Often cities erect these pieces to literally or metaphorically tell about the culture’s past or about a previous aspect of the place. This may also relate to a historical event – perhaps a war or a significant loss of life. In this case the works often remember and honour the dead. [See www.gatewayarch.com]

Raising awareness

(e.g., AIDS quilt; Guerrilla Girls billboards; Hearts in San Francisco).

Galvanizing people – Works of public art may be created and displayed specifically to call attention to a particular issue or cause. Often temporary, these works may be overtly political and seek to change the status quo. [See www.aidsquilt.org]

Political commentary – This often takes the form of street art or graffiti (e.g. Banksy). Typically unsanctioned, these works of street art or graffiti work to add a layer of political commentary due to their location or their commentary. [See banksy.co.uk/out.asp]



Robert E. Lee Monument. Marius-Jean-Antonin Mercié. 1890. Richmond, VA, USA.



Shoes on the Danube. Can Togay & Gyula Pauer. 2005. Budapest, Hungary.



Hearts in San Francisco Project. 2013. San Francisco, CA, USA.



Red Reeds. Dale Chihuly. 2012. Richmond, VA, USA. Red Reeds. Dale Chihuly. 2012. Richmond, VA, USA.



Creamsicle. Jim Bachor. 2015. Chicago, IL, USA.



Untitled. Knitorious M.E.G. 2016. Richmond, VA, USA.

Renewing space

Some public art is situated in a particular location to assist in rural or urban revitalisation, attempting to bring people to a particular area or improving the area in the eyes of the artist or the funding agency. Public art in this broad category may be sanctioned or unsanctioned and may start as unsanctioned, but become mainstream over time.

Improves neighbourhoods – Some artists decide that they are going to make a change in their immediate surroundings and they begin an urban renewal project in their neighbourhoods. Frequently, these works start in an unsanctioned manner and may later be embraced by the local citizenry (e.g. Heidelberg Project – Detroit, Michigan, USA; Project Rowhouses – Houston, Texas, USA). [See www.heidelberg.org]

Adds a sanctioned aesthetic element – Often situated in museum sculpture gardens or other public arenas, these works have the primary function of being an aesthetic element in the landscape. These are typically works that are officially sanctioned and approved (e.g. Red Reeds, Dale Chihuly, Richmond, VA, USA; Spoonbridge and Cherry, Oldenburg and vanBruggen, Minneapolis, MN, USA).

Adds an unsanctioned aesthetic element – Usually created by an individual or small group, these pieces may be street art, mosaics, paintings, arrangements of stickers, yarn bombing, or any format. They typically are relatively small and may be temporary or lasting. They may be created in reaction to a specific event or they may be a playful addition to an environment.

Renews the Earth – Artists may create their works of public art so that they have a direct effect on the environment or so they serve to awaken people to a particular environmental issue. This category includes many works from the Earth Art movement as well as more recent works designed to actually cleanse the earth (e.g. Spiral Jetty, Robert Smithson, Salt Lake City, UT, USA). [See www.diaart.org/sites/main/spiraljetty]

Literally cleans – Reverse graffiti is a trend that falls into this category of renewing an urban space. Artists use water and other cleaning products to remove soot, typically along a busy road. Thus, they are creating a temporary grey scale work and the works are frequently a form of environmental commentary. [See inhabitat.com/reverse-graffiti]

Reframing public engagement

This social function of public art is one that tends to happen over time as the work of art becomes part of the community. It may act as a gathering place for community members, may change the social dynamic of the area, or may encourage civic action or participation. One example is the Stravinsky fountain in Paris, France. Completed in 1983 as a part of a larger civic project to create new fountains in certain areas in Paris, one goal of the project was to bring

pedestrians into the areas and redevelop where markets had been torn down. [See www.travelfranceonline.com/stravinsky-fountain-near-centre-pompidou]

Reinforcing Messages of Power - (such as those representing a cult of personality; dictators- Lenin, Stalin, Saddam Hussein, Kim Jong-Il- or leaders erecting statues to themselves or a regime). In contrast to the works that 'Reference the past,' these works are created within the time of the regime and may be a form of controlling the citizens at that time. [See www.telegraph.co.uk/news/picturegalleries/worldnews/9202996/North-Korea-unveils-huge-statues-of-Kim-il-Sung-and-Kim-Jong-il-in-Pyongyang.html]

Reinterpreting, adding, and changing meaning

(e.g., graffiti; Krzysztof Wodiczko's projections on monuments to reawaken them in the present; various interventions on public art; yarn bombing).

Monumental interventions - Usually temporary, these interventions on existing works of public art seek to change them and potentially bridge the gap between when they were created and the present. These works may be sanctioned or unsanctioned and often have a political message. In the case of Wodiczko's works, they often function to connect the public art from the past to a contemporary issue relevant in that local area. [See www.art21.org/artists/krzysztof-wodiczko]

They may also take the form of performance art at the site of a work of public art. The message of the temporary performance often relates to the ongoing message of the permanent monument or site.

Representing concepts & ideas

(e.g., Statue of Liberty, NY, USA).

Works of public art may promote a concept or idea relevant to the entire society or those with power. In the case of the Statue of Liberty, it was a gift given to the United States by France in honour of the centennial of the United States. As such, it is a commemorative statue in one sense, but what it commemorates is not a person, but rather the conceptual underpinning of the United States. This also serves to project the ideal of liberty into the future. [See www.nps.gov/stli/index.htm]

Representing religious/spiritual beliefs

(e.g., Serpent Mound, OH, USA; Stonehenge, UK).

Many indigenous groups as well as many contemporary groups create large public works that may function as ceremonial sites. Newer works such as the Christ the Redeemer sculpture in Rio de Janeiro, Brazil also work to show the religion in a society, may comment on the religiosity or morality of the society, and may serve as a beacon for those looking for spiritual guidance. [See www.ohiohistory.org/visit/museum-and-site-locator/serpent-mound]

Representing the space and/or the people

This tends to happen over time as in the Statue of Liberty or the Gateway Arch. Public works of art sometimes come to represent an area and may become a visual 'shorthand' for a place. Images of these works are used in films and television to alert the viewers to the location. However, Cloud Gate in Chicago, IL, USA is an exception to this in that it became a symbol for Chicago very quickly.



Cloud Gate. Anish Kapoor. 2006. Chicago, IL, USA.

As we considered and reconsidered these varied works of art and their social functions, our visual concept maps emerged over time and shifted as our working understanding also shifted based upon the various authors and theories we explored. Certainly works can occupy multiple positions at the same time. For instance, the Statue of Liberty could be considered to represent the space and the people while it simultaneously represents concepts important to those in power. At the present, we have several maps in different formats that we continue to refine.

Limitations

A newer trend in visual arts, socially engaged art, often occurs in a public space or has a public element. For instance, Thomas Hirschhorn's large piece, Gramsci Monument, created in 2013 in the Bronx neighbourhood of New York City, involved hiring residents to build several temporary sculptures for music performances, a library, a computer lab, a snack bar, among others. Hirschhorn also created banners with quote by Gramsci and added other aesthetic elements to this large-scale project situated in an underserved community. This work could be considered public art, socially engaged art, participatory sculpture, or many other forms. Due to the extreme variability of socially engaged art, we have yet to add it to this understanding of public art. Additionally, there are many works of art that happen in publically accessible places that may have some of the functions described above, for instance Mel Chin's Revival Field. In this work that is publically available, he planted a particular type of plant known as a hyperaccumulator to extract toxins from the earth over a landfill site in Minnesota, USA. Though this work is in a publicly accessible area, the artist's intent was to create a conceptual work that would sculpt the ecology of the site. When understanding works of art, there is always a complex interaction between the artist's intent and how the public receives the work. In this case, the work is widely recognised as an important work of environmental art. If it had become or if it does become a gathering point for activists, a place for discussions of public art and public issues, then we would consider it a form of public art.

Significance

This study is intended to provoke dialogue about public spaces and the role of public art within these public spaces. This is important to help communities consider their public art, what is present and what they might wish to augment. Additionally, teachers and students in art classrooms at various levels could use this framework as a teaching tool. This study is particularly timely because across the United States public sculptures stand proudly telling stories of the past. In many Southern states, these stories revere the Confederacy and its leaders. Though these works of public art purport to tell the 'truth' about history, many of them promote false collective memories, ignoring alternate points of view, and oversimplify, rewrite or disregard the realities of the past (Loewen, 2007). Because of the current dialogue regarding the display of the Confederate flag in public places, thinking about the works of art that also occupy public places is also important. For instance, in New Orleans, Louisiana, the city council recently voted to remove several statues of Confederate leaders that were erected after the American South lost the Civil War. Built during the 'Jim Crow' era in the United States with many legal restrictions on the freedom of African Americans, these works of public art have come to symbolise divisiveness over time. The current plan is that the monuments will be moved to a storage facility and later installed at a site with interpretive materials. As the landscape of the United States rapidly changes, various communities need to engage in discussions about their public art – confronting the works that have a social function that may be contrary to current views. What we do with these works and how we hold these discussions are important aspects of sustaining vibrant communities into the future.

As we consider the future of our communities, including the particular aspects of specific places, it is crucial to keep in mind the local history of the place. At times, the local history and public art may involve values, beliefs, or events that are not congruent with contemporary values and ideals. While we certainly cannot change the past, we do have the power to change the future of our public spaces and reinterpreting older works or adding newer works to contested spaces may assist in using public spaces to promote democracy. As we consider the types of communities in which we wish to live, it is paramount to consider how works of public art shape us in this place.

Note

All photographs taken by Melanie L. Buffington

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the plenary



Images David Baird



The short plenary session was a chance for Chairs of the Academic and Professional strands to draw together and share the key points.

All Chairs reported on the high quality and relevance of the papers and the value of the discussions.

Each Chair crafted their own session. The quality of discussion and questioning was 'high' and it was apparent to the Chairs that there was good engagement from the delegates and participants were taking valuable information, networks and connections from the sessions and the conference. Examples of comments from their Chairs:

"The discussion was meaningful and active. Everyone was included."

"The discussion was as valuable as the papers, this is where the format was strong."

"The questions and discussion really enabled the presenters to go further into the detail of their work. It enriched the content and allowed exposition of the methodologies, which are often very interesting and different across countries."

The Chairs were interested as to whether the content of the presentations would add value to the work, approach and thinking of the participants, asked this in the evaluation, 100% of this of respondents said 'Yes'. This was confirmed by delegates.

There was a genuine feeling that the sessions had provided plenty of scope for future collaboration to emerge and there has already been some contact between delegates who wish to explore this further.

The idea of prizes at the plenary was taken in good spirit and people seemed genuinely pleased to receive them. Nice touch. This has already proved useful to one delegate whose University have commended her for her prize.

conference papers student strands

NEGOTIATING ARTEFACTS & FUTURE SPACE

CHAired BY PROFESSOR DUNCAN HIGGINS

Declining crafts: looking through a different perspective *A. Patel*

Culture-based design innovation – a semiotic analysis of patchwork in Northwest China
B. Xue and M. Tang

Tangible ideation: developing material study approaches and toolkits with children to
enhance design education for children *B. Jeon Lee*

The mark of the maker *P. Robbins, A. Oussoren and K. Doyle*

declining crafts: looking through a different perspective

AUTHOR:

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Abstract

Many Indian crafts are facing extinction. Examples include stone sculpting in Odisha, cotton and silk weaving in Maharashtra, and Madhubani in Uttar Pradesh. This paper focuses on Madhubani, an intricate form of art and craft practiced by artisans in Bihar, in the state of Uttar Pradesh, used to mark special occasions, festivals and life events. The paper describes the external drivers threatening this craft, and the ways in which it has evolved to incorporate new tools and materials. It takes a practice-based approach, in which the author reflects on a three-month period of training with one of the last families of artisans in Madhubani, and the product and furniture designs she developed as a result. Convivial conversations with the family are recounted, and practitioners' concerns are described around the decline and lack of options for the survival of the craft. The paper finishes with recommendations for a collaborative creative action research approach to evolving the specific craft of Madhubani, in such a way that its true heritage is preserved.

Keywords: modernisation, madhubani, indian traditional craft, decline

declining crafts: looking through a different perspective

Introduction

In today's times, there are only a few traditional craft producers that survive. In India, millions of people possess traditional knowledge and skills and are still struggling to make a living by producing and creating handcrafted goods (Handmade in India: Preliminary Analysis of Crafts Producers and Crafts Production, 2015). It is believed that many Indian crafts are facing extinction. Government as well as private agencies are concerned about the same (Handmade in India: Preliminary Analysis of Crafts Producers and Crafts Production, 2015). Madhubani is the type of craft that mainly includes Hindu art and is declining. Commercialisation and modernisation resulted in the stylised version of the craft resulting into the lost of its original identity and importance (Mishra, 2015). It is believed that many Indian crafts are facing extinction. Examples include crafts like stone sculpting in Odisha (Craftandartisans, 2015), cotton and silk weaving in Maharashtra (Indianheritage, 2015), Kalamkari paintings of Andhra Pradesh (Stayorg, 2015) and Madhubani in Uttar Pradesh (Craftrevival, 2015). Madhubani is the type of art and craft that is done by the artisans in Uttar Pradesh, India. It is the type of painting that includes Hindu art and is done using different mediums such as twigs, brushes, fingers, nib-pens, matchsticks, natural dyes and pigments (Painting-drawing.knoji.com, 2015). These paintings are done for each occasion such as Weddings, Birth of a new-born, Indian festivities such as Durga puja, Kali Puja and Holi to name a few. These usually depict an assembly of images such as those of the lotus plant, fish, birds, bamboo grove, snakes and human figures characterised by eye-catching geometrical patterns. Each of these symbolises a meaning; the fish symbolises fertility and good luck, peacocks symbolise love and religion and the snakes are considered as the divine protectors (Kumar et al, 2014). They were originally done on walls that were coated with cow dung and mud. It is known that Madhubani painting earlier known as Mithila painting, which was a domestic activity and was not known by the people until the massive Bihar earthquake in 1934. It was only then that the British colonial officer in the Madhubani district and to be South Asian art director at the Victoria and Albert museum, discovered the paintings and he brought them into public attention in 1949 by writing an article on it in the Indian art journal, Marg (Kaur and Kaur, 2013). In the late 1960's, Bihar was endangered with a second natural disaster. It was then, when the government encouraged the women of Bihar to start painting on paper instead of walls as a source for income. Having evolved through the years, these paintings are now done on canvases, cloth and handmade paper (Das, 2015). These paintings were traditionally done in three forms, namely the floor paintings, wall paintings and paintings on movable objects. Rice paste was used as a medium for floor paintings and vibrant colours were used for wall paintings. There were three to four different colours used for the purpose of wall paintings. Paintings on movable objects included clay models of pots, elephants, mats and the faces of the brides (Mishra, 2015). Due to industrialisation and modernisation setting in, the traditional forms and cultural reasons of the craft started to decline. New art forms were being adapted in order to make some income from the craft. Stylised form of the craft started to take place hereby leading to a loss of the identity (Mithilapaintings, 2015).

There are various approaches to the preservation of crafts. Examples include historical attempts to engineer national identity, as seen in governmental initiatives in Japan (Freeman, 2016), Scotland (Peach, 2007), and Slovakia (Makovicky, 2009); communities of practice may be supported through learning and teaching programmes (Cumming, 1997); or semi-industrial craft practices may be brought into direct contact with the very drivers that threaten them, for example in the potteries in the United Kingdom (Bunnell, 2004). Many makers drop the term 'craft' in favour of 'design' or place a marketing emphasis on 'quality' in order to pacify markets and consumers, as they find that consumers can have a mindset of crafts as something that is handmade and not of a good quality. Researchers have further critiqued some attempts at preservation of communities of practice, for the subsequent 're-contextualisation' of cultures, which become separated from the evolving vernacular they were once an authentic part of (Makovicky, 2009). In India, this can be seen in the Western and Northern regions where there have been attempts to regenerate weaving and handloom craft in the Saurashtra and the Maharashtra regions through the injection of grants (Roy, 1999). This paper considers the dilemma facing craftspeople practicing Madhubani in light of these different approaches to preservation.

As a part of the training programme, the author had made notes about it in the form of interviews and casual conversations. It was necessary to make the artisans feels comfortable in order to get honest answers from them. The author tried understanding the history of the craft before getting into the deeper problems.

History

According to mythology, it is said that the art originated during the time of Ramayana, when king Janak ordered the kingdom to paint and decorate the town for his daughter Sita's wedding to lord Ram. The ancient tradition of wall

paintings in Bihar played a major role in the emergence of this new art form. It is believed that women craved religiousness and an intense desire to connect and be one with god and they began painting images of gods and goddesses in such a divine way that it captured many hearts and the new art form named Madhubani, emerged. The three different castes of the Madhubani region had their own different styles of doing the paintings. (Author's notes)

The Brahmins were the highest among these three castes. The Brahmin style of painting consisted the use of vibrant colours and the paintings were inspired from the Hindu mythological stories of gods and goddesses namely Ram, Krishna, Durga and Shiva. As the Brahmins could easily access to the sacred Hindu literature, it was easy for them to portray it in their paintings. This caste mainly paints with the themes of gods and goddesses and magical symbols connected with the deities. (Author's notes)

The Kayasthas were a little below the Brahmins. The Kayastha style of painting consisted of the elaborate wall paintings of the nuptial chamber or the "kohbar ghar" which symbolise sexual pleasure and procreation. This caste used only black and red colours in their paintings. The Kayasthas and the Brahmins shared a similarity in their paintings as far as the subjects were concerned. The styles of these paintings go back to the Aryan dynasty, which consisted of line- drawings of sacred symbols such as the lotus plant, bamboo grove, fish, tortoises, parrots and birds that symbolised fertility. (Author's notes)

The Dusadhs were the lowest caste and were refrained from painting the themes that represented the divinities. They were known for their tattoo paintings, which included themes of flora, fauna and the legend of the Dusadh caste, Raja Salhesh. These are line – drawing paintings that are divided into several horizontal lines and margins. Considering the use of vibrant and rich use of colour in the paintings, the artists have now started using themes based on the Hindu mythology in their paintings. (Author's notes)



Figure 1

Case study

The authors practice based approach constitutes of a three-month training period with one of the last families of artisans in the Madhubani art at Ahmedabad, Gujarat, India where in the author had called the artisans over for a collaboration project. The data was then collected through various illustrations, photographs, recordings, and conversations with the artisans. Figures 1 and 2 show the original work of the artists the author worked with.

It was with these artisans that the author collaborated with and created new pieces of tables and chairs. During the training period,



Figure 2

the author learnt and acquired skills and knowledge of the traditional Madhubani craft. Convivial conversations with the artisans made the author aware of the exploitation of the artisans by the government, suicide rates of the artisans who had been failing to earn because of the decline of the traditional craft and how the new modernisation era has led to a major decline in the traditional and the original form of art.

Contradictions in research

The authors' convivial conversations with the families' state that the current scenario of the craft and the scenario mentioned in the research contradict with each other (Painting-drawing.knoji.com, 2015) (Kumar et al, 2014) (Kaur and Kaur, 2013) (Das, 2015) (Mishra, 2015) (Mithilapaintings, 2015). The conversations state that the art is neither upcoming nor growing but is declining. The artisans state that with the evolution of technology and digital art setting in, not many are ready to carry on the practice. People are not ready to buy the original paintings, as they are more inclined towards modern art. With the increase in basic standard of living and a decrease in the craft opportunities, artisans have migrated and chosen to opt for some kind of work resulting into declination of heritage. According to a recent study, four artisans killed themselves while the other few died because of starvation. There have been more such cases in the recent years where the artisans have committed suicide because of devastating financial situation and also because of a feeling of hopelessness in a world where their art skills and knowledge were once appreciated and respected, which now had become unwanted (Libel and Roy, 2015). While Das' research states that the craft is upcoming and the artisans are being recognised all over the world (Das, 2015) the artisans say that it is recognised but for the modern form of the art and not for its traditional form. Das' also states that there are various governmental centres that are playing a major role as far as the development of the cultural scenario of Bihar is concerned (Das, 2015). The artisans claim the opposite. They say that the centres have been developed but no steps have been taken for the betterment of the cultural scenario. Das says that the office of development commissioner, ministry of textiles is working under the government of Bihar in order to give opportunities to express their cultural activities in different places (Das, 2015). While the artisans that the author-interviewed claim that there have been no such opportunities given to them and the government approaches them only when there is a talk show or an interview-taking place. There are 38 training centres that are there in Bihar which are supposedly made for the development of its craft and keeping the cultural heritage alive but none of them work towards it. These centres have been claiming of providing the necessary skills to the artisans and providing them the necessary financial benefits and guidance through workshops and seminars but yet again, these artisans deny it saying that the government centres exploit the artisans by giving them negligible amount from the so called government schemes and awards.

Decline and modernisation

Digitalisation and modernisation of the craft lead to a decrease in demand of the handicraft sector. The new stylised forms of the same art, lead to a decrease in its traditional value hereby the craft losing its identity. Digitalisation and modernisation are the root cause of traditional crafts disappearing. The originality of the craft is dying and due to modernisation, there are artisans who have given up on making traditional and original crafts hereby focusing on making stylised modern paintings. Hence, old craft heritage is being lost. Commercialisation has ruined the originality of the art. New art forms are being formed without knowing the importance of the traditional art and the importance of women or each symbol in the art. New colour schemes are being formed and paintings are made without any rhythm in the background, forms, colours, songs and rituals. The buyer decides the themes of the modern form of the art and the paintings are made according to the themes and the colour combinations given by the buyer (Mishra, 2015).

Another research supported this by stating that the artists have been called to the various countries abroad for conducting workshops and this is how the art has reached overseas, but along with reaching overseas it has also lost its traditions. The traditions of the art aren't preserved and new styles and themes have been formed (Mithilapaintings, 2015).

Figures 3 and 4 clearly depict the evolution of the art from its traditional form to its stylised form. The original paintings contain all the aspects of the

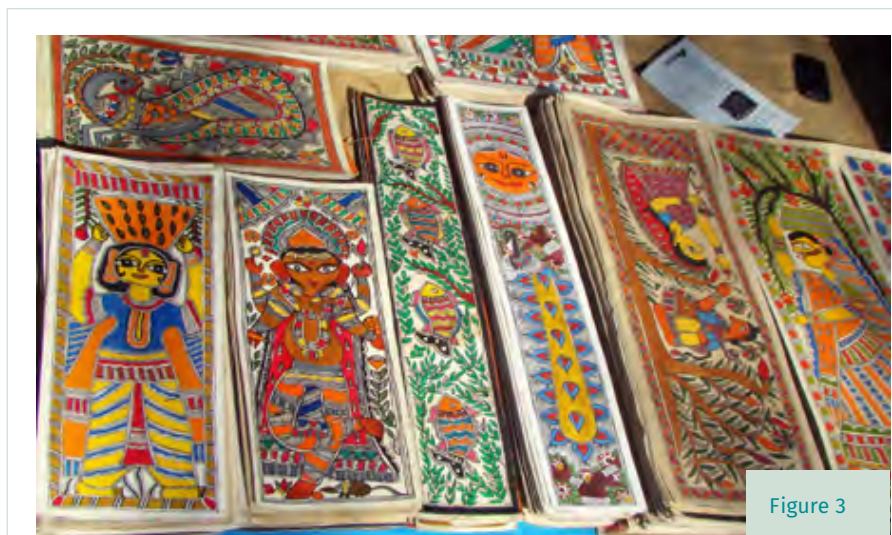


Figure 3



Figure 4

traditional heritage with each form showing its own importance (figure 3).

The stylised version of the art does not do any justice to its original form. The stylised version proves that the cultural heritage of the craft is being lost (figure 4).

Before the Industrial Revolution took place, everything was more or less handmade. With the rise in repeatable, machine production artefacts became cheaper with a consistent quality but it also lost its uniqueness and became impersonal. Along with this, came a change in society's perception

of a craftsman. Since machines could replicate the handwork, the skills of a man and his expertise to make various objects lost value. However, the ability of the mind to visualise and plan its implementation had risen. This made it seem like the craft was becoming less valuable and irrelevant in the modern society; yet craft is experiencing a renaissance.

In recent times craft techniques, approaches and skills have been progressively been used in contemporary art, fashion and design. Craft practices are also coming up in other fields. An upcoming community of design and technology researchers is finding out a solution on blending crafts and electrical engineering and computer science together (Jacobs, 2013).

It is necessary to give time and space to the crafts in the twenty first century and make the making valuable (Frayling, 2011). Craft, as a discipline with increasing significance could be contributing to new product development. According to designer Jean Beebe, *"crafts education and practice is centred on a dialogue between creativity, materials and skills, the maker developing ideas by combining conceptual vision with manipulation of the object"* (Frayling, 2011). Many craft makers inherit the creative stimulus for a lifetimes work with the vision and skill being developed side by side. The limitations of her skills hampered the advancing ideas and their parameters. However, she worked with craft makers who were highly skilled and who could produce the size and the thickness required for the blown glass, which lead to a collaboration of a designers crafts knowledge and the craft makers skills, which made the product development unique. Beebe's ideas and crafts design knowledge along with the craft makers' skills made the weakness of both the designer (lack of skills) and the craft makers' (lack of design knowledge) became stronger by collaboration and new creative products were developed. It also helped in developing appreciation between the quality of the product and the product creating system along with developing a relationship between the craft skills and the employees and the effects of form and processes on pricing. Apart from that the collaboration has also played a major role in expansion of ideas and in developing the ability to motivate the craft makers to work (Sciencedirect, 2015). In order to achieve a unique product development and preserve the uniqueness of each traditional craft, collaboration of traditional art and design is necessary. It is important to preserve the traditional crafts for the benefit of design and product development. Therefore, traditional crafts need to be preserved.

Future

Traditional craft of Madhubani is declining. It can be concluded from the primary and secondary investigations that the craft is coming towards an end by losing its identity. Not many artisans are ready to continue the practice due to the increasing standard of living and there are some who are giving up their lives due to the feeling of sheer hopelessness and lack of respect. The craft is losing its traditional value; the government is claims to offer help but is not helping in the development of the cultural scenario of the craft. Modernisation and digitalisation are playing a major role in the death of this and many other traditional crafts. Therefore, it is necessary to preserve this craft and save the cultural heritage. Having learnt this craft from the artisans, the author intends on focusing on using this craft on different mediums such as wood, glass, metal, fabric, etc. in such a way that the traditional heritage of the craft is not lost. The author tends to make an aesthetically as well as practically designed range of furniture and lifestyle products that help the artisans in preserving their cultural and traditional identity. Having worked with both traditional as well as digital art, the author concluded that digital art could not do what these handicrafts could do. However, by using the term "design" instead of "craft" and by focusing more on the quality the author intends on using this and some similar declining crafts, in different contemporary projects. The author wants to create a blend

of crafts and innovative furniture designs focusing on making these artisans aware of the different techniques and, how exploration and experimentation would lead to a different progress while preserving their heritage. There are too many artisans who commit suicide because of the loss of their identity and a feeling of hopelessness. In order to protect their identity, keeping their source of income constant and also preserve the traditional aspect of the craft; the author, while working with the artisans suggested the method of introducing their work as a design and not refer to it as a craft. The focus however, would still be on the traditional aspect of the art but in such a way that the art becomes a part of the modernistic furniture design and making a new design line out of it that preserves the craft's identity and heritage.

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culture-based design innovation– a semiotic analysis of patchwork in northwest china

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Abstract

Designers can gain inspiration from a range of sources, including folk art. However, traditional Chinese folk art, which is considered an important element of the country's cultural heritage, has particular meanings. Understanding these meanings is crucial to designers' ability to use them properly to create value for new innovations and preserve cultural heritage.

In this paper, an example of patchwork from northwest China is analysed. The contributions of this analysis are twofold. First, it explores a traditional Chinese folk art with origins in remote mountain villages that is little known in the wider design world. Second, it will help designers to explore the meanings of cultural heritage as a source of design inspiration. The origins of Yanchuan patchwork are traced through field research in Shaanxi, a province in the northwest of China, and the meanings and underlying values of the patchwork examples collected are analysed following a semiotic approach. Observations of how folk artists created these examples and a review of how patchwork can be used in modern designs suggest a framework for use in culture-based design innovation and research.

Keywords: culture-based innovation, design innovation, chinese folk art, chinese patchwork

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1. Introduction

1.1. Research background

With Western culture leading global fashion today, Oriental culture is often seen as a subculture. Traditional Chinese folk art and cultural heritage is gradually disappearing from daily life in China. Rapid developments in technology mean that tradition is often regarded as old-fashioned (Ke, 2004). However, designers can gain inspiration from traditional cultural elements to design projects that have a strong cultural basis and are imbued with meanings beyond their regional significance, although cultural strengths are largely neglected or underused in contemporary design practice and education. It is crucial that the new generation of design students responsible for the creation of new things improve their awareness of the need to protect cultural knowledge through feasible design innovation and exploration.

This research is motivated by several factors. The research site is in Shaanxi, a province located in northwest China that is the origin of the Yellow River Civilisation and is well known for Xi'an's Terracotta Warriors and Shaanxi Opera. The primary motivation of this research was to discover and preserve such fast-disappearing local traditional handicrafts as Yanchuan patchwork, Fengxiang clay sculptures and Hua Xian steamed flower buns and to ascertain the extent to which they can provide inspiration to contemporary designers. These distinct forms of artistic expression have been inherited from ancient times and were derived from Chinese philosophy and religions. Although their elements vary, their sources are similar. The process by which the rural Chinese have transformed abstract concepts into visual images using wisdom and imagination has been a lengthy one (Wang, 1996). Extracting the cultural elements of these important forms of cultural heritage thus also takes time.

Because of the complicated process of making original handicrafts, the number of people with the knowledge and skills to do so is rapidly declining. Although local governments are trying to protect local cultural heritage through legislative measures, they struggle to keep pace with the rapid disappearance of a huge number of crafts with significant cultural value and diverse styles. China is often treated as a huge international market with abundant market resources and work opportunities. Thus, another motivation for this research was to draw the attention of designers in both China and elsewhere to the urgent need to protect and preserve these highly aesthetic forms of Chinese folk art and to encourage them to devote their efforts to doing so.

Yet another motivation was the recognition that traditional folk arts can be a reflection of a nation's collective consciousness, attributes and psychological qualities. They contain deep cultural and artistic thinking within them (Zhao, 2011). It is thus necessary to investigate how different historical periods contributed to the design evolution of artistic traditions, with reference to philosophical ideas, artistic thinking, technological innovation and lifestyles.

1.2. Research questions

1. What is the specific denotation and connotation of the traditional Chinese symbols in Shaanxi's folk art?
2. How can contemporary design properly incorporate the symbols of traditional Chinese handicrafts?
3. How can we raise designers' awareness of the need to protect China's fast-disappearing intangible cultural heritage through design innovation?

1.3. Research objectives

1. To provide a deep understanding of the methods, significance and social value of Shaanxi's traditional folk art through analysis, a literature review and cognitive and qualitative methods.
2. To collect data from field studies and observation projects and conduct data analysis in a theoretical and systematic manner.
3. To create a toolbox comprising the combination and interpretation of specific traditional cultural elements for use in modern design thinking and to develop a framework that can support the preservation of intangible culture heritage and design innovation.
4. To conduct tests and experiments with young designers and observe how they incorporate traditional Chinese cultural elements into their design practice with reference to the developed framework.

1.4. Research significance

The significance of this research lies in several areas. First, it has identified a number of types of folk art in Shaanxi. Yanchuan patchwork was chosen as the main object of study due to its distinct form and cultural connotations.

The origins of Yanchuan patchwork were traced through field research in Shaanxi, and the meanings and underlying values of patchwork examples collected were then analysed following a semiotic approach.

Observing how folk artists create their patchwork designs and reviewing how they can be used in modern design led to development of a framework for culture-based design innovation and research. If used in design education and innovation, the framework will help to protect and make use of the cultural knowledge inherent in Yanchuan patchwork. It may also be used as a paradigm for protecting other kinds of cultural heritage through design thinking.

2. Literature review

2.1. Origins of patchwork

As a branch of Chinese folk art, traditional Chinese patchwork can still be found in many rural areas of China, and is created primarily by women. Yan (2009) notes that several different terms are used for the Yanchuan patchwork from northern Shaanxi. For example, it is called 'pile of flowers' in Yongping Town and 'jacquard' in regions along the Yellow River. The term 'Yanchuan patchwork' was first used by a local folk artist named Feng Shanyun. Feng noted that the patchwork originated in the daily life of working people, and thus represented their long-term labour. He also observed a wide range of groupment styles and distinct local traditions. Yanchuan patchwork generally has rough, thick and durable features that reflect its practical value in rural life in northern Shaanxi. Liu (2006) defines patchwork as using a variety of colours and different textures and shapes of cloth and created with embroidery and other sewing techniques. Patchwork was originally used to mend torn clothing using traditional patterns to extend its life and increase its aesthetic value. Yan (2009) also states that Yanchuan patchwork features a wide range of themes. Most early themes reflected primitive forms of worship focusing on human reproduction.

2.2. Chinese semiotics in philosophy

Chinese semiotics into two categories based on the relationship between subjective and objective properties: the logical classification of objective property and the aesthetic classification of subjective property. The advent of Chinese semiotics stems from exploration of three academic areas: structural linguistics, logic, and cultural philosophy and aesthetics (Xu, 2008).

One of the most representative areas of Chinese semiotics is the philosophical study of Chinese Primitivism, which is concerned with primitive societies. Its main proposition is that 'the combination of Darkness and Brightness produces everything, and everything will continuously breed in reproduction in an endless succession'. This is also the philosophical foundation of Chinese folk art, according to Jin (2004). Semiotics can be used as a tool in carrying out scientific analysis of Chinese thought and culture.

2.3. The origins of Chinese symbols in aesthetic creations

BanPo painted pottery with fish patterns in Figure 1 above is one of the most typical Chinese semiotic productions. It has an

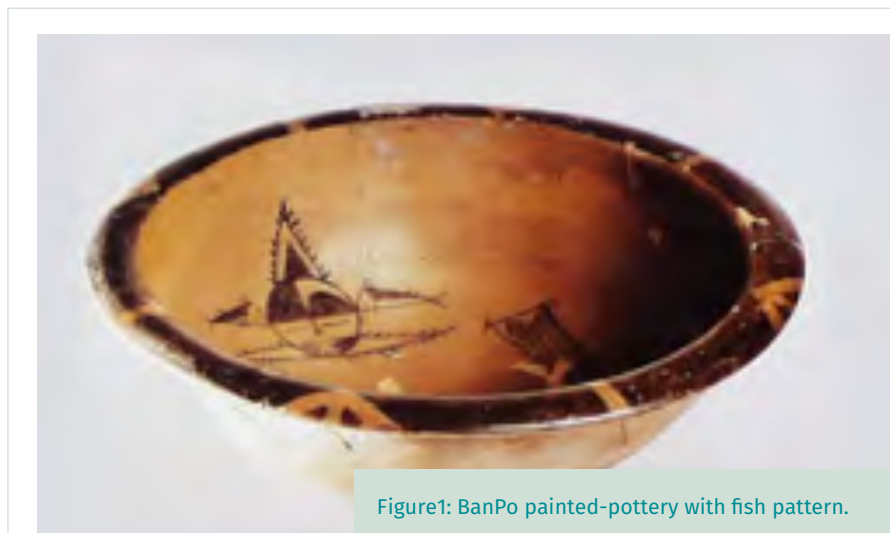


Figure1: BanPo painted-pottery with fish pattern.

almost 7,000-year history in Shaanxi, but was not discovered until 1955. Created in the Neolithic age, this pottery has been labelled a representative form of Yangshao culture. The patterns it features can be understood as representative symbols of that age, and can also be interpreted through the semiotics approach used in contemporary research. Analysis of these patterns suggests that the people in that period engaged in a specific form of totem worship and were very superstitious, a phenomenon not exclusive to China. Munn (1973) discusses numerous ancient artworks with images of fecundity and birth. Xun (2000) points out that there are two features of traditional Chinese symbols: they summarise the laws of nature as our ancestors understood them, and have elements of imagination and a symbolic character indicative of creative awareness. Jin (2004) believes that, in primitive society, because human beings were weak in their struggle with nature, animals with super-human abilities became totems that were worshiped as gods. Therefore, we can speculate that the two fish that appear next to a human face on Banpo pottery symbolise an animal of water and land, as well as descent from

generation to generation. This may be the earliest appearance of the double fish totem. Langer (1953) believes that a symbol not only has the function of referentiality, expressing and conveying a concept, but also of configuration, formalising human experience and presenting it objectively. Some believe that the imagery on Banpo pottery is a true portrayal of fishing and hunting life in the Neolithic period.



Figure 2: Evolution of the double fish totem. (www.yx128.com/lunwen72.asp)

Figure 2 illustrates the evolution of the double fish totem. It shows that even in ancient times, people already conceived of a doubled number of symbols as denoting balance. A typical such image is the Tai Chi Diagram (also known as the yin-yang symbol), which has become the representative graphic of Zhouyi theory. Zhou Dunyi (1992) discusses the deep meaning of this diagram. He states that it represents the philosophy of the alternation of the sun and moon as the origin of everything. The diagram symbolises mutual transformation, relatively uniform formal beauty and harmonious beauty. An (1985) points out that many ancient Chinese folk patterns use the combination and division principles of the Tai Chi Diagram.

2.4. Chinese semiotics in culture-based design innovation

Semiotics has deeply influenced many artistic fields. It is useful for analysing the meaning of artworks from different points of view and at a deeper level, and serves as a bridge between the visual arts and visual culture. The concept of connotation in semiotics is particularly meaningful for a range of cultural and social areas. Semiotics is also being used to connect the visual arts with other disciplines such as heritage studies, according to Waterton and Watson (2015). Researchers have found semiotic elements in many examples of intangible Chinese cultural heritage such as paper-cutting and patchwork. Waterton and Watson (2015) believe that cultural heritage and the visual arts are impartible.

Design is an increasingly popular discipline that is seen as enriching daily life aesthetically while rendering life more convenient by solving a variety of problems. Design education was first developed in the West, with modern Chinese design education emerging in the late 1970s (Ghose, 1989). Sources of inspiration are essential in both design education and the design process. Eckert, Stacey and Clarkson (2000) recommend various sources of design inspiration, for instance, pictures of objects, sketches, digital performance, artwork, natural phenomena and written texts, to name just a few. A synthesis of sources of inspiration can also stimulate innovative thinking in designers.

In China, traditional cultural symbols are gradually becoming referential images in local design practice, instilling it

with additional creative purpose and cultural significance. Zhang (2005) believes that the transition of visual culture to incorporate traditional Chinese cultural symbols is not completely independent of traditional Chinese thinking, and in some ways represents a renewal of such thinking. However, Ghose (1989) argues that most of the new generation of design students obtained their design knowledge from the modern education system rather than from original folk art or regional



Figure 3: 'Shang Xia' Playing card in Chinese painting. (www.shang-xia.com/gift-corner)

handicrafts. If they want to gain inspiration from traditional crafts, they must first learn these crafts. There are many examples of such inspiration, but not all designers are able to make good use of traditional graphics, particularly non-Chinese designers. To do so, it is first necessary for them to understand the deep meanings of traditional Chinese symbols in a systematic way.

Keane (2007) comments that policies concerning the cultural innovation industries are well established in China, with many cities implementing economic policies designed to benefit cultural industry workers and emerging industries. Figure 3 shows a series of playing cards carrying the brand name Shang Xia, an art brand conveying a traditional Chinese lifestyle. For this playing card series, Shang Xia invited contemporary Chinese painter Lin Xi to create images for the cards. Lin painted a number of different objects with specific and subtle meanings in traditional Chinese culture instead of the patterns commonly displayed on playing cards, for example, a kylin, ganoderma, Bodhi leaves, a red peach and a Taihu stone, all of which have auspicious meanings in China and derive from the natural world. Lin's purpose in this commission was to create a product that can be used by customers and also allow them to appreciate the beauty of Chinese culture and develop an interest in nature. Relevant to this example is Zhang's (2005) assertion that many Chinese designers have begun to rethink traditional Chinese culture and find inspiration in traditional philosophy and aesthetics. They are enriching their design experiments by absorbing rich knowledge from traditional culture.

3. Research methodology

The nature of culture-based studies in the design arena requires a combination of research methods and a deep understanding of the relevant cultural knowledge and the masters who created beautiful works of art with their brains and hands. The backgrounds of this research project and its methodological context and research questions have been presented. It adopted a combined approach using both quantitative (decomposition of information on patchwork) and qualitative methods (interviews to evaluate and acquire feedback on the information models abstracted from patchwork created by various masters). Two field studies, an interview and observations have been conducted based on the foregoing literature review, and some first-hand data have been collected. The details of each method used are discussed in the following sections. Because the main research area is Yanchuan patchwork, a long-term field study will also be conducted in Yanchuan County in Shaanxi in the coming months. Following analysis and synthesis of the knowledge obtained thus far, a second round of data collection and a number of experiments with design students and contemporary designers will be conducted in the future to test whether the proposed framework can be implemented in practice.

4. Research purpose and analysis

4.1. Purpose

To gain an elementary understanding of Yanchuan patchwork and observe the current living situation of contemporary patchwork artists in Yanchuan County, further field research is necessary. The paper-cutting and patchwork of Yanchuan are unusual within China, and the works of Feng Shanyun and Gao Fenglian, in particular, have a good reputation both in China and abroad. Therefore, gaining an understanding of the creative environment of these two masters provides a starting point for the additional research. I will first investigate their background, and determine where they are living, how many people in their families are also creating patchwork and what awards they have won. I will then ascertain what kinds of problems they have and how they can be helped and supported.

Another purpose of this research is to gain a deeper understanding of the creative motivations for and connotations of the patchwork created by different individuals. The significance of and social values in their work will be uncovered through systematic comparison and analysis. Last but not least, I will investigate the possibility of cooperating with local artists for culture-based design innovation to protect the intangible cultural heritage and skills of Yanchuan.

4.2. Analysis

The Zhuaji doll shown in Figure 4 is a kind of 'happy doll', a god who governs procreation. Jin (2001) concludes that it is a primitive cultural relic of witchcraft and of a matriarchal society that worshipped a female procreation god. It is clear from the shape of this Zhuaji doll that it is female. Her hands are raised up, and her legs are open as if she were giving birth. Her hair is fashioned into a double bun, and she is wearing a wreath, grasping two chickens in her hands and stepping on two fish. In Chinese, the pronunciation of 'hair bun' and 'chicken' is similar to that of 'lucky'. Zhai and Zheng (2005) surmise that metaphorical and symbolic language based on China's past farming civilisation is still active in Chinese expressions today, creating rich symbolic imagery. A fish is a totem animal with strong reproductive capacity. A chicken and a fish can also be taken to represent yin and yang. 'The combination of Yin and Yang produced everything, and everything will continuous[ly] reproduce[e] and breed in an endless succession'. These animals fully embody the Chinese philosophy of yin and yang. In the image in Figure 4, another two chickens

appear on the Zhuaji doll's arms and ears. She is sitting on a red lotus. Because a lotus has many seeds, the flower represents the birth of many children from generation to generation. Lotus imagery was widespread amongst the people who introduced Buddhism to China in the Han Dynasty (Jin, 2001). In Buddhism, the red lotus represents the female genitalia, as implied by the phrase 'Om ma ni pad me hum', which can be translated as 'the holy red lotus.' Its widespread appearance in primitive art is indicative of the prevalence of the worship of the reproductive organs, and reflects the sheng-sheng thinking in Chinese primitive philosophy and people's desire for many sons. The chest of the doll is decorated with a tiger pattern and a child. The tiger is the king of all animals, and people believe that it has the strongest power to protect their families and children.

Gao Fenglian draws on her superb paper-cutting skills to produce quite delicate patchwork. Compared with paper-cutting, patchwork uses cloth instead of paper, and patterns are made to look three-dimensional through the application of layers of fabric. Embroidery is also sometimes used as a method of decoration

for the more detailed parts of patchwork. Gao, who is an old woman, was born in the countryside. She combines her fanciful imagination and understanding of her own life and the local culture and history with expert scissor work to create patchwork pieces of a variety of shapes. Viewers can not only find profound philosophical thinking in her work, but also her worship of and faith in the old gods and her love of life and hope. Her spirit has been passed down from traditional Chinese culture over the generations.

Gao's use of colour is very bold. In her Zhuaji doll, she uses red, an auspicious colour in Chinese culture, as the background colour. The outline of the doll's body is in blue, and two green peony patterns decorate the area around the eyes. In Chinese folk history, the peony is a symbol of the sun, and Gao uses the flower to make the doll's eyes appear bright and piercing. In other parts of the patchwork, she uses dark purple and black as the background colours, as well as yellowy pink and orange to brighten, lighten and shade. Her approach gives an overall impression of abundance and creates a sense of depth.

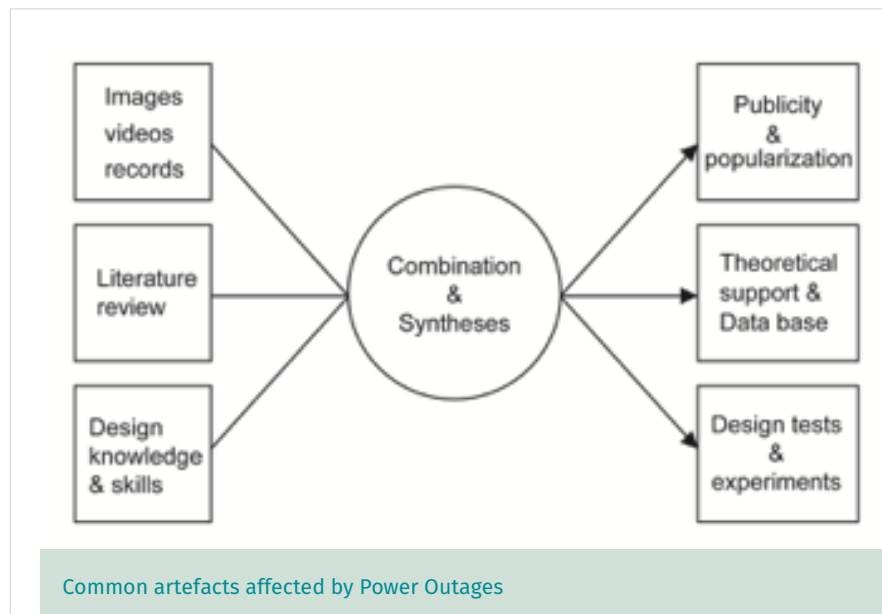
This is a highly representative work. Sticking fabrics together layer by layer provides a strong visual impact, and lends a special touch. The use of totems and symbols are also very clever aesthetically. Cultural heritage has been widely applied for design innovation such as paper cutting and Chinese painting. Yanchuan patchwork can also provide inspiration for the design of innovative products. For example, the patterns can be integrated into the design of decorative cloth through scanning or applied to 3D printing to create handicrafts or toys. Technological developments can serve to preserve and carry forward the skills and spirit of traditional handicrafts in danger of being lost.



Figure 4: Gao Fenglian's patchwork 'Zhuaji Doll'.

5. Future Plan

The chart on the right outlines the three main parts of the research carried out thus far: data collection, literature review and the application of design knowledge and skills. Through combination and synthesis, these three parts are anticipated to lead to the three following outcomes. The first is to publicise Yanchuan patchwork amongst the general public by documenting examples and discussing the skills involved in creating it and its aesthetic value. The second is to provide theoretical support to researchers and a systematic database of Yanchuan patchwork for contemporary designers. The final outcome is to develop design tests and experiments based on the knowledge gleaned thus far.



The final outcome is to develop design tests and experiments based on the knowledge gleaned thus far.

The context of 'place' in this research represents a transformation from remote villages to modern cities. It also brings creative thinking from folk art into design fields. Reflecting on the research questions, several tasks remain. As Chinese semiotics and Chinese primitivism are closely related to Shaanxi's folk art, it is necessary to continue to investigate related theories in these areas and to establish a first-hand database for use with the proposed framework. As noted, an in-depth professional field study will be conducted in the northern part of Shaanxi in the coming months. In the meantime, it is necessary to keep good connections with local artists and contemporary designers and design students.

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tangible ideation: developing material study approaches and toolkits with children to enhance design education for children

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Abstract

In the past few years, the concept and practice of collaborative approaches have stretched from adults to younger age groups. Therefore, it has been increasingly acknowledged that children also should be encouraged to participate in and their contributions valued. A tactile learning approach, which is one of the most effective learning methods of maximising children's learning ability, has been applied to children's education for many decades. However, there are few studies that emphasise material study for children and youth. Therefore, this study proposed a teaching and learning approach with children's participation, which evolved through a designerly and architectural educational project. The main objects of this study were to collaborate with children to develop material study toolkits for children and youth; and to propose a multidisciplinary teaching and learning approach to the primary school curriculum. It demonstrated with the 5th grade of pupils in Töölö Primary School, Helsinki, Finland, in 2013. An analysis of the process and results of the study revealed that material study toolkits were of great benefit to children in recognising material, enjoying a tactile experience, and developing ideas. In addition, there was evidence of children's participation being connected to a satisfactory academic achievement

Keywords: design education for children, child involvement, participation, tangible toolkits, material experience

tangible ideation: developing material study approaches and toolkits with children to enhance design education for children

Introduction

Participation may bring children to enter the society and discover the world. Recently, the involvement of children has been issued in various aspects and the Convention on the Rights of the Child highlights children's right of participation (UNICEFF 2011). Several researchers have pointed out the merits of children's participation in product development (Hanna, Ridsen, Czerwinski & Alexander 1999). In addition, there have been global movements to actively involve children in environmental planning and design (Driskell 2002; Hart 1997; Matthews 2001; Lozanoyska & Xu 2012; Tonucci & Rissotto 2001).

Children acquire new skills and knowledge in different ways. Some children learn more by seeing, hearing, touching or doing. One's surrounding materials are appropriate sources from which to learn about the world through the senses. However, there are few studies that focus on the study of material for children and youth. Therefore, I have developed material study approaches and toolkits to enhance the tactile experience for children and youth. This study contributed to fostering their design education and tactile experience. It has been developed by collaborative projects with children (7-19 yrs.) from ARKKI (Arkkitehtuurikoulu, School of Architecture for Children and Youth) and Töölö Primary School, both in Helsinki, Finland, from 2012 to 2013.

The purpose of this paper was to propose a new teaching and learning approach enlisting children's participation, which evolved through a designerly and architectural educational project. In this project, I introduced and applied to one material study toolkit, Material blocks. There were two main objectives of this approach: 1) to collaborate with children to develop toolkits in design education for children and youth; and 2) to propose a multidisciplinary teaching and learning process, as well as an approach to primary school teachers and pupils. After analysing the process and results of the project, I observed that these two objectives were implemented and achieved, even though refinements could be made. Moreover, there was evidence of children's participation in developing toolkits in design education, as well as their improved academic performance.

Children's participation and collaborative teaching & learning approach

School curricula have been changing rapidly in many countries. One example of this change is the inclusion of real-life problem-solving exercises (Eggleston 1976). These types of problem-solving exercises are often prevalent in design research and practice. Therefore, design education, which is based on real context projects, can be structured as a multidisciplinary educational approach (Davis 1999). In Finnish comprehensive curricula, arts and crafts education teaches students about diverse knowledge of techniques and materials, as well as management of tools (Seitamaa-Hakkarainen & Matinlauri 2015). Even though the Finnish education emphasises knowledge of materials, there are limited opportunities to learn about them in the school curriculum.

One solution to this limitation is to invite children's participation in the school curriculum. Participation has the advantages of developing individuals' competence and confidence, as well as improving the communities (Hart 1992). For the genuine participation of children, there were a number of important requirements to carry on the projects in terms of the children's understanding, awareness, roles and freedom of participation (Hart 1992). Participation not only provides children with chances to have their voices heard, but it also enables them to learn that others' have their own voices. They concede to the others' rights, thus enabling them to adapt to any differences in opinion; hence, participation leads children to actively collaborate in society.

Children's participation is an iterative process consisting of their involvement, motivation and competence. Children have ownership when they are involved in projects, then they have more motivation to proceed through the projects. The motivation fosters competence, which brings motivation for further projects. In this process, adults do not only need to guide children, but children also need to learn valuable and developing concept (Hart 1992). Productive collaboration between children and adults can be a key for sustainable education.

Collaborative teaching and learning have been widely applied in education and their advantages have been revealed by a number of scholars. The concept of collaborative learning has been derived from one of peer learning by Damon and Phelps (1989, p. 135-157). It emphasises mutual influence and equal participation among peers (O'Donnell & Hmelo-Silver 2013, p. 1-15). In particular, this sociocultural perspective on collaborative learning is influenced by Vygotsky's cognitive development emphasis on participation in social practices of knowledge creation (Hakkarainen, Paavola and Seitamaa-Hakkarainen 2013).

Collaborative learning increasingly provides opportunities for the development of intercultural competence (Lahti & Seitamaa-Hakkarainen 2005). Through this methodology, I have provided toolkits, which the children have been involved in developing. The children were also active in developing the collaborative teaching and learning. The collaborative teaching between a teacher and an external domain expert extended the quality of education and led to positive effects both for the teacher and the expert (Kangas, Seitamaa-Hakkarainen & Hakkarainen 2011).

The project: *Build my City*

1. Research design

The activity of constructing physical structures with Material blocks was piloted and developed with children through 2012 and 2013. These blocks were constructed to the dimensions of 45 millimetres by 45 millimetres with four grooves on each side and 90 millimetres by 45 millimetres with six grooves; these were made from 2 millimetre thick cardboard sheets. In connection with developing these toolkits, I organised the 'Build my City' project for one class of 22 pupils in the 5th grade in Töölö Primary School, in Helsinki, Finland on 15 May 2013. This project was structured as a design and architectural workshop for four hours, and the completed schedule and plan were discussed with the classroom teacher in advance (Table 1). It was facilitated in English since the class was a bilingual class who used Finnish and English. In addition, the session was documented with photos and video-recordings along with note-taking of significant conversations among pupils and the teacher.

This project included various activities, such as discussions, building, drawing, writing and displaying from multidisciplinary aspects. Each participant created a model with material blocks, drawings, and writing questionnaires and creating a story. As a collaborative activity, the pupils displayed their buildings on the map of Helsinki and built their new city.

2. Roles of personnel

The adult supervisors involved in this project were a design researcher and the classroom teacher. This project required making spaces and materials available to the pupils and setting up the educational context for the project. As well we supervised the pupils' work, introduced and explained the activities, defined the objectives, demonstrated techniques for performing the tasks, and assessed each design outcome at the end of the project. To help this facilitation, we had conversations with the pupils individually to listen to and discuss their design ideas, and supervised them if they had conflicts or problems in developing the project.

Table 1: The schedule of the workshop.

Period	Theme	Time	Activities
10.15-14.15 Wednesday, 15 th , May, 2013	Design Workshop: Build my City	10.15-10.20	Introduction
		10.20-10.30	General discussion on city & building
		10.30-10.40	Searching material blocks Planning building
		10.40-11.30	Building with blocks Taking photos with human scaled models
		11.30-11.45	Lunch break
		11.45-12.00	Drawing
		12.00-12.30	Break (Display a map on the floor)
		12.30-12.45	Writing I
		12.45-13.00	Display building on the map
		13.00-14.00	Presentation Writing II
		14.00 -14.15	Question, comments & answers Summing up

The pupils were the actual designers of the city planning. They provided the creative design ideas and demonstrated them in various ways. The learning process was realised through a range of design activities including discussion, sketching, model-making and storytelling.

3. Process

The project operated in the form of a workshop. There were five different design activities under the same theme: Discussion, Planning & Building, Drawings, Display & Presentation and Writing. The tasks involved in these five stages are outlined below (Image 1 & Table 2).

3.1. Discussion on my city

To establish a free atmosphere and enable creative ideation, I developed familiar questions for the pupils to discuss cities and buildings. There were also some follow-up questions (Figure 2). Moreover, there was a discussion prior to this between the pupils and adult facilitators to build trust, identity and a sense of belonging (Lozanovska & Xu 2012). Given the age of the pupils, they were not considered to be mature enough to express their thoughts when speaking with unfamiliar adults. However, I have already worked with this group of pupils; therefore, it was not difficult to undertake these activities with them. In general, the building of trust and relationships between adult facilitators and pupils are fundamental in this type of collaborative work.

3.2. Planning & building

Ideation with words or sketching was often applied to the design and city planning process. However, pupils were given material blocks just after a discussion activity to begin to plan new design building designs. Tangible materials aided in the development and encouragement of creative ideas in a relatively short time period. The aim of these material blocks was to trigger the pupils to develop their ideas.

I suggested to the pupils to look around the building, which they built from different perspectives. As well, I allowed them to take photos of the models with their mobile phones or cameras if they wished to do so. However, the pupils were not allowed to use mobile phones during normal lessons in the classroom. Hence, I skipped taking photos of the models and moved to the next stage.

3.3. Drawings in details

After all of the pupils completed the construction of their new buildings, they had the task of drawing their newly designed buildings according to details including title, functions, size, materials and environment. In the first view of the model, the pupils were allowed to draw the view with any drawing materials (e.g. pencils, crayons or paints). The pupils asked a few questions about the given structure to present their buildings. Then, they needed more details about the size and materials as they were conflicted when describing these factors between the real buildings and the models made of blocks. In addition, a few pupils needed to provide further explanations or examples of the functions and environment.

3.4. Display & presentation

Most of the pupils lived in the Helsinki area. Therefore, Helsinki was a familiar area for these participants. Accordingly, I displayed a map of Helsinki, with the dimensions of 4 metres by 3 metres on the floor in the classroom. The pupils showed enthusiasm in finding their living area on the map even though I did not ask them to do so. Then, the pupils were seated and given tasks for the next stage. After explaining the tasks, the pupils brought the models on the map. Some pupils took a long time in deciding where to place their models on the map, but most of them placed the models in the area in which they currently lived. The pupils also presented their works with detailed drawings and models on the map.

3.5. Writing

Originally, there was one writing activity during this workshop to answer questionnaires, which were provided to the pupils (Figure 1). However, a classroom teacher suggested having one more writing activity to create a fantasy story, 'One day in the house' at the end of the session (Figure 2). All the writing activities were requested written in English. It became a multidisciplinary learning and teaching approach covering areas, such as art, literature and English. As such, the adult facilitators guided the pupils when they required grammatical support or further explanations about the questionnaires.

Stage of the process	Tasks
1. Discussion	<ul style="list-style-type: none"> • Discussion on my city <ul style="list-style-type: none"> ○ Where do you live? What type of house do you live? ○ What does your surrounding look like? What are there? ○ Are there any special buildings or places which you like in Helsinki? Why? ○ Have you thought to change your house or other buildings? How would you like to change them?
2. Planning & Building	<ul style="list-style-type: none"> • Glancing materials on the blocks • Planning new buildings • Building new buildings (Image 2) • Making human scaled models • Investigating different perspectives of buildings • (Taking photos of models)
3. Drawings in details	<ul style="list-style-type: none"> • Deciding one view of the building • Drawing the view • Colouring and add details • Title, functions, size, materials, and environment
4. Display & Presentation	<ul style="list-style-type: none"> • Deciding area to build • Display the building on the map • Presenting drawing & model
5. Writing	<ul style="list-style-type: none"> • Answering questionnaires (Figure 2) • Writing a fantasy 'One day in the house' (Figure 3)

Table 2: The tasks in the different stages of the process.

4. Data analysis & results

The process and outcomes from different activities were documented with a camera and a video recorder as well as taking notes on conversations between the pupils and the two facilitators. The completed pupil questionnaires included rich and extensive information about their ideas and thoughts on their design outcomes. I encountered that there were interesting features from the analysis.

4.1. Answers of questionnaires

- Living place: The pupils described their surroundings well. Most of those in this class lived in the Helsinki area. Among these, Töölö (n=9) was the mostly common reply with other answers, such as Kannelmäki, Hernesaari and Oulunkylä. A few pupils also wrote down accurate addresses.
- Favourite place in Helsinki: Linnanmäki was one of the popular places among the pupils in Helsinki (n=10). They also liked shopping mall places (e.g. Kamppi and Stockmann department store) and parks.
- Changing place: The majority of the pupils did not want or had not thought to change their houses or other buildings (n=14). A few pupils wanted to have larger and/or more colourful houses, be closer houses to school, and include luxury items, such as a jacuzzi or a faster lift.
- Using blocks: The number of blocks used by the pupils varied from 13 to 76. The size of buildings varied as a result. Of these buildings, one pupil did not count the number of used blocks.
- Reason to choose material blocks: The pupils did not care about the materials on the blocks when they chose and designed their buildings. They randomly chose the blocks. One boy was interested in colours rather than materials.
- Functions: The function of the buildings was diverse, such as a house, a relaxing place, sightseeing, an entertainment place, a place for fireworks, an observatory and a bunker. The chosen functions were largely for fun and entertainment.
- Size: The pupils used different units to describe the size of the buildings, such as centimetres, metres, kilometres and hectares. A teacher mentioned that the pupils had just learned different measurement units during the mathematics lesson last week, so they tried to use them. The units were on the black board at the front of the classroom. Most of the pupils thought about the height of the building, but some measurement

Figure 1: Questionnaires for general discussion and writing activities.

- **About your living places**
 1. Where do you live?
 2. What does your surrounding look like? What are there?
 3. Are there any special buildings or places which you like in Helsinki? Why?
 4. Have you thought to change your house or other buildings? How would you like to change them?
- **About your new building design**
 5. How many blocks did you use to build your building?
 - a. Small blocks -
 - b. Big blocks -
 6. Why did you choose the material blocks to make your building?
 7. What kinds of function do your building have?
 8. How big is your building? (size)
 9. What kinds of material are made out your building?
 10. Where would you like to place your new building? Describe the surroundings of your building.

Image 1: Process of the workshop: material blocks; glancing blocks & planning buildings; modelling with material blocks; drawing & writing; display buildings on the map; and presentation (from top left to bottom right).



were probably imaginary (e.g. 1km and 5km). In addition, some pupils had abstract notions about the unit, such as medium or big. Four pupils had three-dimensional notions, because they wrote down width and depth as well. A few pupils wrote down the size of their block building.

- **Materials:** The pupils wrote down that they had chosen common materials for construction of the actual building, such as rock, wood, stone, metal, natural materials, glass and bricks. One pupil wrote down unique materials, such as titanium and iron.
- **Environment:** Many pupils wanted to have the new designed buildings close to their own places (n=6). Moreover, the pupils answered that they would like to place their new buildings in a forest, next to the sea, on an island, in a park, in the zoo or in space. Some pupils mentioned specific areas in Helsinki (e.g. Laajasalo, Eira, Käpylä and Herttoniemi).
- **Difficulties:** A few questions required further explanation. (Question 4: What to change; Question 8: Block building or actual building; and Question 9: Block building or actual building on the drawing). The pupils did not answer the questionnaires when they did not understand them.

4.2. Variety of activities

During the workshop, the pupils created models, drawings and writings. All of these activities were under the same theme and amended details.

The model-making activity was simple and appropriate for the pupils and it had many possibilities to connect other related activities. Some pupils said that it was one of the more enjoyable activities during the session (n=4). On the other hand, drawing and writing supported to the goal of investigating the pupils' ideas. The drawing demonstrated more detailed plans: the pupils added windows, doors and other decorations. As well, the pupils who were seated and worked closely arrived at similar outcomes, for example, two boys who were seating next each other from the first group, made the Tower of Pisa. Some pupils showed interests in a large-sized map and tried to find their own places on the map. In addition, the pupils worked effectively according to the schedule; therefore, the teacher suggested having one more writing assessment, 'One day in the building'. It was a fictional writing assignment and provided an opportunity for the pupils to practice English. The combination of the different activities achieved the multidisciplinary teaching and learning process and approaches in diverse areas. This approach could be applied in other contexts as well.

Discussion

Feedback and comments

The pupils enjoyed the whole process and activities during the project. The variety of tasks in this project (e.g. discussion, drawing, modelling using material blocks, display and writing) successfully engaged all the participants in the projects. They commented that modelling with the blocks activity was the most enjoyable part during the session. Some pupils also liked to draw and display their models on the large sized map. However, a few pupils had difficulties working on some tasks, in particular, creating a stable structure.



Image 2: A model of the Tower of Pisa with the material blocks.

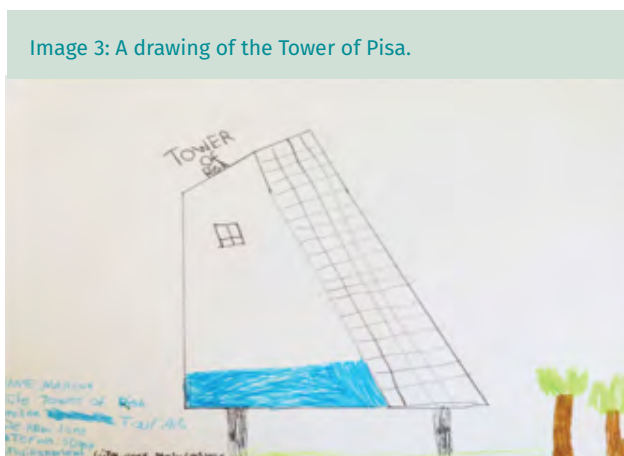


Image 3: A drawing of the Tower of Pisa.

Figure 2: A fictional writing, 'One day in my building'.

'One day in my building'
Once upon a time a man was walking past my building. He was called Jack. It was a dark Halloween night. Jack heard loud screaming from one of the houses in my building and after a while it stopped, but a knife was thrown from the window. When he picked it up from the ground he realized that it was full of blood. Jack went inside the building and saw spider webs all around the hallway and in the lift. He found the house that the screaming came from and knocked on the door. The door opened slowly and it was making creepy noises. Suddenly a vampire appeared with a glass of blood in his hand. Jack peeked behind the vampire and saw blood on the carpet. Jack screamed and ran away to the police station. The police went to the house and started investigating. It turned out that it was all a misunderstanding. What really happened is that the person who lives in the house was cutting tomatoes to make tomato juice. While a horror movie was on. He watched the movie with the knife and the glass of tomato juice in his hand. He got scared and screamed. While he screamed the knife flew from his hand out the window. He also dropped a bit of the juice on the carpet. The person was wearing his vampire costume and the spider webs were in the hallway, because the cleaner was sick for two weeks. After Jack heard what really happened he got relieved and went home.

The teacher commented that the workshop had multidisciplinary teaching and learning approaches, for example, arts, design, architecture, mathematics, geography, literature and English. She was pleased to have this type of teaching and learning process and approach. She incorporated this project into their curriculum, and she was able to teach pupils literacy (through creating stories), mathematics (through measuring), art (through drawing), crafting (through modelling), geography (through displaying on the map) and communication (through discussion).

Evaluating children's genuine participation

Adults set the context for the project, in that they designed the educational programmes, allocated space and time, and provided resources. During the design process, pupils initiated their design project and made decisions with the help of the adult facilitators. Children were given the freedom to make decisions related to design (e.g. the shape, the size, the material and the location of the building), and the adult facilitators helped them to realise their decisions using design and architectural techniques and languages (e.g. drawing to scale, finding the suitable modelling material in real, building the shape and structure, installing the model). Therefore, this project achieved high levels of genuine participation from the children.

Difficulties & limitation

The difficulties encountered in this project suggested modification of the design process and tasks. Every task should be appropriate to pupils. Hence, co-planning or confirming plans with the classroom teacher occurred in advance of the projects beginning with the pupils. The limitation of this pedagogical approach did not consider individual differences in capacity, personality and creativity. In addition, I noticed that many pupils did not consider that materials on the blocks during the model-making process. Nevertheless, the material blocks worked well with this age group of pupils (11 yrs.), materials images on the blocks did not encourage the pupils when they planned and built a new design. They relied on their previous knowledge and experience about materials. Addressing this limitation, a variety of tasks in future projects will be elaborated for effective participation.

Further development

In sum, the pedagogical model introduced in this paper resulted to be an effective way to encourage children's genuine participation in school curricula. It can be applied in different design and architectural educational contexts. The resources can be guides to other participatory and collaborative design projects. Children's creativity and enthusiasm were great resources for design, and helped to overcome challenges such as a lack of ideas and the frustration that a designer or design researcher often experience when they design artefacts for children. The material study toolkits will be further developed with and for children in tangible and digital formats.

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the mark of the maker

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Abstract

Material Matters, a research centre within the Intersections Digital Studios of Emily Carr University, is exploring knowledge creation through the new opportunities enabled by emergent digital production technologies. What are the methodologies that emerge from the gaps and fissures between emergent digital tools, legacy processes and practices, and contemporary making? Within Craft, the inexorable amalgamation of the analogue and digital is enabling new means of production through the considered re-imagining/re-implementation of technique and material processes. This hybridised model evolves in response to the digital flux within established landscapes; it employs a mix of localised, tacit and explicit knowledge to create new physical and mental spaces for makers.

Through studio making and academic research we explore how craft makers, with extensive material-specific knowledge, may transform elements of tacit understanding through digital means, extending their creative practice. Our research examines the place of skill, sensibility, and the inherent “connectedness” of legacy making traditions through the lens of digitally mediated production technologies as a means to explore more considered, reflective, and sustainably engaged practices.

Keywords: tacit knowledge, emergent technology, digitally mediated production

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Introduction

This paper will examine, discuss and reflect on two material pathways within a new craft paradigm, it will explore ways in which the considered application of digital means affects the methods and outcomes of traditional craft processes associated with ceramic media and glass. Material exploration and discovery in encaustic tile and cast glass manufacturing processes form the basis of this research, with the objectives of exploring the efficiencies and competencies within new, hybrid ways of material production that maintain or enhance the capabilities of the maker.

Craft production is built upon a very particular form of interaction between the materials an object is made of, the processes these materials are subjected to, and the individual orchestrating the interaction. At its core, Craft is a manual, skills based, creative process that manifests the fine-grained and highly personalised knowledge of an experienced individual. Craft production's high degree of technical knowledge and specialisation forms, over time, a tightly linked inter-relationship of material, process and individual practice. Through this interaction, craft production has come to embody both an approach and an ethos.

Though craft production is emblematic of an individual's mastery, it also contains a distinct irony: a craft object is highly localised in its fabrication, highly individualised, produced for consumption in low numbers, and strongly associated with an individual practitioner. This apparent anti mass-production, egalitarian economy, ironically tends to produce expensive, unobtainable, elitist objects directly at odds with the innate premise of their production and greatly narrowing their accessibility. It was this paradox that undermined the Arts and Crafts movement of the 1880's, "as designs turned out to be so labour intensive that only wealthy cultured voluptuary could afford them" (King, 2008) Then as now, if a craft object cannot attain a high enough market price to justify the skill, time and effort to produce it, it teeters on the edge of economic viability. For the craft practitioner, this is a pervasive and persistent problem.

As Mentioned earlier, one of the strongest signifiers of the craft marketplace is the direct link back to an individual maker and that maker's intimate connection to production. How is it possible to maintain this allure of the genuine, and a semblance of its authenticity, while at the same time addressing the conflicting issues of economic viability through either a rarefied, expensive object or the homogeneity of the mass-produced?

Fortunately for the maker, the means of production are in flux, rapidly shifting towards the emergence of very different production ecosystems. Technologies that previously required massive outlays of capital and the marshaling of armies of knowledge can now be purchased, placed upon a desktop and mastered within a remarkably short space of time (Wakkary et al., 2016). Digital methods have come to easily emulate levels of skill previously acquired over a lifetime, but where is the maker within all this mechanical commotion – how does the made retain a legitimate link to a maker in a digitally mediated process?

We have been exploring this question from the perspective of emergent technologies, in particular 3D printing. 3D printing is a highly adaptable form generation tool capable of producing remarkably complex objects in a wide range of materials, and as a result, the direct production of form is rapidly being decoupled from manual skill and manual forms of tacit knowledge. Strangely, this freedom from pragmatic constraint – a distinct freedom from the constraints of complexity – produces a somewhat unexpected aesthetic phenomenon, for when 3D printing is used to its greatest capability (complex geometry) it produces objects that begin to look unsettlingly the same, "create[ing] objects that, at best look as though they are using a very specific technology that is instantly recognisable as that technology in itself and not a means of communicating an idea through an appropriate tool". (Hoskins, 2014) Objects come to bear the hallmarks of the method and none of the maker. Digitally created works may simply become 'Artifacts of digital culture whose appeal is essentially their perceived novelty. They attract less for what they mean than for the fact that they are' (Lunenfeld, 2001)

There are many instances of top down, disconnected production - idea, passed along for refinement, which is passed along for production - none of the component parts within this chain having either the knowledge or the expectations of the other parts. (Wakkary et al., 2016) Digital technologies may be just a new link in this chain, creating another level of strata that moves the maker further away from the made; however, it may also become something entirely different, for as digital production technologies mature they transform themselves, becoming more capable, vastly cheaper and easily attainable, encouraging new ways of thinking/combining/making.

In the 1830's Minton & Co. began industrial production of encaustic ceramic tiles with intricate, crisp, richly coloured and highly varied patterns inlaid into their surfaces (see Fig. 1). Minton tiles quickly became a mainstay of Victorian interiors and a distinctly beautiful hallmark of the era (see Fig. 2).

Encaustic tiles are produced through an efficient but highly skilled and labour intensive multi-step process. Initially, a repeating tile pattern is produced on paper. This pattern is carefully reproduced in strips of metal, that are bent and soldered to form closed cells. This metal form is then placed into a rectangular metal frame

Figure 1: Minton Encaustic Tile



3D printing and Encaustic Tile



Figure 2: Encaustic tile in situ



Figure 3: Encaustic Tile, elements of industrial production process (metal frame, finished tile)



then multiple coloured ceramic slips are poured into the corresponding cell. Once all the cells are filled the metal form is removed from the metal frame. Lightly moistened clay then fills the form covering the wet, multi-coloured layer of slip. This material is placed in a hydraulic press under high pressure forcing the moisture in the wet slip up into the comparatively dry clay layer above. Finally the dry, flat, unfired tile is removed from the press in preparation for firing. This entire production process, from filling the cells to removal from the press, is completed in minutes, but there are bottlenecks that constrain this process.

Ceramic is a universally pervasive material. It has been used in an extremely wide range of applications from tableware to aerospace and is a material well seated in the public consciousness. We have all lived with some form of ceramic object throughout our lives and have an almost unconscious understanding of the material in its finished form. Despite this level of ubiquity, there is a distinct friction between the ease which ceramic materials infiltrates a broad-spectrum of our lives and how difficult the material is to manipulate. Ceramic, unlike many materials, must transition through multiple states and be shepherded through multiple processes to achieve any measure of satisfactory final result and as a result, encaustic tile production has witnessed technological innovation in the past.

As the production of Portland cement gained industrial levels of manufacture in the mid 19th century much encaustic tile production transitioned to this cheap, durable, readily available material that did not require the exacting drying and firing cycles of ceramic materials. This first technological innovation greatly sped up the production of tiles and produced minimal aesthetic change as the entire tile manufacturing process - except for the removal of drying and firing - remained virtually the same (see Fig.3). This did however leave a preexisting bottleneck in place, for the processes needed to create the tooling for the tile did not change, and the transition from a paper pattern to soldered cells continued to require great skill and considerable care.

The metal cells for encaustic tiles have to be extremely accurately formed, placed and soldered, as the resulting tiles must repeat seamlessly regardless of orientation (see Fig.4). The patterns are also internally complex, with many intersecting lines and parallel sections that must retain consistency. And finally, there is a practical limitation to how complex a pattern can be, given the capabilities of hand formed metal cells.

FDM printing (fused deposition modeling) in plastic has the capability to address (and likely exceed) many of the above constraints; furthermore, with the cost of printers and their associated consumables dropping, a 3D printed encaustic tile frame is able to be produced at orders of magnitude less cost, in both materials and time, than a traditional item (see Fig.5+6).

Initial investigation looked at: how closely a 3D printer can replicate the required geometry of a traditional encaustic tile frame, will a 3D printed frame be robust enough to withstand the tile production process, and what are the new conditions presented by this process?

With a typical minimum extrusion width of 0.5mm an FDM 3D printers can print the wall of a cell to a thickness analogous to a metal cell but extruded plastic does not exhibit the same material strength as metal. At 0.5 mm an extruded cell is functional but fragile. A solution was found by thickening the cell walls as they moved away from the tile surface – the sharpest detail, necessitating the thinnest cell walls, is closest to the tiles surface.

Extruded plastic walls, despite being thickened, were found to be quite flexible, and depending on the density of the desired pattern, required reinforcement. Working within three 3D modeling software “Rhino” a support lattice was created that could be merged with the underlying cell pattern, creating a reinforced geometry that was stiff enough to hold multiple pieces in place but open enough for cell to be filled with tinted cement.

In use, the plastic cell frames proved to be durable enough to produce multiple tiles (no frame exhibited any signs of failure) and being plastic, were easy to clean and prepare for the next pressing. Importantly, there was secondary psychological benefit working with this method for if the patterns did break, the process of reproducing them was quick and simple, the saved 3D file only needed to be output again.

This new workflow moved through three principal digital technologies (Illustrator, Rhino and a 3D printer), all orchestrated by a single person, this created a very different perception of complexity. In the traditional method, high levels of skill, patience and accuracy are needed to produce a usable frame, in the digitally mediated process these requirements are shifted, and to an extent, considerably lessened. Though requiring knowledge of digital software, the number of steps to produce usable results is lessened and the inherent accuracy, repeatability and malleability of the design process is highly apparent. This points to a new type of interaction, one that exists at some intermediate point between the digital and the analogue, and somewhere between the emergent and the legacy



Figure 4: Encaustic Tile, examples of metal frame and cell filling

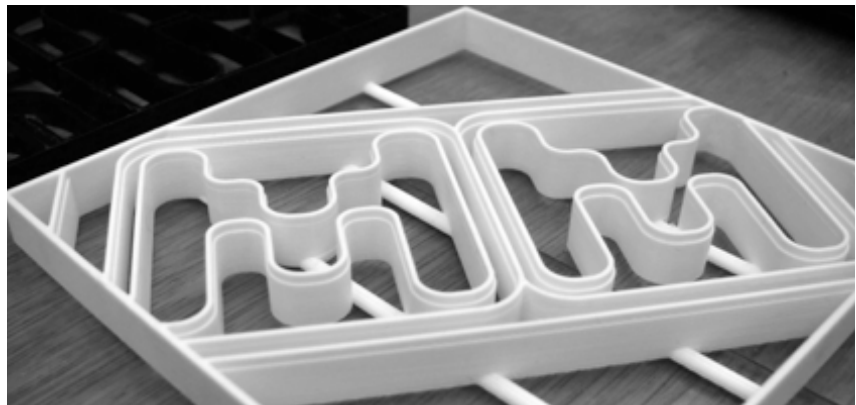


Figure 5: Encaustic Tile, Translation of traditional method through digital means



Figure 6: Encaustic Tile, example of finished tile.

allows for a recalibration of how design transitions to process and on to object. There is a distinct opportunity for the reconsideration of means and ends.

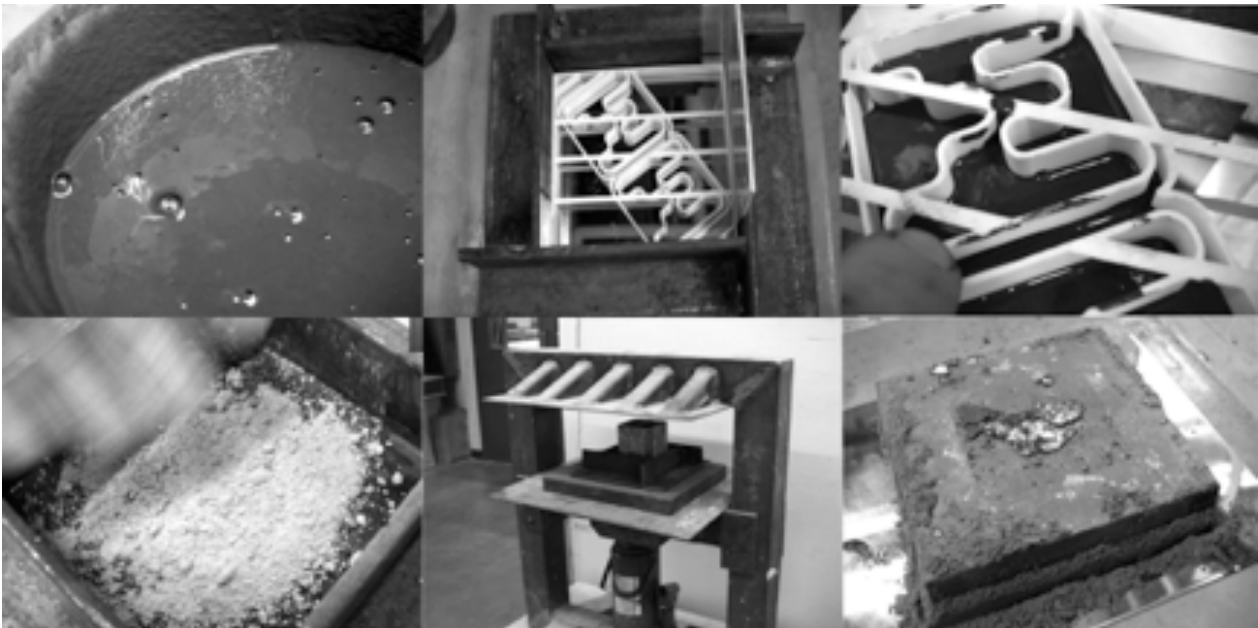


Figure 7: Encaustic Tile, example of finished tile.

3D printing and Glass

Concurrent to the encaustic tile process, we have been exploring opportunities for digital production processes benefitting contemporary glass technique. Open source communities may have enabled 3D printing in a variety of materials, however glass remains an emergent topic in additive manufacturing processes (Marchelli et al., 2011). Our areas of inquiry are 3D printing directly into glass substrate and the design and development of sacrificial 3D printing tooling for kiln-cast glass production. Our work developing printing methods in glass builds on the, previously published research of 3dp printing directly in glass initiated at the Solheim lab at the University of Washington. (OPEN 3DP, 2015) Our aim here is to carry this engineering research forward, toward creative research in art, design, and craft production, initially exploring 3D printing directly in glass and 3D printing kiln cast tooling for glass production. The glass pieces shown here are primarily a mixture of Spectrum clear powdered glass and Maltodextrin, processed for consistency and grain size. Binder recipes included mixtures of distilled water, alcohol, and glycol, tested at a range of fill and saturation levels. Technical details including ratios for the material and binder mixtures, as well as firing schedules, have been previously published in our paper for NIP31 conference in Portland, 2015.

Direct Glass Printing

3D printed models were placed on a kiln shelf and fired without support material (2.5D firing), or were packed in silica sand or alumina hydrate for support (3D firing). The firing schedule included three stages: low temperature hold (Binder burn-off), anneal temperature hold (soak), and ramp to melt temperature (fuse). The soak hold served as a pre-fuse step to ensure all organic materials had burned off, which usually happens in the range of 200-500°C (Johnston, 2005). Our CAD models were designed to explore the resolution and complexity capabilities of our recipes.



Figure 8: Left, unfired 3DP glass, Right, fired to 690°C for 10M

As the fusing reaches a temperature where the model begins to take on the characteristics commonly associated with glass (translucency, rigidity) the detail from the original model is diminished. Figure 9 illustrates the primary issues with firing - mainly shrinkage and loss of detail - the model has a Z-height of 5.75mm and is shown in its green and fired state (690°C for 10m with a ramp from anneal temp of 50°C/hr). Figure 3 shows the same model fired to 720°C for 10m with a ramp from anneal temperature of 50°C/hr.

Both fired models exhibit the rigidity of solid glass, however the higher fired model is translucent while the lower fired one is opaque. Two models were created to explore the optical qualities of 3DP glass fired to a translucent state. The resulting contrast in depth of fused material displayed an opportunity for fusing 3DP glass into multi-layered sheet. The next models examined this opportunity for an accurate control of light through the depth of printed material.

The final models created were a series of woven structures, the largest with a Z height of 8mm, Y 240mm, X 240mm (Figure 11). The open nature of these models allowed for shrinkage to occur with less tearing than the solid sheet model, and while the fired models exhibited a reduction in scale, it was a uniform reduction without significant variation from the green model. These forms exhibit the accuracy and complexity achievable through the process, and led us to consider the opportunities for printing inclusions for use in hot-worked glass, as the 3D printed forms share a similar COE to glass in an artisanal melting furnace. In general, this material research into 3DP glass has uncovered new opportunities in form, and control over optics in a zero waste additive process.



Figure 9: Loss of detail as transparency is achieved

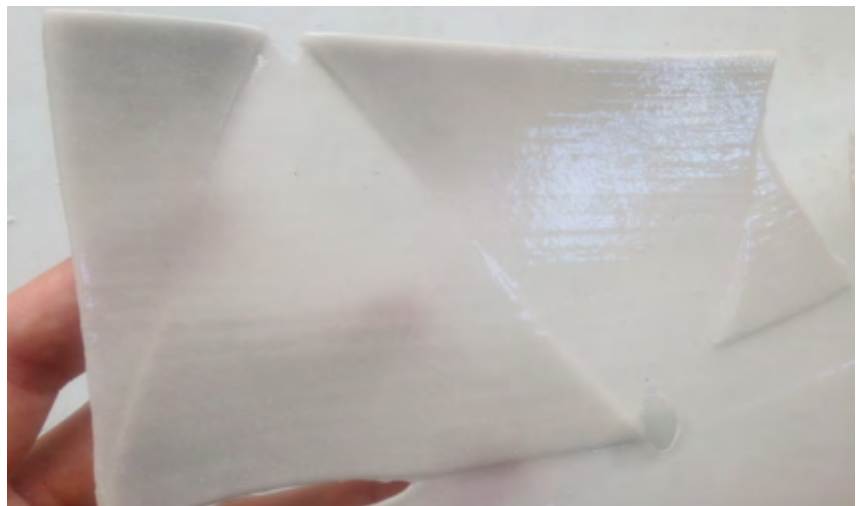


Figure 10: Larger 3DP Sheet with gradated depth



Figure 11: Unfired 3DP GLASS, open woven form

3DP Glass Casting Moulds

Concurrent with this powdered glass fusing research we have been examining the capabilities of our low cost, open source, 3D printing powder and its applicability to the glass casting process. We have successfully adapted the open source recipes enabling output of 3D forms at a 20X reduction in cost – in comparison to commercial 3D printable consumables. This development has previously led to multiple streams of inquiry based on bronze metal casting, ceramic slip casting and most recently, glass casting.

The refractory capabilities of our powder formulation are based on its primary constituent, Hydroperm, a commercially available plaster used in the fabrication of hand made refractory moulds for metal casting. 3d printed moulds produced with this material have the capacity to withstand the intense thermal shock of metal casting (typically a moulds transitions from ambient temperature to 1000°C and back to ambient in less than 1 hour) however, glass casting has a casting cycle of multiple 10's of hours with the need to hold high temperatures for multiple hours while the glass is melting and annealing. Initially our explorations were conducted to determine if a 3D printed mould could withstand a glass casting cycle and what level of surface details would survive the process.

The moulds are printed, de-powdered, set with water, dried, and bound together with wire in preparation for casting. The typical glass casting procedure entails using ceramic flowerpots to act as crucible for the glass directing the molten glass into the aperture of the mould below. Fired over a 25 hour casting cycle, The moulds were held for 4 hours at a peak temperature of 830°C while the glass was molten, allowing the glass to flow completely into



Figure 12: 3DP Fired glass, open woven form

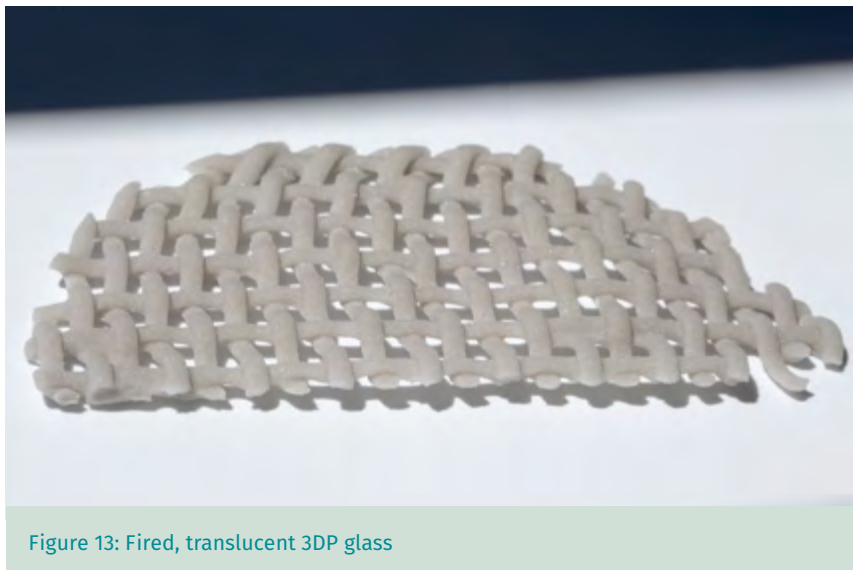


Figure 13: Fired, translucent 3DP glass

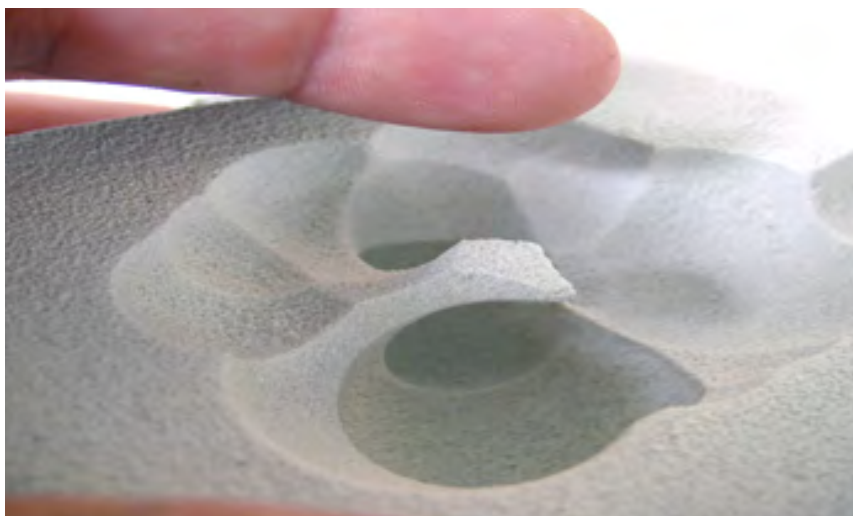


Figure 14: Detail of mould surface (form courtesy of Gayle Matthias, Senior Lecturer, Contemporary Crafts and Tavs Jorgensen, Research Fellow in 3D Digital Production, both of the Automatic Research Group at the University of Falmouth)

the mould. At the completion of the casting cycle the glass had melted successfully, being deposited into the mould below by the flowerpot/crucibles above. The moulds display specific characteristics: as a result of the re-calcination of the plaster during firing, is extremely easy to remove from the cast glass object and surface detail from the mould readily transferred to the glass. The cast glass takes on the slightly “dimpled” surface of the mould, the result of the mould water setting process (when the 3D printed mould is first removed from the printer it is de-powdered then the relatively delicate surface is misted with water to create a much more durable shell. This misting process appears to slightly dissolve the sugar within the printable powder leaving the texture behind).

This initial proof of concept success of this material in the glass casting process has created multiple possible avenues for further development. We are exploring issues within geometric complexity, the digital versatility afforded by 3D modeling software, and how the Maker remains is apparent in this digitally mediated process (Figure 16). We are investigating parallel formulations of printable materials to refine the de-powdering process and refine surface characteristics.

Craft technology/maker discussion

The word ‘maker’ has entered the mainstream lexicon relative to our ease of access to emergent personal production platforms (Troxler 2013). How do we speak about making in 2016? If we parrot the popular notion that now ‘everyone is a maker’, the catchphrase of Chris Anderson’s 3rd industrial revolution, we may naively mistake a willingness to try, with gaining in-depth knowledge. The phenomena of the maker movement has built community, spread knowledge, and in general has helped to



Figure 15: Glass casting setup, pre-firing (form courtesy of Gayle Matthias, Senior Lecturer, Contemporary Crafts and Tavs Jorgensen, Research Fellow in 3D Digital Production, both of the Automatic Research Group at the University of Falmouth)



Figure 16: Detail of full glass cast (form courtesy of Gayle Matthias, Senior Lecturer, Contemporary Crafts and Tavs Jorgensen, Research Fellow in 3D Digital Production, both of the Automatic Research Group at the University of Falmouth)



Figure 17: Surface detail, form and seam flashing, post-casting (form courtesy of Gayle Matthias, Senior Lecturer, Contemporary Crafts and Tavs Jorgensen, Research Fellow in 3D Digital Production, both of the Automatic Research Group at the University of Falmouth)

Figure 18: Glass casting setup, post-firing (form courtesy of Gayle Matthias, Senior Lecturer, Contemporary Crafts and Tavs Jorgensen, Research Fellow in 3D Digital Production, both of the Automatic Research Group at the University of Falmouth)



challenge people to consider how things are made, but when seen through the eyes of contemporary craft, the maker movement doesn't actually seem to be about making things.

As McKenzie Wark put it "It's like a homey version of what Nicholas Bourriaud called 'postproduction art.' The stuff has already been made. You put it together. Like Ikea furniture, but, you know, fun. It probably isn't fun working in the factories that makes the circuit boards or the Lego bricks or the knitting machines." (2013). Wark's comment points to a re-framing of the maker movement as a movement of assemblage, more concerned with a broad education of modes of fabrication, and less concerned with experiencing the transmutation of material in a craft sense.

As the word maker has entered the mainstream, craft has emerged as a mainstream fad, using the word to its full anachronistic potential – craft-washing places the word back in its pre-industrial production light, as a verb, an action out of time and place. In this context craft is framed as inefficient, ecologically unsound, nostalgic, carrying an outdated and uninformed aesthetic, with a general refusal to engage with pressing present day social issues (Malins et al. 2004)

To speak about craft in this sense disregards crafts foundational philosophies, studio movement, redefinition as an approach, thinking mechanism, and a noun; dialogues which all make up contemporary craft relevant in this time and place (Elder et al., 2008, Adamson 2007). This informed practice finds opportunities for contemporary craftspeople to combine their tacit knowledge with the distributed knowledge found in open source appropriate technologies (Pierce, 2012), and in this juncture both communities address, to some extent, the criticisms they face.

Conclusion

Emergent technologies invite us to explore and understand multiple, digital opportunities as the barriers are lowered and the technologies become personal and more ubiquitous. (Troxler, P. 2013) Highly capable, low cost means are aggregating around traditional ways of making creating new spaces to make and new pathways to making. The very word "Making", the offspring of this new paradigm, implies a new form of interconnected, egalitarian, cross-disciplinary production. The in-built connectedness amongst technologies - a sketch becomes a scan, becomes a digital render, becomes an output to multiple devices and the community converging around this technology is rapidly infusing the digital within the legacy, hybridising the knowledge bases each is built upon. As the traditional barriers between things become more permeable, as the pathways to physical objects are reimagined, the flux between tacit knowledge, what an object is, how it is made, of what and by whom becomes much more of a personal, participatory, interlinked investigation.

Craft is concerned with material-specific knowledge – the embodied knowledge of tools specific to process – , a conscious methodology; these elements of knowledge act as the infrastructure which underpins a craft making practice. The research presented in this paper reflects our belief that the distinct approach of craft, when carried forward into digital manufacturing, enables designers to address fundamental craft inefficiencies while maintaining the ethos of craft based practice. The digital furthers modes of production, which are aligned with craft making as a political action, contributing to the dissolution of the craft production/luxury goods irony. In this vein, our research activities continue to be equally concerned with the development of knowledge creation through material and process-centric knowledge transfer.

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conference papers student strands

INNOVATION AND SUSTAINABILITY

CHAired BY PROFESSOR VENU DHUPA

Cycling, place & identity – ongoing research / a work in progress *S. Beales*

Future spaces: food design applied to inclusion and local identity *R. de Castro, L.H. Guimarães and A.C.G de Lacerda*

Social cohesion based on sustainable and creative production guide by design and share management *R. de Castro, A.C.G de Lacerda and L.H. Guimarães*

KNITWEAR DESIGN NEW VISIONS: SMART-K PROJECT. How the traditional craft methodologies are evolving into new scenarios thanks to technological innovation *M. Motta, F. Gallarati, G.M Conti and A. Dell'Acqua*

Smartphone enabled design: utilising unique markers for re-imagining Ming vases *P.D. Found and M.H Lin*

Future factory. New design skills in the era of post-craft. *V. Malakuczi and L. Di Lucchio*

cycling, place & identity – ongoing research / a work in progress

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Abstract

'In this Place addresses how the importance of place impacts the way in which we generate ideas, create and design. It looks at how we transmit and circulate ideas, ideologies and knowledge between geographical locations, historical moments, objects, images, actions and cultural contexts'.

As cycling journeys have decreased (37% of road journeys in 1949, less than 1% in 2012 in the UK) (Pg 3, Reid, 2015) and subsequently 'car culture' has increased there is a growing public negativity towards cycling, often reinforced by media – both mainstream and social.

In some Western countries, such as the UK and USA, cyclists may be regarded as outsiders or strangers. Yet in other countries, such as Denmark & Holland, cycling is seen as the norm and cyclists are integrated into the transport ecosystem, just as other roads users are. This paper will consider how place and cycling connect and whether innovation (particularly in wearable technology) can be utilised to enable cyclists to occupy space and place more comfortably and safely. This paper is presented as part of the author's continuing research into cycling, identity, fashion and innovation. The objective of this paper (as part of my MA by Registered Project) is to contribute towards advancing cycle safety through an analysis of road user's attitudes to cycle safety equipment, particularly clothing, and the proposed development of a system which utilises wearable technology to deliver improved visibility, whilst also offering functionality and fashionability.

cycling, place & identity – ongoing research / a work in progress

Background

There is overwhelming evidence that the majority of cycling fatalities and accidents involving automobiles are caused by the driver failing to see the cyclist, or failing to give enough space to the cyclist (Transport Research Laboratory, 2010). There is also significant evidence that improved visibility of cycles and cyclists reduces the risk of injury or death (Thornley et al, 2008). Yet many cyclists choose not to use cycle safety equipment to improve their visibility to other road users or to protect themselves in case of an accident (Hagel, 2007).

In a world in which personal safety, and perceptions of personal risk, have become increasingly important to us (MacMichael, 2010), it is paradoxical that cyclists don't always do what is good for them. This may be related to 'fashionability' or perceptions of personal style. Consequently there may be a way in which fashion – through design, wearable technology and marketing – could contribute towards increased safety on the roads, and to ultimately saving lives.

When considering fashionability, there is some evidence that shows that many cyclists refuse to wear safety equipment, most notably helmets but also clothing, as they feel it makes them look stupid, unstylish or affords them unwarranted attention. Many also associate safety equipment with childhood and lack of free choice (Christmas et al, 2010). There are also a certain number of cyclists who refuse to wear safety equipment when they are forced to by legislation (as evidenced by the significant decreases in cycling in areas that have introduced mandatory helmet legislation) (Bluejay, 2013).

In addition there is a strong body of cyclists who believe that by wearing safety equipment they are contributing towards the idea that cycling is unsafe. They question why cyclists should have to dress up and utilise specialist equipment when car drivers don't have to (although, of course motorcyclists do). They point to studies that show that motorists often ignore safety equipment and that its use can make matters more dangerous (Walker, 2006) and they point to countries which have significantly higher cycle usage (The Netherlands and Denmark for example) where most cycle journeys do not involve the use of specialist safety accessories – largely due to the exceptional bicycle infrastructure in these countries. (Bluejay, 2013)

There is some evidence to show that the decision whether to wear safety equipment is situational: there is a significantly higher usage of helmets when it comes to cycling as sporting activity. There is also evidence to show greater usage on major rather than minor roads (Christmas et al, 2010).

Interestingly however, although there is much evidence to show that cyclists don't wear safety equipment, there is very little research into why this is and the importance of personal style and 'fashionability' in safety decision making. This will form the basis of my primary research.

There is also very little written about the desirability or possibility of cyclists being able to control their safety equipment through the use of technology, specifically wearable technology. Could it be, for example, that if visibility clothing were to be controllable in terms of usage, colour, signalling, frequency etc. then it might become more useful but also more 'fashionable'?

With regard to motorists, the majority of research shows that the drivers are, or are reported to be, at fault in cycle/automotive accidents. This, plus perceptions of bad road behaviour and illegality by cyclists, may contribute towards a growing antagonism between motorists and cyclists. This is exemplified by this quote on cyclists from Jeremy Clarkson.

"Trespassers in the motorcars domain, they do not pay road tax and therefore have no right to be on the road, some of them even believe they are going fast enough to not be an obstruction. Run them down to prove them wrong." (Guardian.com, 2015)

The direction of my research suggests that it is not just desirable but incumbent on the cyclist to become more visible and that it is the responsibility of the cyclist to be seen as well as for the driver to see. As most evidence shows that high visibility, retroreflective material and lighting is the most effective in increasing visibility then this may create an imperative for cyclists to become more visible. And as they do so, then naturally a percentage will want to be more fashionable.

There is also significant research which shows that drivers often cite poor visibility of cyclists and lack of correct safety equipment as reasons for their negativity towards cyclists (Walker, 2013). Therefore an uptake in the usage of cycling safety equipment could contribute towards improved relationships between cyclists and drivers.

Cyclists and identity

In attempting to define the 'cyclist' it immediately becomes apparent that cycling is not just a physical practice but a tremendously differentiated variety of characteristics, defined by physical, cultural and social criteria such as age, gender, demographic, ethnicity and journey purpose as well as geographical factors – country, metropolitan, urban, semi-rural, rural etc. and cognitive factors such as attitude, aptitude, experience and risk profile. In addition to these factors there are situational and environmental factors relating to road and cycling infrastructure – protected, semi-protected, open, on road, off-road – that define cycling but that may also enable one person to be defined as more than one type of cyclist. For example, the same cyclist might be a commuting urban professional but display entirely different characteristics and approaches to cycling when participating as a road racing cyclist or 'roadie'. Their attitude to cycling and safety will also be defined by the attitudes and experience of Other Road Users (ORU's) and indeed by the number and type of cyclists they share the road with. Thus the aforementioned cyclist in Denmark or Holland, might approach cycling and ORU's in an utterly different way to a British cyclist, because of those countries societal and cultural attitudes to cycling. As Skinner says, 'Cycling is a modal choice and a process rather than a fixed, finished state. This process involves the continuing interplay of individuals' social location and personal transport experience with the policy context that frames their choices.' (Skinner, 2007, p. 147). Cox (Cox 2013) attempts to reduce this process to Competences i.e. skills and abilities relevant to the activity. Meanings – the range of meanings (symbolic and signficatory) understood by the practitioner and conveyed to the outside world through action. And Materials, which includes technologies, infrastructure and space. However this simple categorisation may simply serve to include a variety of wider interrelated yet not integrated factors relating to cycling.

For example, Cox considers how cycling is composed of a combination of machines, riders and spaces. Each is required to create 'cycling' but within those factors there is whole realm of variables. For example diversity of machinery, which forms part of Materials. To the untrained eye, a bike is a bike. It has wheels, a frame, brakes etc. But to those in the know, there is a huge difference between a £4,000 carbon fibre road bike and a £400 steel touring bike. Each leads to a different approach and identity for the cyclist. Yet an unfit MAMIL (Middle Age Man In Lycra) might possess the £4,000 bike and behave utterly differently to a teenager competing in regular road races, therefore 'diversity of machinery' may have limited relevance with regard to attitude and behaviour. Consequently, it is clear that the bicycle is an object is a socio-technical machine whose meaning and users are shaped through a variety of complexities.

Aldred summarises the complexity of defining cycling and place within cycling context when she talks of meanings, social context and social influence being vital to any sociological perspective on cycling. (Aldred, 2015, p. 104.) In further work by Aldred and Jungnickel, considering cycling cultures their research shows a difference between intent, identity and understanding in 4 different cities in the UK as the table below demonstrates:

Case study area	Bristol	Cambridge	Hackney	Hull
Seen as a cycling place (by interviewees)?	Yes	Yes	Yes	No
Established or emerging cycling culture?	Emerging	Established	Emerging	Established
Cycling and choice	Cycling as subcultural choice	Cycling as rational, mainstream choice	Cycling as subcultural choice	Cycling as lack of choice (rational choice without alternatives)
How is transport cycling associated with class?	Cycling as middle class	Cycling as classless (or weakly associated with affluence)	Cycling as middle class	Cycling as working class
'Classic' local bicycle referred to in interviews	Expensive touring, commuter or mountain bicycle	Shabby shopper bicycle with basket	Trendy 'fixed wheel' bicycle	Cheap mountain bicycle
Key local cyclist stereotype(s) referred to in interviews	MAMIL (Middle aged man in Lycra)	Bicycling professor, local eccentric, student	Fashionable young professional or student	Low income cycle commuter

This research contends that a cyclist in Bristol is different to a cyclist in Hull, though they are both defined by the bland singularity of the term 'cyclist'. For example, In Bristol and Hackney, respondents regard themselves as part of a subculture, whereas in Hull, cycling is a part of a way of life that requires low cost transport. However the limited sample size and the potentially subjective definitions ('subculture, rational etc.) mean that this categorisation is relatively limited. As such, it would be perfect possible for a cyclist in Hull to see cycling as subcultural and in Bristol to see as it necessary through lack of choice.

Consideration of culture and subculture continues in Cox's seminal work on 'cycle cultures' (Cox, 2014), drawing on Williams and Gelder's research. As Cox shows, riding a bike in the Netherlands is to be integrated into a normal, unconsidered, everyday practice. The bicycle is simply a tool for getting around. Whereas in the UK, cycling often represents a lifestyle choice – a deliberate act that involves contesting occupation with other road users. So in the Netherlands, cycling may simply be part of the culture – part of a way of life – whereas in the UK it may be part of a subculture - non-normative and marginal. Furthermore being part of this significant minority may allow UK cyclists to embrace a collective identity which provides solidarity, security and protection, which may not be as important in countries where cycling is part of a wider culture. Cox then considers how cyclist subcultures exhibit multiple fragmentations often only visible to insiders but can be unified through organisations and advocacy against mainstream. As part of this reasoning he considers Queer theory, in which there is much debate about whether activity should not just change social norms but undermine fundamental norms that homogenise society.

Clearly defining cyclists by type is a complicated and potentially simplistic approach and this complexity is even more relevant when considering cycling identity? Identity can be defined as 'personal' i.e. a person's sense of who they are and 'social', i.e. a sense of who they are like and who they are different from and 'cultural i.e., the place that they take within a wider cultural framework.

As to whether cyclists can be said to have an 'identity' which is defined by them being a cyclist Skinner believes that 'both in the perceptions of 'others' and the understanding of 'self', questions of identity loom large in the social practices of cycling' (Skinner, 2007, p. 83). Unfortunately, although there is some work to categorise cyclists – such as that by Davies et al (2001) that draws on a broad population survey to identify nine different social groups with different degrees of sympathy towards cycling – there is little academic primary research on how cyclists define their own identities. Skinner believes that this is a problem. As he comments:

'The apparently practical, concrete issue of cycle commuting is intractable without the apparently esoteric notion of identity.....considerable energy has gone into improving facilities for cyclists, building a cycling infrastructure and promoting the benefits of cycle use, but much of this has rested on largely untested assumptions about individuals' attitudes, needs and behaviour around transport.' (Skinner, 2007, p. 83)

Skinner contributes towards the development of an understanding of identity through his interviews with over 100 cycling commuters in Cambridge. Most interesting is his finding that most cyclists don't differentiate themselves by comparing themselves with drivers - interestingly cycle owners are more likely than non-cycle owners to be car drivers (DOT, 2012) therefore they can have both identities – but rather compare themselves with other cyclists, particularly with regard to dangerous and illegal behaviour. This concurs with other research including that by Winters, Spinney & Cobey that shows the multi-faceted nature of the cyclist. Skinner's principal conclusions are that the relationship between transport and identity should be considered to be: multi-faceted and contingent – never just about cycling or social identity; a process rather than a fixed, finished state; and informed by wider representations of transport users' attitudes and practices but founded upon a far messier reality.

Considering identity, less through empirical research but rather as an academic and cyclist well known in his field, Horton argues that cyclist's identities (in the UK) are often defined by how they are perceived. His belief is that drivers, through the act of being in a protected environment such as a vehicle, can be seen as to retreat from the 'public' world of the city, whereas 'Cycling puts the person back into this fearscape in a much less mediated way' (Horton, 2008, p. 134). As Christmas says, 'the stereotypical cyclist emerges as a character who breaks the fundamental rules of road sharing' (Christmas, 2010, p. 55). And as Horton says 'People don't look out for cyclists but they see their violations' (Horton, 2008, p. 135). Horton goes on to argue that this continual promotion of the cyclist as outsider and lawbreaker, coupled with the idea that cycling is only safe in dedicated places ties in with a wider fear in society and that the stigma, scapegoating and stereotyping of cyclists could tie in with what psychologists might describe as a projection or transference. This is reinforced by Leonard et al whose research shows that 'freedom' is perceived as a key benefit of cycling. This may be an area that merits further study, particularly when compared with the car driver who is 'trapped' in his car and restricted by laws, lights and congestion. Despite the relatively limited research into identity it does seem clear that, as Skinner says: 'For most people, their transport choices permeate their identities not in the sense of them being a 'cyclist' or a 'motorist' to the exclusion of other options, rather transport informs identity through its interaction with other aspects of people's livesanalysis should move from the focus from the circumstances and choices of an archetypal individual towards an understanding of the varied conditions in which differently placed people negotiate transport problems and choices' (Skinner, 2007, p. 91)

Cycling and place

When considering cycling and place it is important to understand what differentiates the cyclist from other users of place. Although cyclists will often be static and congregate in one place – even for a fleeting moment (at traffic lights, for example), the key to cycling is the action of moving from one place to another – travelling through places as part of that process. Being self-powered, the cyclist's experience is affected by far more factors than automotive users.

Wind, weather, gradients, environment, time of day, perceived and actual danger are far more relevant to the cyclist than the car driver. Cycling is also generally a solitary action, so that even if cycling in a group, the cyclist is taking their own path, has no passengers and considers the world in an isolated mental environment.

Because cycles are powered by humans and cyclists are relatively unprotected the senses become far more relevant when cycling as opposed to the 'cocoon' like state of automotive driving. These may mean that cyclists may become more in touch with the places that they travel through and attuned to the space around them. Cyclists are also able to exercise greater independence when navigating place and can under or overtake, mount pavements, run a red light, get off and walk or go off road if they feel the urge. This may contribute towards some of the animosity that drivers feel towards cyclists.

Place in cycling also may depend on the type of bicycle being ridden. For example an urban courier may have an utterly different perspective on place and the action of cycling to the rider of a 'Boris bike'. The numerous types of bicycle – road racing, single speed, tourer, hybrid, mountain, foldable, Dutch etc. – may lend themselves to different experiences of place. There is also a strong feeling amongst the cycling community that cyclists are often challenged in the place that they occupy. Whether by accident or design, Other Road Users can often have a negative, and even deadly, effect on the cyclist's ownership of the space that they are cycling in. At its extreme this can lead to non-cyclists taking action to try to dispel cyclists from occupying places. Most notably this has happened recently in Nottingham and Brighton with the use of drawing pins and suspended wire, designed to deter cyclists from being in a specific place. Cyclists are also unique in that they part of the process of cycling on the road is to regularly occupy the same place as Other Road Users. So that a motorist may, however fleetingly, occupy the same place as a cyclist. Nowhere is this truer than at junctions or roundabouts where the majority of accidents occur (DTI, 2012). This contested space has led to a number of movements and action groups in which cyclists have attempted to reappropriate place for themselves. The most notable of these being the Critical Mass movement and the Naked Bike Rides. It's also important to remember that the average cyclist is doing very little damage to the place that they occupy – environmentally – and to other users of that place in terms of potential damage or destruction.

Spinney contends that the concept of place is theorised in geographical enquiry as being a specific place that is for dwelling, work, sociality etc. He argues that spaces of mobility, i.e. roads and pathways that are being travelled on are generally seen as relatively meaningless or 'non places' but that instead they should be considered as having meaning an embodied and sensory engagement with place. He refers to Ingold (2000, 192) who says 'A place owes its character to the experiences it affords to those who spend time there, to the sights, sounds and indeed smells that constitute its specific ambience. And these in turn, depend on the kind of activities in which inhabitants engage.'

As such experience of place may be defined not by the place you are in but the things that you see. And this interaction is often defined by signs or non-human pointers and instructions.

Future steps

As I enter the next stage of my research - which will include qualitative, quantitative and ethnographic primary research into cyclists, ORU's and their attitudes towards visibility - it is clear that understanding of place in consideration of design and the potential development of a product that utilises wearable technology will be key. My investigations will consider whether a product that is personalisable and situationally sensitive may offer options for improved visibility. Therefore by understanding place and its place in the context of cycling and cyclists, I will endeavour to create a solution that is 'place sensitive' and consequently more personal to the individual cyclist. As Hebdige says, 'Violations of the authorised codes through which the social world is organised and experienced have considerable power to provoke and disturb.' (Hebdige, 1988, p. 223). Therefore if I am able to understand more about the cyclist as 'outsider' and how they may occupy place in a way that seems more individual and appropriate, yet offers greater visibility and safety, then this may lead to the development of a place for cyclists which is more secure and less contested.

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future spaces: food design applied to inclusion and local identity

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Abstract

In times when ancient customs and memories are lost and left at the mercy of moment, much of the identity of a culture has been lost. Thinking new scenarios highlighting the culture of a community and further promoting income generation is an important and valued way to sustainable development. A valuable tool for achieving this result is the creative production that combines new solutions for recovery and propagation of concepts and ideas. Therefore, this article discusses issues surrounding the belonging of a community through creative production, manages the recovery of cultural identity, in order to promote social inclusion through income generation and encourage local tourism.

As a case study, points to a project developed in Matozinhos, town in the metropolitan region of Belo Horizonte / MG. The project “Sabores das Geraes” brought by the Food Design recovery and rescue of cultural identity through food, processes and raw materials. The work has partnership with the UEMG, local government and tourism agencies. Workshops on creative processes were developed, importance and rescue of local memory and new dishes were developed based in the region characteristics. A very worthwhile experience and with important results that to the community, the local tourism and the university.

Keywords: food design, social inclusiveness, creative production, sustainability, identity

future spaces: food design applied to inclusion and local identity

Introduction

We live in a transition period where the design extends its field of activity beyond the issues restricted to the product development process and environmental impacts during their production. Social and environmental demands of this age require innovative solutions and answers for the construction of the future to be achieved. In this context, transdisciplinary design to configure it in a way of contributing to growth and economic and social development of communities, through practice of creativity.

Sustainability is a guiding principle that should be present in any project currently concerned with environmental problems present in the world. The designer is another actor within this great plan, intermediating the various human processes in pursuit of the path of social innovation and creativity is at the heart of this novelty. The approach about creative communities – models that are based on the fact that creativity is central to the development of society – are congress and international seminars, where professionals from various fields discuss the role of creativity as a driving factor of change effective. The design becomes a suitable tool for achieving this transformation.

It is crucial to know how to interact with heterogeneous groups and learn mediate the integration of several universes, and understand cultural contexts both in product design as well as systems and services in the forms of collaborative innovation and social participation. Autonomy is also essential for the design act systemically, for the development of identity and local culture, soft skills, to support the action of the designer in contemporary and expand their work space.

The changes in the course of the last few generations, are a current trend in which the redefinition of consumption and presents the appearance of a new term: creative economy. This branch has focused on intellectual pursuits, covering all professionals who offer services based on knowledge and opening new possibilities for issues related to intellectual capital. As quoted in criacidades site (2014), the experience economy, recognises the value of originality, the collaborative processes and the prevalence of intangibles in value creation, especially in culture. The knowledge economy, takes the emphasis on technology triad, job training and generation of intellectual property rights. And the economy of culture, proposes to enhance the authenticity and unique and inimitable cultural intangible.

The design associated with the systematic organisation of more sustainable ways to cultivate, produce, market and consume quality food can make an important contribution in this process of improving the quality of life of local communities, specifically in our state, generating sustainable development.

In the medium term, this project will seek to inductor new Creative Communities in Minas Gerais, through contact with other communities. This network enables the development of new groups and communities, leading to an increasing tourism potential and consequently the development of the region.

The subject matter of this article seeks to understand how the environment can assist in the rescue and expression of culture / memory of a city. Shows relevance of a case study to identify itself as the methodology of

Design might favour the recovery of taste memory, resulting in encouraging tourism and consequent sustainable development. The case study proposed in Matozinhos is a sampling of a study that can be done through the same methodology in other towns, where history is rich, and it has been forgotten by younger.

The research methodology consists of theoretical, case study in an environment via memory project in the town of Matozinhos and dynamic and questionnaires in the community, for different age-groups.

The designer, as a mediator for new paths, features large and effective tools that can through various projects supporting cultural form, adding leisure and knowledge of innovative and attractive ways, connecting past and future, history and present. Connect generations in one place, in one story. Norman Potter says about this action of the professional: "The responsibility of the designer is actually the place of value in a world of facts" (Potter, 1999).

Creative economy: innovation in the service of various areas

As defined in dictionaries, creativity is the "ability to create, invent, have original ideas." Through it, companies can enable more economic projects and proposals with cost cutting, optimisation of materials and personnel, resulting in increased profits. Often creativity is arising from an improvement on something already existing. And so the creative economy is suggesting improvements in processes, innovative ways that favour those involved and also the environment in a sustainable manner.

It is noticed that a few years ago, the competing stores only between similar stores and installed in nearby regions, but with globalisation and the increasing use of virtual shopping channels, e-commerce, competition gets a new proportion, in which consumers can order the desired products anywhere in the world. A good alternative to support entrepreneurs to take actions that fall within the market is to use techniques of Creative Economy to stand out and continue to survive in the market. According to LIMA (2014) "This new economic model is based on creativity and innovation, that values human capital and comes from the results of individuals or groups exercising their imagination and exploring its economic value." Adding value to the product through creative differences in the same raw materials enables the creation of different products with better quality and value.

LIMA (2014) also discusses the importance of intangible assets in the handling of the economy. According to her, "Products and services can be copied, but not its source, because the creative talent is unique. The creative economy is leveraged to cultural diversity. The more diverse and rich cultural content of a society, the greater their development possibilities". The important thing is to provide unique experiences, experiences that are memorable and striking, they are provided by products or services offered.

As talks BEZERRA *et al* (2012), the creative economy also has important value in that it highlights the human being as a direct actor of sustainable development, since it brings together activities based on talent, creativity and "individual skill embodied in intellectual property and cover the supply chains of cultural industries and their overlaps".

As John Howkins said during the IV International Conference on Design Hall "Inspiramais", held in São Paulo – Brazil, the creative economy enables building better places to respect, listen to and meet the needs of the site. In an interview with DRAFT, during a lecture he participated in São Paulo, Howkins talked about the importance of not only offer goods and services, but the need to also be a consumer in order for the cycle to be sustained.

BEZERRA *et al* (2012) also portrays very clearly that:

The creative economy must be understood according to the theme of emergency the most contemporary expressions more powerful the link between culture and economy, referring to the distinct set treated for goods and services based on texts, symbols, images and activities based on creativity, the talent and individual skill embodied in intellectual property and cover the supply chains of cultural industries and their overlaps and has important implications invading the field of knowledge from other areas especially in economics and management. (Bezerra *et al*, 2012)

So, the creative economy is based on knowledge, as the book "Creative cities: perspectives" (Landry, 2011):

[...] Is the cycle that encompasses the creation, production and distribution of products and services that use creativity, intellectual assets and knowledge as key productive resources. They are economic activities that depart combining creativity with technical and / or technologies, adding value to intellectual assets. It combines the talent to economic goals. It is at the same time, cultural assets and marketable product or service and incorporates tangible and intangible elements endowed with symbolic value.

Therefore, the creative economy comprises the cycle of creation, production and distribution of goods and services that use intellectual capital as their starting point in order to use the technologies as allies of cultural policies.

Design thinking, the "think outside the box"

A widespread, national and international tool, that suggests a strategic way of economic development and competitiveness. As states the book "Design Thinking: innovations in business" (Vianna, 2012), the Design Thinking, art associate to science and technology to find new business solutions. The if-can use various tools to solve challenging business problems and drive innovation; considering it as "[...] an approach focused on the human being you see in the multidisciplinary, collaborative and tangibilisation thoughts and processes, pathways that lead to innovative solutions for business". That is, a way of thinking outside the conventional boundaries, focusing on finding new and innovative ways, providing real and effective actions.

Vianna (2012, p. 14) claims that "human beings are by nature Design Thinkers," because:

observe the world and generate new abductively solutions is a collective human skill that only recently came to be seen as something that needs some exceptional talent and designers learn to use abductive thought to construct and deconstruct assumptions, turning them into opportunities for innovation, remaining "outside the box" (Vianna *et al*, 2012, p. 14).

E Brown (2010, p. 8), complements the argument saying that "the essence of Design Thinking is to explore different possibilities."

The Design Thinking presents a methodology seeking to support innovative solutions, with the steps: Empathise – when those involved are approaching the problem context; ideation – purpose of generating new ideas to solve problems encountered at this stage are used tools such as brainstorming, co-creation, menu ideas and positioning matrix; and prototyping - that validates whether the ideas generated, seeing the feasibility of each.

Azevedo et al (2013) concluded that the design thinking is not only associated to creative thinking to achieve success, and that the implementation of ideas is necessary, and that they “maintain their essence throughout the process” (Vianna et al, 2012, p. 158), from early conception to implementation in the market.

Design, communities and power – an economic development opportunity

We note that a wave of futile power, hasty and standardised engulfed the world in recent decades. We believe that one way to deal with this wave and save local cuisines, traditional products, animal species and endangered plant is by taste education, knowledge about the food and local food traditions.

Several people involved in the production of food, many chefs around the world have expressed their concern for what people are eating and where food comes from, its origin. In interview at “Estado de Minas” newspaper April 22, 2012, the chef Izabela Rodrigues Guimarães stated that people need to get back in touch with food and prepare your own, because this relationship is and has always been essential to life. The ideals of the international Slow Food movement also reflect this concern.

The Slow Food movement advocates the protection of traditional and sustainable quality foods, primary ingredients, conserving methods of cultivation and processing and defending biodiversity both cultivated species as the wild species.

According to the philosophy of Slow Food, “the only form of agriculture that can offer a development perspective is one based on the wisdom of local communities in harmony with the ecosystems that surround them” (Manual Slow Food, 2008). Underscoring the cultivation, production and marketing of food are inextricably linked to the economy, to politics, agriculture and the environment.

The award-winning Chef Sergi Arola Catalan, 2 stars Michelin, in an interview with FOX (released in April 2012), stressed the importance of the return to use of the products of “terroir” and believes that this is a worldwide trend. In Brazil the Chef Alex Atala, the only Brazilian to feature in the prestigious list of the 50 best restaurants in the world of English magazine “Restaurant” (since 2006), he became known for his use of fruits and Amazon products in their recipes.

US chain Whole Foods Market supermarket has a much higher than industry growth and has in his philosophy respect for the principles of sustainability, working in collaboration with local producers and has the largest chain of natural and organic products in the world (www.wholefoodsmarket.com, accessed 25/04/2012). In London was created in 2010, “The People’s Supermarket”, whose motto being of the people and for the people, working only with local products. In free markets, we can see growing demand for organic products, showing that the trend of the big Chef is gaining fans and becoming more popular.

The design associated with the systematic organisation of more sustainable ways to cultivate, produce, market and consume food quality can make an important contribution in this process of improving the quality of life of local communities, specifically in our state.

Matozinhos – site characterisation

Matozinhos is a municipality located in the metropolitan region of Belo Horizonte – Minas Gerais, Brazil. Its population measured by IBGE in 2010 was 32,973 inhabitants, located 47km from the capital.

The town, which was called Matozinhos, began around the Lord’s Chapel Bom Jesus, which was built on the site where a saint’s image was discovered among ancient ruins of a camp. Mr. Bom Jesus, then became the patron of the place, and to this day, crowds of faithful make pilgrimage to the city in September. On 23 August 1823 the village was elevated to parish under the name of “the Lord Parish of Bom Jesus de Matozinhos”, and until 1943, belonged successively to Sabara, Santa Luzia and Pedro Leopoldo. On January 1, 1944 was elevated to municipality, with the name of Matozinhos, being elevated to the District Headquarters in June 1955. The opening season of the Brazil Central Railroad in 1895 produced new progressive reflexes, such as installing the first plant of wool fabrics in Minas Gerais, in 1908, in the locality called Perivale.

Matozinhos is situated on a plateau, so the general appearance of its territory is mountainous, and the Rosebush Peak its highest point, with 1011 metres of altitude. Other attractions make up the tourist scene Matozinhos. The formation of limestone reveal the great archaeological and speleological wealth of the region, marked by the Caves “Some Great,” “Potions” and “Ballet”, and this last is the rock art panel called “Fertility Ritual”. Old buildings such as the chapel of St. Joseph, built in colonial architecture in the eighteenth century, are also relics of the city. Special mention deserves the Jaguará Farm, home of the “Bond of Jaguará,” which was an important rural establishment of the colonial period.

Region typical fruit

Typical fruit from Brazil are known for their flavour and the many combinations that allow you to prepare various dishes. In addition to these qualities, the fruit have important nutritional value and should be included frequently on the menu.

In Minas Gerais some fruits are easily found mainly in the state. Among them those who most caught attention in abundance in Matozinhos region are Jabuticaba, avocado and “Cravon lemon”.

The jabuticabeira (*Myrciaria trunciflora*) is a tree native to the Atlantic Forest, which occurs in southern Minas Gerais to Rio Grande do Sul.

It is known for its delicious fruit. Its trunk is very branched and has smooth bark, which is renewed every year after fruiting. During the spring come your trunk numerous white flowers. This process occurs simultaneously for the replacement of sheets, completely modifying the appearance of the tree. After pollination, the flowers are gradually replaced by small green fruit, spherical, it becomes red and then black when fully mature. Thus, jabuticaba gets jabuticaba colour.

The fruits are berry kind, featuring bright and thin shell that breaks easily when it bites the fruit. The fruits are usually consumed fresh, because of its great taste. They may also be used to prepare juices, liquors, brandy, vinegar and sweet.

The avocado, scientifically known as *Persea americana*, the family of Laureáceas, is nutritious because it contains abundant amount of vegetable fats, which in this quality does not reach the liver and makes good digestive fruit. It is indicated for cases of weakness and malnutrition, and the eradication of pain and so common constipation.

The avocado has a yellow-green slurry, soft texture, positioned around a wide seed; it is precisely the edible portion of the fruit. In addition to phosphorus, it has vitamin E, glutathione and minerals, one potenteantioxidante. Its high energy content, attributed to the presence of monounsaturated fats, contributes to raising the good cholesterol, HDL.

The Cravo lemon originating in China, belongs to the family of rutaceae. The Rangpur lime plants are very vigorous and produce large amounts of fruit with many seeds per fruit.

This is a very rustic variety, which is why it is known by various regional names: pink lemon, lime devil, lemon vinegar, among others. Spread by birds is common to be found in the field and in the Brazilian interior yards, but hard to find in big cities. Like a tangerine, for having a slightly loose bark pulp, and peel and pulp in orange-red colour. It has flavour and very characteristic aroma, abundant in seeds and acid juice, for being the variety with less fructose content.

Project development – the construction of the project

Mapping

Visits were made to Matozinhos, in order to know the area, interviewing residents, identify fruits and plan seminars and project workshops. During the interviews it was noticed that there are many local food, being left out due to its large production and lack of creativity in leverage them in other ways. It was reported that the region has small plantations of eggplant, garlic, annatto, cloves, and vegetables like endive, kale, lettuce, and fruits: banana, tangerine, lemon, guava, jabuticaba, cherry, avocado, orange, mango and that much of the fruit ends up rotting feet. It was thus seen that local production is greater than can consume, thereby generating waste of food.

Execution

During visit, an awareness seminar explaining the project and the proposal to use local produce to generate income for the city was conducted. The seminar was attended by residents who were registered to participate in the workshops that were held in revenues and new applications for products of the region.

Questionnaires and interviews were conducted to understand the profile of the workshop participants learn more about the region and its customs.

They were analysed the main raw materials used by the residents in the fabrication of handicrafts. Among the products produced largely consist of cheeses and pastries, its main raw materials are found in their gardens and orchards and the products are marketed in the region.

Packaging workshops have also been proposed to support the sales of new products that would be inserted in the market.

Recipes

Offered through the workshop, it was possible in addition to rescue and record traditional recipes of the community also create a line containing five cakes using ingredients abundant in the region.

The recipes created during the workshops refer to the socio-cultural characteristics found during the initial survey, and feature special details that refer to culture and tangible and intangible heritage of the region.

During the workshops, the most popular ingredients were selected, low cost and could be used with versatility, as the “fubá” milk or curd, sugar and oil, which along with local fruits, they have created new recipes.

The newly developed line then had the cakes: Garapa das Grutas, Mocambeiro, Sumidouro, Jaguará e Jubileu de Matozinhos.

The “Garapa das Grutas” cake (Image 1) gets a rustic look, as the walls of the caves. The texture of this cake is associated with the important set of karst caves of Lagoa Santa, heritage of the region.

Image 1: Garapa das Grutas Cake. (Source: Personal Archive, 2014)



Image 2: Mocambeiro Cake. (Source: Personal Archive, 2014)



The “Mocambeiro” cake (Image 2) is a tribute to the green areas of Mocambeiro, preserving the State Park About Grande. Use avocado as the main ingredient, fruit common and popular in the region.

Image 3: Broa Sumidouro. (Source: Personal Archive, 2014)



Image 4: Jaguará Cake. (Source: Personal Archive, 2014)



Image 5: Jubileu de Matozinhos Cake. (Source: Personal Archive, 2014)



The Lake do “Sumidouro” of “Cerca Grande” is as special as the amazing flavour of this bread with chocolate. The lake appears only in some periods and not always in every year, offering a beautiful landscape. The “Broa do Sumidouro” cake (Image 3) sink so is this honour.

The base ingredient of the “Jaguará” cake (Image 4) is lemon juice, fruit abundant in the grounds of homes, farms and ranches in Matozinhos. This cake is a tribute to the architectural ensemble of Finance Jaguará, important heritage history of the region.

The basis of “Jubileu de Matozinhos” cake (Image 5) is the fubá with yogurt and adding mines cheese pieces, which gives a special flavour to the celebration of the Jubilee of Bom Jesus of Matozinhos. The coloured cheese with guava on the roof is the highlight of this cake, referring to the party colours.

Results

As a result, a catalog was printed with community recipes and new recipes of cakes online, created from the local culture. It was distributed to the community and the university group is using as a promoting tool, presenting Matozinhos food in many different places.

Considerations

The project Creative communities Generations – A Food Design approach aimed at community rescue the flavours of the past, childhood using the typical products of Minas Gerais and creating new applications.

It is noticed that there is an interest of Matozinhos residents to learn new techniques and recipes that best fit the typical food of the region as well as recall ancient customs, which are valued for their origin.

It is observed that the community has an interest in increasing their production and would like the number of tourists visiting the region grow. The city could become a gastronomic tour option. For future studies, we seek then the application of the methodology of a case study in the city in order to prove the effectiveness of the design method to obtain sustainable development through workshops that encourage local tourism.

Therefore, it was perceived as thought and design tools can support the creation and dissemination of ideas and projects to support the recovery and conservation of memory and culture of a place.

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social cohesion based on sustainable and creative production guide by design and share management

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Abstract

This paper discusses the importance of the Design as an interdisciplinary field that promotes dialogues between stakeholders in the complex world. The relevance of Design is comprehended as a “tool” to shape sustainable projects, developed by a shared management of a community. The complexity of the scenario increased by globalisation concerns problems such as: overcrowding; limitation of natural resources, pollution, and excess of consume and discard of residues. The society cannot leave all the wicked problems to be solved by city planners, so alliances have been formed among companies, public sectors and communities, to share responsibilities and work in a collaborative and inventive manner.

As a reference to this kind of thinking, there is a project that took place in a small town called Jeceaba, in Minas Gerais, Brazil, and it's still changing behaviours through positive actions. The project conceived in Jeceaba, was based on creative production, which used discard residues from a steelwork factory to make furniture to its own Environmental Secretariat. Aspects of managing the complexity were put in practice, as the stakeholders shared tasks and learned the value of the culture and local residues to generate products, social inclusiveness and strengthen the local identity.

Keywords: social cohesion, social inclusiveness, shared management, creative production, sustainability, residues

social cohesion based on sustainable and creative production guide by design and share management

1. Introduction: the complex world and the “wicked problems”

The scenario that we live today requires deep and extensive changes of society, because the general panorama is fluid (Branzi, 2006), dynamic (Bauman, 2002) and complex as a consequence of the evolution of the technology and global communication, promoting a larger exchange of ideas, capabilities and expertise. As a result of this scenario, there is no right way to solve “wicked problems” – such as: excess of consume, poverty, social exclusion, limitation of natural resources, climate change, pollution and overcrowding, the path must be redesigned during the route, demanding a bigger ability of managing the information from the designers and others actors involved. Global issues such as these ones generate local problems, and the sum of these local problems generates global issues. It appears like we cannot escape from this endless cycle, but fortunately there are ways to solve these issues through decision-making, but there is no final solution, since solutions are not totally good or bad, but the best thing to do at a moment in time.

The concept of “wicked problems” has attracted increasing focus and the practice of bottom-up initiatives is taking place in order to change the culture of urban governance. The definition of the term is not consensual yet, but the literal definition is perverse problems, which leads us to understand that we are living in a complex and mutant reality. The expression “Wicked problems” concerns instable problems that have cloudy solutions and that are socially, economic and environmentally complex to be solved by a unique entity, as we have defined at CEDTec¹. In addition to that, it is about questions that should not be understood or interpreted in a linear way of thinking, because these perverse problems cannot be reducible to simple cause and effect explanation, they cannot be predictable. It should be analysed in a systemic way of thinking because of its complexity. The systemic way of thinking connects the parts of a problem and allows us to evaluate the whole and the interaction of the parts promoting the emergence of new ideas, which would be impracticable to happen with a linear way of thinking, according to Ric Young² in an internal seminar at CEDTec.

The management and resolution of these problems cannot be understood as a responsibility of city planners only, Design Networks must be created between individuals, companies, non-lucrative organisations, local and global institutions, in order to use creativity and entrepreneurship to obtain shared values (DESI, Background, 2009). This network must be interpreted as Transdisciplinary, which means a collective understanding of an issue, including all the disciplines, world views and methods of the parts involved. The individuals, the communities and the society must be seen as agents/actors of large-scale change.

The Design Networks must be understood as a shared management or an integrated management of these problems, based in strategies to coordinate the development of public politics in a transversal way, promoting solutions to these difficult questions (DESI, Background, 2009)., The information technology and the communication have made the involvement and the participation of diverse social actors in the elaboration, execution and monitoring the public politics an easier task. When interacting with stakeholders the designer uses the gained knowledge over the years to exchange ideas with stakeholders and formulate potential solutions to reach sustainability in an effective manner, according to Dijon Moraes (2010).

2. Designer: the manager of the information of the complex world

The etymology of the word “Design” comes from the Latin term “designare”, that means in English a plan or a draw/sketch. Design continues to expand in its meanings and connections revealing unexpected practices and understanding before the mutations of the contemporaneous world. The responsibility of Design in this panorama, understood with the goal of concretising an idea with an intention, a plan, a project – of an object, a process or a service for example – is to search a productive method capable to associate development with the prosperity of the individuals and the environment at the same time., as we have defined at CEDTec. To do that, the designer must think the whole life cycle of a product in a systemic and sustainable way, choosing processes that are more efficient (avoiding pollution and residues) and that includes facilitation to disassembly the parts, to recycle and reuse of

¹ CEDTec: Research Center of Study in Design and Technology created in 2010 at Minas Gerais State University – UEMG. The main line of research is Inclusive Design.

² Eric (Ric) Young: Founder and President of E-Y-E | The Social Projects Studio. Architect of numerous social change initiatives addressing a broad spectrum of societal challenges. Creator, in 2000, of the Social Innovation Initiative with DuPont Canada which gave rise to one of the world’s first social innovation think tanks, in partnership with McGill University.

the components, substitution of non-renewable materials to renewable ones, minimisation of resources and other strategies, in accordance with Aguinardo dos Santos (2009).

The Design has potential to influence the entire consumption and production chain to make it “sufficient”, which means, to make the individuals reassess their consumption habits aiming to approach the consume to the real needs of the costumer. To achieve that “sufficient” stage the designer must rethink the making process of the product and give significance to it – establishing bonds by reaffirming the local identity through the concept of the territory, as a way of differentiation/valuation of the goods. In a world that is getting more and more globalised the local value tends to be dissolved, that is why the designer must learn about local handcraft and cultural roots creating an identity to the products avoiding the programmed obsolescence. This way it becomes clear the challenges and opportunities of design in the search for sustainable ways of living, like explains Vezzoli and Manzini (2008).

Aiming to reach a “sufficient” way of consumption, in other words, to express the real needs of the costumer, the designer has to analyse and understand the life cycle of the product with the intention of reintegrating it in the chain after its disposal. It should start a new life cycle - creating a new product or reusing it to the same or similar function. This way the designer can minimise the impact of the new products in the environment. The life cycle is like Chehebe (1997) explains, a technique to evaluate the potential aspects associated to a product that starts since the pre-production , passing through production, distribution, getting to the phase of use and finally being discarded.

Manzini and Vezzoli (2005) understand the pre-production as the transport and transformation of the raw product into materials. The production is seen as the transformation of the materials into products. In the distribution phase the product is packed, transported and stocked. The use is the process performed by the consumers, that use the objects until the stage of elimination or discard, in which the product has a series of options of destiny, such as, reuse or recycling, making it possible a start of a new life cycle. In this case study, the product that will be considered and explored are wooden pallets from the point of the elimination phase, showing new possibilities of use to this incredible material that it is not often valued.

When the life cycle is analysed based on the 5R's – reduce, rethink, refuse, reuse and recycle- designers can improve the environmental conditions and life quality of society. That way the designers will be doing their part in the name of a sustainable planet, in what regards the trilogy - production, environment and consume – not only in theory but especially in practice.

3. Methodology: case study

The bibliographic review relays in the thematic of Design to Sustainability, Cross disciplinary Design, Shared Management, Life Cycle and Resignification of products and marginalised materials, searching authors that are often mentioned in academic studies. The methodology used was explanatory and detailed in a study case format.

In the community of Jeceaba ,shared management of problems - such as discard of residue- are discussed in a creative way aiming to change behaviours and minimise the impacts on the environment , making it a question of life quality and not only an ethical matter. The analysis of this case study leads us to the understanding of the importance of the Design to sustainability that generates projects economically efficient, socially equitable and environmentally correct.

With an emphasis in sustainability, creative process, innovation, cultural identity and collaborative work – local or global – the designer can inspire positive actions, share knowledge and experiences with different individuals from different areas. In this case study, the figure of the designer is not present, but new projects and plans are being elaborated with the intention of strengthen the territory, the community and the handcraft through the Design Methodology.

4. Estudo de caso 1: Jeceaba and its limitations

According to Haddad (2015) mining represents about 5% of the Brazilian GDP and in this scenario of the national economy, one of the contributions of the globalised corporative mining to the development of the country is to be the articulator link of one of the main sectors of our economy, such as, steel mill, that has the capacity of strengthen and expand the income generation, the job creation, the tributes and exportable surpluses of the nation. Still according to the author, in almost all cities that are less developed in the country and that have a big enterprise of mining or steelwork implanted, the socioeconomic benefits generated are expressive: a modernisation of the infrastructure of the city takes place (economic and social), the average salary goes up five times, the tributary collection of the city tends to get 10 times higher and the job market becomes more diverse and dynamic.

The mining and the steel mill must not be seen with “bad eyes”, but a compromise from the enterprise is necessary to formulate effective actions and a strategic plan concerning the benefits to the community and the environment. Alliances must be formed, like mentioned before, so problems and solutions generated by the big enterprises can be managed in the best possible way.

Based in this principles a proposal was developed in the city of Jeceaba (MG), located near to Congonhas and 120 km away from Belo Horizonte, with a population of 5.396 habitants, in 2014. The community needs socioeconomic alternatives that promotes growth in the city, that currently presents big enterprises of mining and steel mill in the region (IBGE, 2010), the steelwork Vallourec & Sumitomo Tubos do Brasil (VSB), that was implanted in 2007 and the mining Ferrous that is building a tailings dam in the district of Caetano Lopes, planned to be ready in December 2016.

Tied up with the development, the installation of VSB brought also negative impacts to the environment due the high production of residues, and CO2 emissions. Besides that, society also suffered with exacerbated growth of the population, high flow of vehicles (especially trucks on the roads), considerable amount of expropriations that were done to build the industrial patio and the increasing of the rural exodus depopulating and impoverishing the communities distant to the urban centre.

In the management of the work routine of the company, there is some residue, compatible to reutilisation, like wooden pallets, previously used as support to transport big pieces. These residues, without apparently use, are often discarded by VSB that transports it, at no charge, to the properties of the citizens that are determined to use it somehow, being usually burned to hit up the water.

The main objective of this case study was the reuse of the wooden pallets to create furniture and ornaments by the community, tailor made to the Secretariat of Environment, known as “Casa do Agricultor” in 2013. The solution came from its own community to solve the daily problems (demands of social character), understanding their limitations, they created new ways of living that are more collective, collaborative and environmentally correct. This leads us to the perspective related by Meroni (2007): “ordinary” people (apparently) can have incredible ideas and actions if they were given the chance.

The reuse of the pallets – storage and used with neglect – to make furniture such as desks, shelves, drawers, cabinets, kitchen tables, panels, benches and others products, should be seen as a reuse of “Rediscovery Wood”, a term used to classify wood originated of fallen trees, demolition and urban waste. The main objective with this reutilisation is to rediscover, transform and to give a “new life” – new meaning- to the discarded material.

Picture 1: “Casa do Agricultor”.
(Source: Personal Archive, 2013)



Picture 2: Storage of the residue.
(Source: Personal Archive, 2013)



Picture 3: Woodworking.
(Source: Personal Archive, 2013)



Picture 4: Furniture made with the residue.
(Source: Personal Archive, 2013)



The result of the workshops can be seen inside of the “Casa do Agricultor” that was completely furnished with a line of furniture and ornaments, that represents to the community a new understanding of the value of the residues and a chance to turn Jeceaba into a space for creative production that gathers all the aspects of sustainability – social, economic, environmental and cultural. In addition to that the community learned the value of the local culture and found ways to strengthen the identity of the individuals and the territory. Members of staff of the Secretary were responsible to specify the needs concerning the type of furniture that should be made, and the results are simple and functional products.

In this way it is understandable that with reuse of the wooden pallets discarded by VSB, the project promoted a change of behaviours and an internalisation of attitudes of the citizens. Also as a result of this Project the city received a prize called “Pedra-Ágata de Sustentabilidade”, given by ANAMUP (Associação Nacional dos Municípios Produtores), for this Project called “Arquitetura sustentável: minimizando os impactos causados pela siderurgia e mineração”, according to the magazine “Revista Perfil” (2013).

Besides that result, other projects started to be elaborated to continue the reuse of these residues through a Masters Project and a Extension Project of a centre of research called CEDTec - Centro de Estudos em Design e Tecnologia – of “Escola de Design/UEMG”. These projects will be occurring in partnership with the Municipality of Jeceaba through the assistance centre (CRAS) of the city and the steelwork VSB, creating a Design Network between these stakeholders.

The CRAS of Jeceaba already works a bit with creative process and currently the centre develops a series of activities, open to all ages, that benefits about 570 people a week, with the objective to promote knowledge and exchange of experiences, making people overcome vulnerable situations. The centre of assistance encourages artistic projects that use an approach to strengthen identity and territory, through educational lectures workshops and collaborative practices that promotes in the end of the process events related to arts, culture and handcraft. All this associated with the methodology of the Design that gives support to innovation solutions, leads the city to become a space of creative production. The Methodology of Design should be understood according to the following steps: Immersion – moment when all the people involved get close to the context of the problem; Ideation – search to generate new ideas to solve the identify problems and Prototype – when it is validated the generated ideas considering the viability of each one. (Brown 2010). Thus Design must be seen as a way to welfare and a reduction of impacts to environment.

5. Considerations

This article seeks to demonstrate the importance of Design to Sustainability through the city of Jeceaba, that with this first step allowed the community to value the available residue and new projects were started to change the reality and attitudes of its citizens. In this particular case, Design could be used as a tool to reach a systemic end to the residue, social inclusiveness, professional qualification, knowledge, income increase and promotion of the potential of the individuals and the city itself. The results achieved are not only in terms of products but most important is the change of community's mentality regarding to ownership of their environment and also their responsibility and possibilities of making a difference. This project offered them an opportunity to connect with each other and act as a group to solve their own problems and look forward better living conditions. Design is a way of improving citizenship and contributes to a more “self-sufficient” way of living.

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KNITWEAR DESIGN NEW VISIONS: SMART-K PROJECT. how the traditional craft methodologies are evolving into new scenarios thanks to technological innovation.

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Abstract

The following paper aims to show some of the results of the SMART - K research whose purpose was to create a software for 3D modelling to be applied within the production chain of the industrial sector of Italian knitwear.

Today, the market offers software for knitwear designers that can represent the product concept in 2D and still remain purely descriptive, without providing any kind of information useful for the end producer in terms, for example, of yarn quality or size and placement of working to be used for a given item of clothing.

While technology must improve production efficiency, in Italy, the knitwear sector in particular needs this intervention as it is characterised by a long, complex and highly fragmented production chain. SMART-K, or new System for the creation of design innovation processes and for the integration of the production chain, by Means of the Application and Research of new Tools for virtual prototyping and rendering in immersive environment in the Knitwear sector, tries to offer companies in the sector a series of new digital tools in order to improve the various design phases of clothing items. The following are some of the operational phases (those not covered by an industrial patent) of the software the objective of which, within the companies of the specific sector, is to increase the efficiency of the stylistic, creative and production skills of all operators involved thus optimising costs and production times.

Keywords: new technologies, 3D visualisation, knitwear design, innovation, crafts

KNITWEAR DESIGN NEW VISIONS: SMART-K PROJECT.

how the traditional craft methodologies are evolving into new scenarios thanks to technological innovation

Technology and knitwear: the contemporary

In the contemporary context of the Fashion System, technology is playing an increasingly important role: it improves efficiency in the production phase, provides designers with new tools during design, revolutionises traditional prototyping techniques.

The introduction of new technologies in the Italian Fashion System meets the special reality of Made in Italy, which has always been synonymous of excellent products designed by integrating craft know-how with innovation of materials proposed by small and medium-sized enterprises.

In the current socio-economic context, where precisely small and medium-sized enterprises that make up the production core of our country suffer most, even where craftsmanship and tradition have a dominant role, integration with high technology is deemed necessary. This integration, and its subsequent implementation, must be able to improve production effectiveness, reduce waste and at the same time, enhance the creative process in its deep connection to craft know-how; all this so local realities of Made in Italy districts can compete with global companies both in terms of project "value", and efficiency and innovation.

A sector that particularly requires this type of intervention is the knitwear sector which, in Italy, is a reality of excellent companies recognised all over the world but that reflects, more than others, the economic difficulties due to the long, complex and fragmented production chain. It is precisely in this case that technology can support creative and production processes increasing business performance, preserving the quality of products. Knitwear products have always been the essence of manual labour. However, in Italy, it is an integral part of the industrial System divided into spinning and knitwear companies and brands of specialised products. Technology, in Made in Italy intended as clothing, intervenes at the level of materials or finishes applied on them. The software is only available in the translation of stitches in "machine language", i.e. specific stitches and working that the needles of the machine must use to obtain a sweater or a cardigan, leaving to the eye and hand of man the subsequent phases prototyping, defect removal, quality control for the finished garment.

The software currently existing are 2D, in support of the graphic representation by the creative team, while remaining at purely descriptive and with the need for frequent additions from the point of view of the programming of machines: for the latter in fact, there is specific software that, in most cases, is developed in collaboration with the manufacturers of industrial machines (Stiger, Stoll, Shima Seiky) and cultural heritage of the various internal programmers of companies which manage to translate a design into what, is colloquially called "machine language".

The disconnect between various software, the difference in the management of the automation languages, as well as the need to shorten the supply chain in some of the burdensome steps currently planned, generated the idea of the SMART-K Project, a research project aimed at developing applied technology (software) that can improve production efficiency, reduce waste and losses and at the same time enhance the creative process in its deep connection between workers. Started in April 2014, in particular the research project aimed to integrate and analyse project skills in new technologies applied to the design of knitwear patterns and expand the skills from the operating point of view of software, and their integration, for the realisation of a unique machine file, which can be easily shared by the various players in the production chain and immediately understandable.

THE Smart – K RESEARCH

Work group. Players involved

The work group of the SMART- K project involved various stakeholders; initially, the collaboration of professionals of the knitwear sector with researchers from Politecnico di Milano, together with knitwear design experts, aimed at identifying the strengths and weaknesses of the sector. Subsequently, some professionals were involved for 3D modelling and visualisation, fast prototyping, as well as the Steiger for the realisation of a common software language for design and manufacture of industrial knitwear machines. More specifically:

- Maglificio Ghidotti and “Cose di Maglia”; the first, an industrial knitwear producer and, the second, a brand of knitwear design. The role of these two players was very important in order to have a sampling of garments suitable for the study and analysis of garment development.
- Two knitwear designers and two researchers from the Politecnico di Milano that favoured knowledge on the state of the art of the production chain in the knitwear industrial sector, in addition to acting as intermediaries between traditional production and innovation, with the role of translating prototypes into patterns to be used during programming of the industrial machine.
- Three experts in the creation of software related to the company Mw Power lab.
- Three operators of Signal, an Italian company active in many areas of electrical engineering and automation, whose core business is the development of technologies for industrial textile machinery, and particularly in the knitwear sector, with applications on flat, circular knitwear machines, for hosiery and for the realisation of seamless garments.
- Three operators of Steiger, a Swiss company worldwide leader in the production of machines for industrial knitwear that verified the Smart - K software, applying it.

Research phases

Creation of a library of stitches, the models, the software.

From an initial preparatory phase of analysis on the state of art of the production chain of the industrial knitwear sector, a second one was necessary, of field research with companies, which could describe the various phases of the production chain, identifying the weak points, and those with greater expenditure of time and/or economic resources. Smart - K was developed to compress and shorten the various production phases, especially in the preparation of samples; for textile and knitwear companies, this is a real collection of clothing, which is intended only to be presented to buyers for orders of garments. No one may ever wear the sample because, for example, the sizes are only indicative and do not comply with the law of each country. The garments indicate only the placement, or position, of processing, the purpose of which is to perceive “the touch” of the yarn, its size in terms of tensions used.

In parallel with the early phases of research, researchers from Politecnico di Milano and those of Mw Power lab integrated and analysed design skills in new technologies applicable to the design of knitwear patterns through Lectra's 2D software, specifically Kaleido Knit, in order to understand the extent to which design could be digital as opposed to manual prototyping. In fact, Smart - K starts from a base of existing data: for example, from Lectra Knit derived the library that catalogues the physical and morphological characteristics of the yarn along with the types of stitches in order to obtain a programming and virtual design tool as complete as possible.

The virtual “library” elaborated on the Lectra model was integrated with information until then absent through dismantling and reconstruction of some existing knitwear garments. At this stage, it was very important to physically

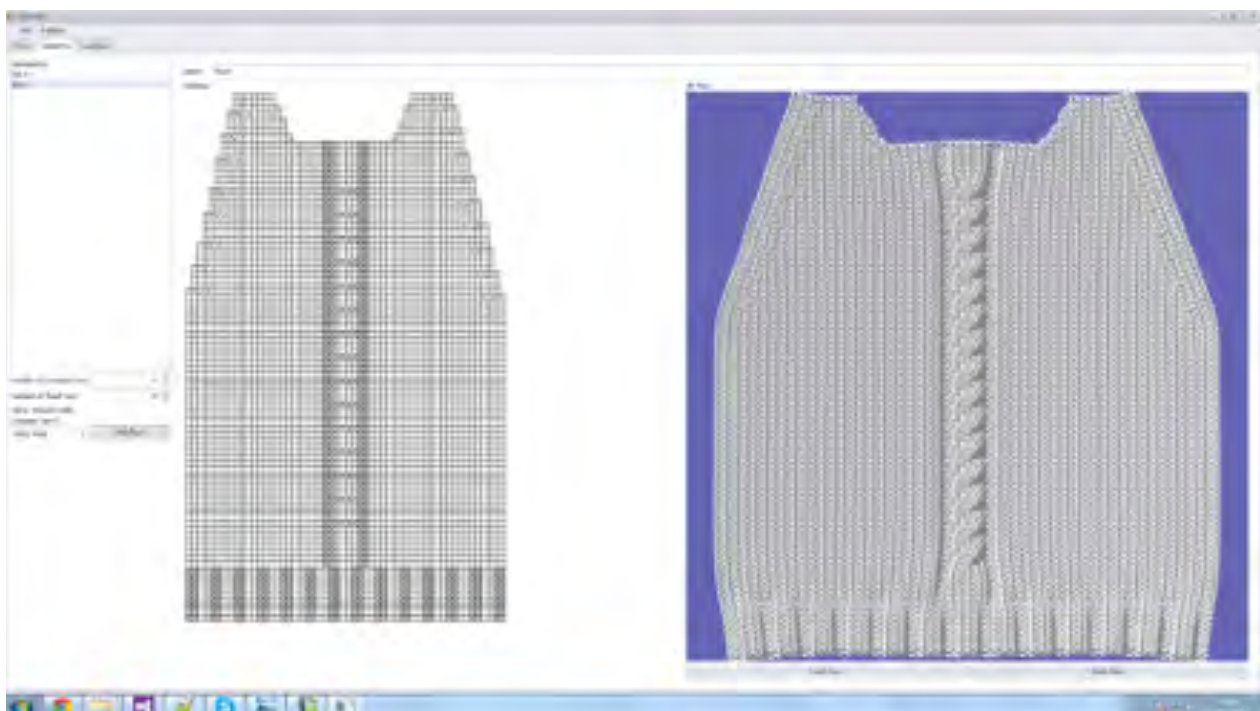


Figure 1: To the left, the pattern of the various stitches to be realised. To the right, the flat view of 3D.

experiment so that the software was not just another virtual reality tool but had a real application value. In this phase, most of the specific information was collected about the construction of the garments, yarn quality, type of stitch used by the knitwear industry for the realisation of articles of clothing. “Cose di Maglia” and Maglificio Ghidotti provided basic articles of clothing that were analysed and from which the pattern was derived to develop an abacus of collection-type for Smart-K. The intent of this part of the project was to create the basis for a collection providing for all the possible types of basic clothes able to implement the software “library” as much as possible.

25 items were chosen and for each of these there were four photographic sequences (azimuth, lookbook, hardLight, softLight) and two video sequences (hardLight, softLight). Moreover, from the same article of clothing two photographic sequences were also made with still model, for a possible 3D reconstruction of the human figure.

At the conclusion of this graphic, visual and physical reconnaissance of the articles, a shared language (CSV) scheme was elaborated to create the pattern, and the relative working to appear thereon, for the programming of the industrial machine.

At the same time, within Maglificio Ghidotti, the programming method currently in use was studied: in fact, the programmer interprets the design provided by the style office and manually completes Excel files, in which in enters, stitch by stitch, all the movements that the machine will have to make. Manufacturers of industrial knitwear machines such as Steiger provide their own software, such as Model, which translates the information of the Excel files into machine language.

From the Model software and having developed a shared language (CSV), the final tables and procedures to complete a pattern-type were elaborated so that both the company and the knitwear producer, or Knit designer, may have the necessary and shared tools for the design of the garments.

For the representation of the pattern-type, there were several design tests both for redesign of the garment and modelling; each garment was deconstructed into its original parts (sleeves, front, back, neck, pockets) and once the basic pattern was defined (number of needles/ranks, yarn titration, type of stitches), two separate cards were created for each model: the first, which provided information on the type of garment (colour, yarn titre, fineness of the machine, measured in cm of the pattern), the second, an Excel file in which each cell corresponded to a stitch, and each sheet, represented a part of the garment (neck, sleeve, front, back, pocket, etc...).

Above we see one of the tables completed through the CSV language: all information on the yarn (titration, density, fineness, composition, twist, colour, elasticity, resistance), garments (length and width as well as extension, resistance of seams,

Figure 2: Some of the screens of the Model software, in which the programmer enters stitch by stitch the commands related to the product to be realised.



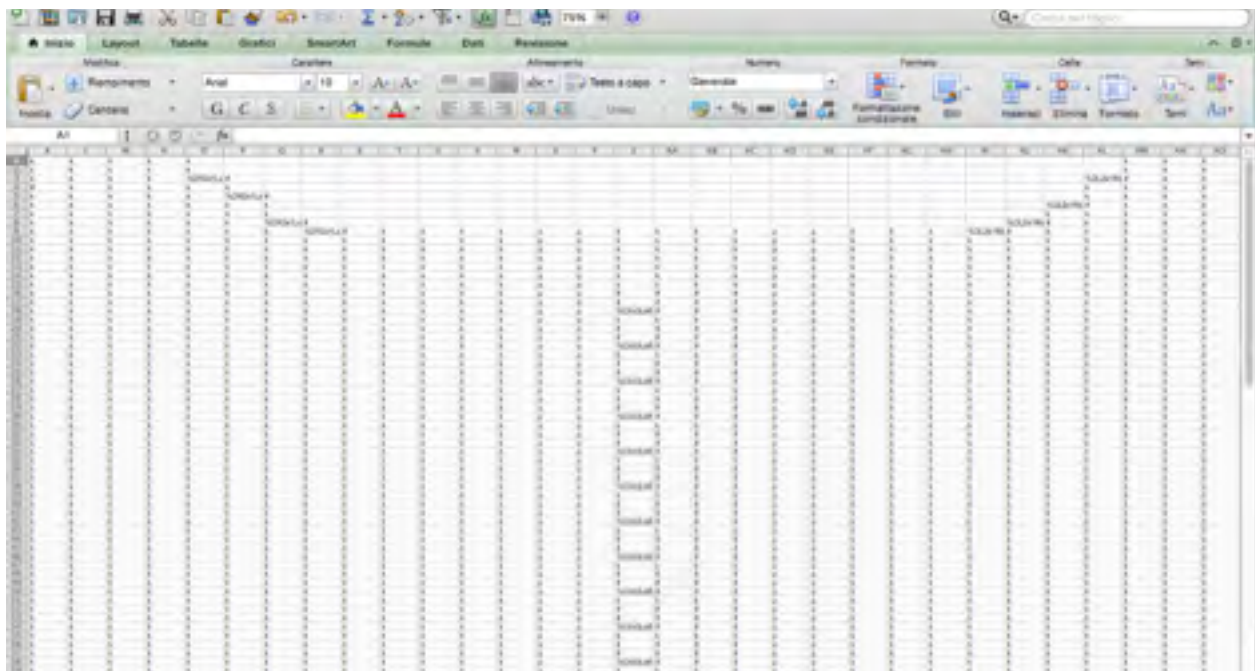


Figure 3: Screenshot of the excel file with the CSV language: in the table you can see the straight and reverse stitches (respectively encoded as P and K), and the code for the intersection of 4 knitting on the left to form a braid (%C4x3Left2)

etc.), stitches (straight, reverse, detained, cross, increases and decreases) has an own code so SMART - K will be capable of combining data and elaborating the simulation of the finished product. This type of language, combined with the Model software dedicated to the programming of Steiger industrial machines, can encode codes so that the industrial knitwear garment can be easily designed and thus realised.

Objectives achieved

Several objectives were achieved during the two years of research and there was intensive exchange of information and methods between the partners. As regards modelling, the guidelines were created for the achievement of a collection of basic items in knitwear studied in order to obtain a palette of specific patterns. In addition, through the interface model belonging to the application for 2D design of the knitwear producer Lectra Kaledo Knit, characterisation parameters of yarn were included in the Smart-K software: titration, density, fineness, composition, twist and colour. As for the area of Virtual Prototyping, during the project, design skills in new technologies applied to the design of the pattern of a knitwear garment were integrated and reinforced. Also, competencies in terms of operating software, and their integration, were enhanced for the realisation of a shared file. The shared file is a file that uses CSV language that is then inserted directly in the Smart-K display system.

The photos and videos were entered in the Smart-K software to integrate and return a 3D display as realistic as possible. In particular, the behaviour of the various materials and various models worn in motion was studied at physical level and helped ensure that the software, once the characteristics of the yarn and pattern were inserted, returned a rendering of the knit fabric as realistic as possible. This meant that through Smart-K real-time simulations could be obtained and it was possible to intervene immediately with the related corrections in order to avoid the production of test sheets, or sometimes test articles, which are now produced by knitwear producers to understand how to turn a design into wearable garment.

In industrial production, the last phase of the research involved the creation of a test item produced with the industrial machine by Maglificio Ghidotti and designed in full only virtually with the new Smart-K software. Specifically, it was possible to computer program the knit sheet, using the CVS language of the Smart-K software making it interact with the hardware part of the Steiger industrial machine and producing directly, with fewer steps on the part of the Model programmer, the sheet itself. Therefore, from the idea to the machine in a single step: the designer can intervene by giving the Smart-K software aesthetic and creative information on the desired garment. The software in real time simulation simulates the final product and passes the information directly to Model, which, in turn, transforms the 3D garment in technical language of working for the industrial machine. SMART - K is definitely one of the first integration projects of the entire production chain of the sector of the Italian knitwear industry.



Figure 4: Screenshot of the simulation of a garment worn: tests of wearability, colour, working stitch, yarn quality.

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smartphone enabled design: utilising unique markers for re- imagining ming vases

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Abstract

The conceptual relationship explored is the comparison between this place “here” (A) and this place “there” (B). Each place has specific characteristics that differentiate it from everywhere else. Perhaps most significantly of all, is geographical position; this place (here) and this (an)other place (here) are, by definition, in different locations.

Inspired by research into mobile music, which allows for the creative process to take place anywhere, at any time, this paper explores the use of smartphones as a tool for 3D sketching ideas for ceramic vessels. For “In This Place”, the intention is to employ an innovative approach to design, utilising smartphone devices to gather and process location specific data to create a series of unique, singular forms. The resulting digital models can then be 3D printed. As well as exploring a new design process, this allows for a kind of collaboration, as users in different locations contribute to designing the complete series of vessels.

Specifically, the aim is to reimagine a ‘pseudo Ming’ dynasty-era vase form, whereby the vessel has a central, vertical division. One half is redesigned by each user “here”, and becomes a unique redesign of the vessel, subtly different to all others designed in their own “here”.

Keywords: mobile devices, generic design tools, 3D printing, location

smartphone enabled design: utilising unique markers for re-imagining ming vases

1. Introduction

The rapid developments in generative and parametric design methods, and digital additive manufacturing (3D printing) allow the creation and instantiation of an almost infinite range of forms. It is no longer the case that designers are limited to designing only forms they can imagine, and draw and model with more traditional design tools. Architecture has used such methods for several years to simplify the design of complex structures, and there is growing interest in generative methods in industrial design. The individualisation of products has become easier, and is now economically viable enough for consumers, often non-designers, to be able to customise products online for printing at home, or delivery. For designers, these processes usually rely on desktop and laptop-based software such as Rhino with Grasshopper, while online services offered to consumers include Ponoko, Shapeways, and Cubify.

Nowadays, smartphones have many features that make them suitable for use as a design tool. They have high-resolution screens, numerous in-built sensors and, although they do not have the processing power of desktop or laptop computers, they have reached the point where real-time data can be processed and used to generate three-dimensional digital models. However, despite these highly portable and familiar devices becoming virtually ubiquitous, they are rarely utilised to explore innovative design processes for industrial design applications.

This research builds on work carried out in the field of generative, mobile-based music, where the smartphone becomes a generic tool for creative tasks. The research explores the feasibility of allowing the generative design process to take place anywhere, and result in the creation of 3D models based on data associated with that place. The digital files can then be 3D printed. It explores connections between “visualising” place – the difference between “here” and “there” – and using the mobile phone as the creative tool for designing objects. It can be described as a 3D design process whereby 3D forms, in this particular case vases or vessels, can be digitally generated, and then exported for manufacture.

2. Background

Before detailing the study, a brief overview of the use of mobile devices in music creation is provided, along with examples of recent 3D design apps. The choice of design task is explained in section three, with reference to cultural factors and relevant creative work, while a broad interpretation of the concept of “In This Place” frames the research.

For more than a decade, mobile phones have been used as the creative tool for music creation (Essl, Wang and Rohs, 2008), in part because they are ubiquitous, portable and powerful enough to allow the creation of music anywhere (Wang, Essl and Penttinen, 2008). Mobile phones are equipped with an increasing number of sensors, and Tanaka argues that by democratising access to sensor technology, mobile phones allow for new cultural contexts for interaction (2010) and new forms of expression (2000), properties which apply equally to design as they do to music.

Mobile design apps and tools have similarly democratised 3D design in recent years, but the general approach differs from that of mobile music researchers. For example, Mecube (2013) is a mobile app for iOS and Android that allows users to design 3D printable objects by adding or subtracting individual cubes. The finished objects can be saved as full colour 2D or 3D files, and ordered as 3D prints directly from the app. The creators claim it makes 3D design easy and fun for non-designers. Sculpteo (n.d.) offer an iOS app allowing users to create customised cups (Pixel Cup) and vases (Profile Vase) using the touchscreen of iPhones and iPads. The Profile Vase uses a photograph of the user's facial profile, then a rotation, to create a vase that can then be 3D printed. Autodesk123D (n.d.) offer a range of online and downloadable programs and apps, created to make 3D design and digital fabrication more accessible. Downloadable programs such as 123D Design and 123D Sculpt+, along with online tool Tinkercad (2013), allow open 3D modelling and file saving for 3D printing. Autodesk's recent Project Shapeshifter (2013) provides an easy way of creating complex 3D printable models in a web browser. By moving sliders, the user can modify the shape of a range of base models, and select a texture with which to wrap it.

In contrast to these examples, where the aim is mainly to make CAD accessible to new users, we build on the approach used in mobile music, where the in-built capability of mobile devices to record, process and display data are at the core of the creative process. We therefore envisage a creative process for which location itself is fundamental to form generation, and is facilitated by the portability of mobile devices.

3. Design task

The intention of the research is to test an experimental design process in a real-world scenario. A series of objects

therefore need to be designed, and instantiated. The justification for the chosen design task is given in this section.

The advent of large scale production and global export of Ming pottery is the background with which this is framed, for cultural reasons, as the research is based in Taiwan. The Ming Dynasty period (AD1368-1644) saw a rapid increase in the production and export of Chinese porcelain (Dillon, 1992), particularly that from the Jingdezhen kilns which, became highly regarded in Europe during the 17th Century (Hsu, 1988). The mass-produced designs evolved to be very similar for all export markets (Liu and Cao, 2014), and thus did not reflect the unique location from which they were exported. In this research, a generic vase form is reimagined using location-specific markers to instil a notion of “place”, making each design unique, then exported digitally before being instantiated in a single location.

The decision to use innovative design processes for vase design is not without precedent. A number of practitioners are exploring the use of location in the design and manufacturing process, but with rather different approaches. Stratigraphic Manufacturing (Unfold, 2012) offered a procedure where the same digital files were sent to different ceramic 3D printing production centres so that each printed cup was unique due to different production conditions, or errors. More recently, in Adaptive Manufacturing (van Herpt and Wassnick, 2014-2015), information measured by external sensors control a ceramic 3D printer, and in Solid Vibration (van Broekhoven and van Herpt, 2015) sound waves cause the 3D printer bed to vibrate during the manufacturing process, creating Moiré patterns in the printed vessels.

Although these ceramic designers are conducting research that is broadly similar, in the described study the design process is approached in a different way. The innovative, mobile-based process is brought to the fore, and applied to the area of ceramics allowing, in a similar vein to mobile music researchers, the creative process to take place in any location; this location then becomes integral to the generative design of the vessels.

Vases are also a suitable design subject because they meet a number of other requirements needed to fulfil the research. While they are functional, they are also decorative, meaning there is an opportunity to create unusual forms; an abstract form will not necessarily make a vase less functional. The physical parameters of a miniature vase are of a workable and executable size, in terms of the size limitations of the available 3D printing technology and the costs of manufacturing.

4. Objectives

The described pilot study had two main aims. The background identified that mobile phones have many characteristics that make them suitable for creative applications, but in industrial design these have not been explored to the same degree as they have in the field of mobile music research. To take initial steps towards building a greater body of research in this area, this study first aimed to test the overall functionality of a prototype app, and the design process for a particular task afforded by it. Secondly, it assessed whether vases designed and manufactured using the described processes offered an innovative interpretation of the theme “In This Place”, in particular the idea of “here” and “there” having unique, demonstrable characteristics.

5. Method

The study consisted of three facets; 1. Identifying a suitable design task (vessel design) from which to, 2. Develop a suitable location-driven design process facilitated by an Android application, and then 3. Instantiation and assessment of the resulting forms.

5.1. Application overview

By design, the application is very simple. After installation, the interface consists of only three elements. A static, but accurate, 3D representation of the generated vase is displayed in the centre of the screen. Below, the location of the user, and by extension their mobile device, is presented as longitude and latitude, to six decimal places. The top of the screen has a large “EXPORT” button, rendered in bright pink to make this function, the only one the users need, obvious (figure 1).

The generic vase form is generated as soon as the app runs, and is instantly deformed using GPS data derived from the current user's location. The vase model has a vertical dividing line meaning that, while one half of the vase form is redesigned through the transformation of vertices, the other half retains the generic base



vessel form. The app uses decimal degree (DD) notation where latitude is measured from -180° to 180° , and longitude is measured from -90° to 90° . This is purely numerical, and provides accurate but easy to interpret data that is mapped so that 1° latitude or longitude, represents one unit of deformation.

The deformation itself is based on Perlin noise, and thus has the appearance of being random (Perlin, 1999). By default, the noise function would use a different Perlin noise algorithm each time it is run within the app. However, the app has been constrained to always use the same algorithm. The latitudinal data drives the horizontal noise, while the longitudinal data drives the vertical noise, with higher values giving greater amounts of transformation. In this way, the differences between vase transformations are determined only by the latitude and longitude of the user's location. The transformed half thus provides a visual representation of "here", contrasting with the "there" of the other vessels in the series.

5.2. Programming and hardware

Processing for Android software was used to create the app. Processing is a free, open source Java-based programming language aimed at designers and musicians (Processing, n.d.). It allows applications to be programmed, tested, and ultimately compiled for use on mobile devices running the Android operating system. Apps created with Processing are freely available and easy to distribute.

In this research, Processing was installed on a Windows laptop computer, and used to code a series of developmental applications. These were tested, modified and refined until a usable iteration had been created. This application was compiled to run on the participants' smartphones. Processing allows apps to be compiled directly as a signed Android Application Package (APK) file, a file format similar to a .zip file, that users can install.

Mobile and smart devices develop rapidly, and are becoming increasingly suitable for 3D modelling. However, not all users have access to the latest model. With this in mind, the 3D models produced during the study were of relatively low-resolution, and the amount of data processed was limited to enable the app to function on mid-range, or older, Android devices.

5.3. Testing the application

Participants were a diverse group in terms of age, gender, and background. Aside from being known to the authors, their common characteristics were a willingness to participate in the study, and ownership of an Android device. They were however, divided into two distinct groups for the purposes of the study, with one group of 3 located in the UK, and another group of 7 scattered across the globe in various locations namely, Taiwan, Japan, Sweden, Slovakia, Ireland, and Peru.

The APK was distributed to participants via e-mail, for them to install on their own mobile device. A short document explaining the purpose of the app and instructions on how to install and use it was also provided. As 3D models of the vessels are generated automatically, and are only influenced by the location of the user, once installed, the app only needs to be opened once. Participants were asked to note down, or take a screenshot of, the GPS data displayed on the screen, and then press the EXPORT button to save the generated vase form as an .stl file. The resulting .stl files were then e-mailed back to the authors, with the GPS data used as a reference of the users' locations, and to identify the created vases.



Figure 2. 3D printed vases

5.4. Instantiation of vases

A RepRap Mendel desktop Fused Deposition Modelling (FDM) additive manufacturing machine (3D printer), using white polylactic acid (PLA) plastic filament material, was available for the instantiation of the vessels.

6. Results

All 10 participants managed to install the app, facilitate the creation of a vessel, and e-mail the required .stl files to the authors. In addition, all the files proved to be suitable for 3D printing, demonstrating that in terms of basic functionality the app, and the process it affords, work as intended. It must be stated that only two of the vessels were actually printed, as it became clear that the quality of the prints was not sufficient to demonstrate the subtle differences between them (figure 2).

Digital renderings of the created files however, show that the vessels designed by participants located in the UK (figure 3 and figure 4) were very similar to one another, as would be expected as each "here" of the users is, globally, close to the others. That said, subtle variations can clearly be seen, making each one in the series unique.

Figure 3: Vases (UK group – side view (digital rendering))

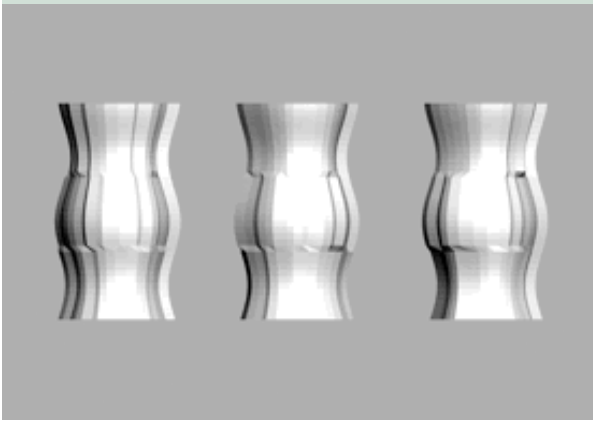


Figure 4: Vases (UK group – bottom view (digital rendering))

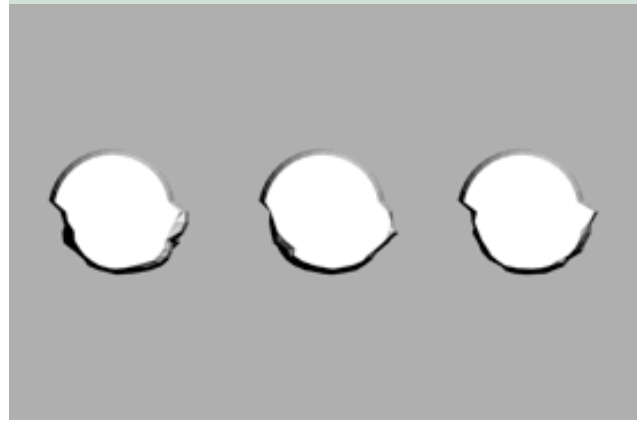
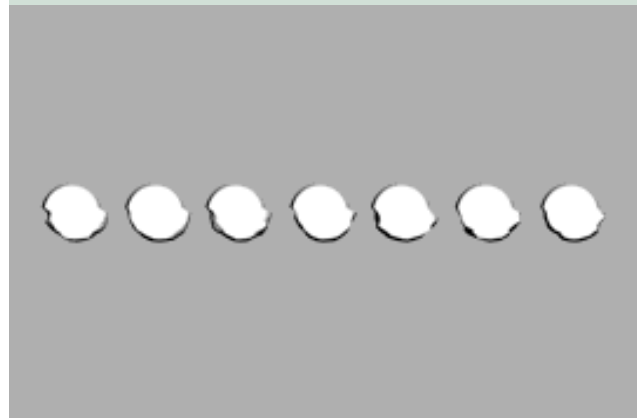


Figure 5: Vases (Global group – side view (digital rendering))



Figure 6: Vases (Global group – bottom view (digital rendering))



The forms created by the global group (figure 5 and figure 6) were both more distinct from one another than those created by the UK group, and from those created by the UK group as a whole. Again, this would be expected as the individual locations are not only further away from each other than those of the UK group, but are also distant from the UK.

7. Limitations

It is acknowledged that the current app, and the process as described have a number of limitations. Firstly, the app allows only one kind of vessel, of a pre-defined size and generic base form, to be created. This however, was a conscious decision as, at this stage, the intention is to create vessels with subtle variations that capture and highlight the differences between those created “here” and those created “there”. While a wider range of forms and sizes would have added greater aesthetic diversity, it would make direct comparison between the vessels more difficult; it would not be clear which variations were driven by location, and which were the result of the user’s own design decisions.

This leads directly to the second limitation. The app does not allow the user any input into the design process, aside from the “opportunity” to be in a place different from that of the other participants. The user is there simply to facilitate the collection of location data, and ensure the processes of app installation and running, and 3D file generation and transference, take place. While this is still a collaborative design process in that each user makes a unique contribution to the series of vases, this results in an app that is of little interest if used outside this particular research activity. Again though, this was intentional, as allowing users to make design decisions would add design variations driven by factors not related to location.

Thirdly, while the process is collaborative in the sense that each user is contributing to a single collective endeavour, it does not allow direct collaboration, or co-creation, between participating users. The collaboration is exclusively between the authors and the individual users. In the current process, direct collaboration between users in different locations is not possible.

Finally, although successfully completed by all 10 participants, some users reported that they found the process not particularly user-friendly at times, especially when trying to locate the exported .stl file. Although the app was specifically designed to export these files to the SD card of the device, the way some Android devices or user settings are configured, can make it difficult to locate them.

8. Discussion and conclusions

While the app, and the described procedure as a whole, does show the ability for mobile devices to facilitate design processes through the utilisation of location data, it does not describe the full potential of the process.

This paper described a prototype process that was successful in meeting the stated objectives, and a number of opportunities for further exploration were identified. In future work, the app will be extended to include real-time connectivity between users, so they can each design half, or a smaller section, of the same vessel simultaneously. This will provide a truly collaborative, or co-creative, design process, where each vessel is the work of two or more designers, rather than designers individually contributing to a series of objects. This could be further enhanced by allowing the 3D files to be saved to a central database so vessels designed in different locations can be presented as part of a global map for easy comparison, or to allow them to be accessed for multiple deformations.

Further research should take into account more data than only GPS location. While this is sufficient in the described study, GPS location used in conjunction with other data sources would perhaps provide a more rounded visualisation of the differences between this place “here”, and that place “there”. As discussed in the introduction, mobile devices are capable of measuring data from numerous sources, and this should be explored more deeply.

The 3D files require high resolution printing to demonstrate the subtle differences between the designed vessels. This was unavailable during the study but is a necessity when the research is developed further. The study did not directly consider the implications for the ceramic field. The use of plastic material for high resolution 3D actualisation would be an adequate medium for the described research, but printing the vases in a higher quality material, preferably ceramic, would not only enhance their aesthetic value but also be more in keeping with the notion of re-imagining Ming vases.

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future factory. new design skills in the era of post-craft.

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Abstract

Today the online marketplace encourages an increasingly 'Long Tail' economy, as Chris Anderson (2006) calls the growing share of niche products opposed to mass manufactured goods.

Design has embraced this evolution, in particular due to the crisis of large-scale production in favour of low-volume production, acting locally while thinking globally.

Therefore, the Long Tail phenomenon causes the designer efforts to shift as well, towards creating uniqueness and experimenting with various goals and approaches.

We look to different Design approaches for this phenomenon: a) on one hand there is the tendency to substitute the Design Skill with new ones (i.e. Makers); b) on the other, a faithful revival of traditional craft techniques and archetypes seems to reply to an environmental-cultural attitude which wants to bring Design back to a pre-industrial condition.

The paper reports an experimental project carried out at our Laboratory in order to investigate this phenomenon and imagine a possible evolution of the Design Skill.

According to our interpretation, creating authentically crafted unique artefacts in a digitally literate age requires the use of state-of-art tools both on the physical level (digital fabrication) and, even more importantly, on the intellectual level: from computationally tailor-made objects to algorithmically generated ornaments.

Keywords: mass customisation, generative design, design skills, digital fabrication

future factory. new design skills in the era of post-craft.

1. Assumptions

This paper focuses on the paradigm shift in the technical knowledge regarding the production processes of goods. The easy access to physical prototyping tools and digital fabrication platforms is allowing a different system of production, based on Maker-spaces, Fab Labs and other similar laboratories, where designers (and others) are finding new ways to create and share knowledge in the field of product design.

New practices of production and innovation are on the rise, deeply changing not only the Design skills, but also the role of this competence in the society.

This requires a rethinking of the skills involved in the creation process and in the production spaces, based on several emerging phenomena:

- The transformation of mass production and consumption through the emergence of 'Long Tail' marketing (Anderson, 2006) and the consequent appearance of a range of on-demand, tailor-made products;
- The insourcing tendency of the manufacturing industry and new forms of productive activism;
- The creative development of communities (not only designers) and a consequent release of the cognitive stock generated by them.

The paper reports the work-in-progress results of an experimental research that investigates how Digital Fabrication is shifting the design skills towards an updated version of the designer as 'post-craftsman'.

The research is carried out with an empirical, learning-by-doing approach, through a series of experimental projects in order to gain a better understanding of the necessary competences and the optimal strategies for the effective development of (potentially) successful digitally fabricated products. In the following phases of the research, the accumulated knowledge will help to lay out a set of guidelines that could help Digital Fabrication oriented designers and companies in choosing the right design strategy and learning the optimal tools and skills, according to the product category they are working on.

We assume that a valuable contribution to the field requires a conceptual clarification about (a) the foreseeable evolution of Digital Fabrication (b) the relation between the values of craft and design (c) the efforts made by traditional industry to diversify its offer towards individuals, i.e. the state of art in mass customisation. This knowledge will be useful to explain a few example projects of our laboratory and to draw conclusions about the necessary skills for developing deeply personal artefacts in the contemporary creative and productive environment.

2. The 'myth' of digital fabrication

The last ten years in the history of Digital Fabrication, particularly 3D printing, has produced a spectacular democratisation, owing to the Maker Movement, followed by a mild backlash; in 2015 even the iconic 3D printer brand MakerBot had to reduce staff and close shops. Such a backlash is not rare in the case of emerging technologies; it can be a signal that the technology should find more ways of providing benefit to consumers, just as it happened after the dotcom bubble of Internet in the late 1990s.

Press coverage on the 3D Printing 'revolution' often imply that it will replace (most) traditional factories, as if it was only a matter of time. How much time, however, is rarely discussed. Today we can observe an incremental evolution of 3D printing technologies originally invented in the 1980's. These technologies have several limitations compared to large-scale manufacturing, including slower speed, higher energy consumption (up to 100x), higher material need, rough surface quality, limited food safety and unavailable electronic components. Researchers in places like MIT's Centre for Bits and Atoms work on the vision of universal self-assembling material that is digital in itself, but they also admit that marketable products are many years away (Gershenfeld, 2012).

Revolutionary innovations are hard to predict by definition, so we cannot know if there will be ever a kind of 'Digital Fabrication singularity'. The technological singularity is a hypothetical event when Artificial Intelligence surpasses human intelligence, rendering the latter superfluous in many areas. Similarly, Digital Fabrication might become as energy/material/cost efficient as factory equipment; then there will be no more reason to evaluate whether it is better to 3D print an object, order it over the Internet or to get it from the closest store.

For now, 'Digital Fabrication singularity' remains in the realm of science fiction, therefore designers today need to evaluate carefully whether their target group gets more advantage from Digital Fabrication or traditional manufacturing. The first produces every object independently, allowing more morphological and logistical flexibility. The latter has a wide variety of processes to optimise price and/or quality; moreover, today it can compete with

the logistical flexibility of Digital Fabrication due to the enhanced availability of products through e-commerce, which allows also niche products to find their public efficiently and thus become an economically important factor, described as the 'Long Tail' economy by Anderson (2006).

However, technological and economic considerations aside, it is interesting to examine the substantial change that the discussed technologies allow in the process of product definition and consumption.

The consolidated role of the designer regarding the industrial process is to define the desired result and to communicate it in specific formats (drawings, blueprints, models) towards all stakeholders, without being involved in the manufacturing process. Instead, when supported by Digital Fabrication, the designer regains the knowledge of the entire process through three-dimensional modelling, which leads to a condition similar to the one of the pre-industrial craftsman: therefore, even if mediated by digital tool, the distance between concept and production is minimal and the relationship is direct and immediate. What you draw is already the final shape of the product.

In summary, what changes is not only the result of the process, but also the relationship between the design and production phases: if in the typical industrial condition design is considered part of the production cycle, thanks to Digital Fabrication it is the latter to become part of the design process.

Finally, we can assert that maybe the most interesting consequence of the Digital Fabrication progress is the facilitated production of unique artefacts with an unprecedented typological and morphological richness.

3. Craft vs. Design: a question of value

Customers have long perceived uniqueness and typological-morphological richness as traditional values associated with products of craft. Meanwhile, historically Design (or better Industrial Design) was born to support the industry that has increasingly substituted the craftwork.

The original philosophy of the highly influential Arts and Crafts movement derived from the 19th century anti-industrial feelings of Morris and Ruskin, and this philosophy includes a spiritual dimension that seeks quality and dignity through the repetitive mechanical movements of the artisan. This is in stark contrast with the classical 'modernist' interpretation of design's aim, which is seeking customer wellbeing through replicating mechanically the best possible solution for a well-defined problem.

During the 20th century, this dichotomy has been increasingly consolidated, and too often simplistic borderlines have been raised to determine if an object is the result of a craft, design or an artistic achievement. In a historical perspective, "the separation of the studio crafts from design for industry resulted in craft and design each developing their own institutions and identities, thereby becoming competing ways of producing decorative arts for the people (a competition design won long ago)." Shiner (2007) tries to clarify the real difference between craft, design and art through the four distinctive characteristics of crafts:

1. Handmade, albeit that is "highly ambiguous, so recourse is usually had to 'substantially handmade:' a condition that lies somewhere between simple hand tools and full automation"
2. Materials, specifically a "focus on exploring and exploiting a particular medium or area of materials, often over a lifetime."
3. Mastery, "a union of imagination, facility, and judgment in working with materials ... a matter of mind and hand working instinctively together, a kind of practical know-how or tacit knowledge"
4. Utility, that can address a wide range of bodily needs as well as psychological needs.

Considering this classical set of characteristics, an artisan must have the Mastery of Handling a range of Materials to achieve Utility. Meanwhile, for design the only requirement of these four characteristics seems to be the utility (4); since the production tends to be machine-based (not handmade) and material (2) is defined according to use and client interests, the mastery (3) of the designer is focused on drawing and software tools.

However, in contemporary practice, often supported by Digital Fabrication, one or more missing characteristics out of these does not (necessarily) mean losing the craft 'status', establishing a natural connection between design and craft.

An opportunity is emerging for both designers and craftsmen to evolve their practices by expanding their already existing use of Digital Fabrication tools in order to explore a variety of forms, languages, functions: in essence, to experiment with the already mentioned 'typological-morphological richness'.

4. Customisation 2.0: from 'mass-' to 'co-'

This new convergence between design and craft, allowed by the Digital Fabrication, highlights another phenomenon related to product variety: the consolidated but also limited paradigm of 'mass-customisation'.

From the 1990's, advances of technologies (and in particular the information technologies) have raised the possibility to efficiently diversify serial products by introducing variables. Marketing and business experts have recognised

early that giving the consumers the possibility personalise certain aspects of their products have a great potential to improve consumer satisfaction, brand loyalty and in general, brand identity.

The result is the, so called, 'mass customisation'.

In the initial times of this practice, the most interesting challenge was to find a way to build consumer trust in the customisation and to manage the intervention into the mass production process. Design remained essentially unchanged; efforts were focused on graphical interventions or minor variations of existing components.

This has been recognised as "mass customisation 1.0" (Davis, 2007) in comparison with a new stage of "2.0" (similarly to web 2.0), characterised by its bottom-up nature, where consumers transform into 'prosumers' (Toffler, 1980), who not only express their preferences within a significant but limited set of variables, but provide some essential input for finalising production.

In this 2.0 stage we can recognise a shift of roles: the relation between design, production and consumption shifts from a broadcasting condition, that transmits a specific content in an unidirectional way (from one point to many), to an on-demand condition (from one point to another point) that is interactive by nature, having flexible contents that are able to conform to the necessities of the interlocutor (Di Lucchio, 2014).

By providing goods in such an on-demand model, mass customisation recalls the traditional way many artefacts were produced, by artisans who tailor-made their products for clients they personally contacted to gather information about the preferences, providing them also the chance of feedback and adjustments.

In practice, for mass customisation to be successful there are a few essential capabilities (Piller, 2009):

- Solution Space Development: Identify the product attributes along which customer needs diverge
- Robust Process Design: Reuse or recombine existing organisational and value-chain resources to fulfil a stream of differentiated customer needs
- Choice Navigation: Support customers in identifying their own solution while minimising complexity and the burden of choice.

Within the phenomenon of Digital Fabrication and in relationship with the revived 'on-demand production' approach, the capability of defining the right Solution Space and Choice Navigation system can be considered equally important for working on tailor made products, whether as a craftsman, designer or maker.

5. Parametric Design: tool or capability?

To summarise previous considerations:

- the evolution of Digital Fabrication enables a new way of manufacturing; there is a new convergence between craftsmen and designers;
- the concept of customisation is evolving and it can be measured by the level of involvement of the customer in the definition process.

Based on these reflections, numerous experimental projects have been carried out in collaboration with 'Sapienza Design Factory'¹ in order to investigate the required skills to 'participate' these new phenomena as a designer.

The mission of our Laboratory is to explore the new possibilities that Digital Fabrication technologies offer to designers, specifically for those who work outside of the traditional industry; we are interested in the possible paths of evolution the designer figure may take and the skills this new figure should have.

In particular, during our experimental projects², we try to understand how to apply and expand the previously mentioned concepts of Solution Spaces and Choice Navigation: the first can be imagined as a multi-dimensional volume (with meaningful variables as dimensions) and the second one as an easy-to-use and engaging interface.

The two projects described subsequently illustrate two very different approaches not only technologically, but also regarding the strategy of user engagement.

5.1. Bézier: minimalist parametric eyeglasses

The parametric eyeglass frame was designed to practice and benchmark workflows of digital tailor-made personalisation. The goal was to determine a minimum workflow that allows the designer/artisan/maker to adopt efficiently a simple, Digitally Fabricated product to user needs, similarly to the concept of minimum viable product

¹ Sapienza Design Factory is one of the Laboratories in the field of Design at Sapienza University of Rome.

² These projects have involved young PhD Candidates in Design and Students of the Master of Science in Product Design of the University where the authors are affiliated. Besides the two projects here presented, we would like to remind: the project presented in the European Maker Faire 2013 titled 'MicroSapienZ' and reported in the paper 'Designing for a 'smart society. How design can generate a more sustainable production-consumption process' (Di Lucchio, L., Giambattista, A., Migliore, E., November 8, 2013. Cumulus Conference Dublin 'More for Less - Design in an age of austerity. National College of Art and Design, Dublin, Eire); the didactic project 'Design for Maker' presented in the European Maker Faire 2014 and reported in the speech 'When Design Becomes Maker' (Di Lucchio, L., October 2, 2014. European Maker Faire 2nd Edition, Rome - Italy).

(MVP) in software development, intended as a releasable product that allows users to start benefitting from the product's core functionalities, without wasting resources on non-essential features. The results were presented through a live demonstration with volunteers at the Roman edition of Maker Faire 2015³.

Eyeglasses are excellent examples for demonstrating the potential of 3D personalisation, because nonetheless the wide variety of products on the consumer market, finding the ideal one can be a frustratingly long process, often finishing with compromises. In this field, tailor-making would resolve user demands both on the physiological and on the psychological level, supposing a sufficiently large Solution Space with various dimensions: head size, face shape, nose width, eventual asymmetries for the ergonomic adaptation and personal style-dependent parameters like lens shape, temple thickness, bridge and hinge height.

In order to develop the Solution Space, first of all a 3D model was created in 'Rhinoceros' in order to quickly experiment with the model topology (types of surfaces). Since Rhinoceros is a direct, freeform surface modeller, it does not support the retrospective modification of the model parameters, desirable for quick product customisation; that required a parametric modelling software.

Therefore, a second iteration of the model was created using the Rhinoceros plugin 'Grasshopper', a visual programming language that allows the designer to control the geometry through a map composed of connected nodes, each representing one logical step of calculation or 3D modelling. This is a powerful way of creating decorative patterns and morphologies that simulate natural growth (often used by architects), and it allows the modification of the surface parameters after modelling. However, this technique turned out to be insufficient for the specific case of the eyeglasses modelling, because some common details (like fillets) are too challenging to achieve with Grasshopper.

The final iteration of the 3D model was created with SolidWorks, a natively parametric software that retains the entire model creation history in a linear list of steps (called model tree), in order to allow the retrospective fine-tuning of model parameters. Feature-based parametric modellers like SolidWorks, Catia or PTC Pro/Engineer are not particularly intuitive for modelling complex organic surfaces (common in design), but they are powerful to interpret the designer's intent in case of more 'modular' geometries (common in engineering). As PTC founder Geisberg (1993) expressed, these tools are meant to "be flexible enough to encourage the engineer to easily consider a variety of designs ... the cost of making design changes ought to be as close to zero as possible".

Image 1: SolidWorks model tree of the parametric eyeglasses frame



In the case of the Maker

Faire demo of the eyeglasses creation, the carefully structured model tree of SolidWorks was sufficient (albeit somewhat instable) to carry out the designer-guided customisation process. This is not a particularly elegant way of Choice Navigation, but it can be fruitful if the designer/artisan/maker personally helps to customise the product together with the future user, similarly as a tailor would – indeed, the client does not need to feel at home in the tailor's workshop, just like in the case of the designer's software. In order facilitate the measurement of the user anatomy, at the Maker Faire demo we have 3D scanned the volunteer's head with a common Kinect camera and

³ General information about the event: www.makerfairerome.eu/en/events

Image 2: The personalised eyeglasses frame printed in polyamide with STL technology



the 'ReconstructMe' software, allowing a rough virtual try-on of the future product, printed on a SLS printer in polyamide plastic.

The functional value of the resulting object has been tested daily for the last 10 months (at the time of writing) by one of the authors; while hard to be unbiased, the experience is dominantly positive, especially regarding the perfect fit and the light weight compared to similar commercial products. On the other hand, the area where the SLS printing does not excel is surface quality: due to the porous nature, there is a noticeable change in colouration and lucidity at points of touch with the skin. Moreover, high friction with the rough printed surface prevents cleaning with the usual eyeglass wipes; fortunately, there is no issue with daily soap and water contact.

5.2. Makoo Jewels: online co-creation platform

Our second example is about a project done in collaboration with the start-up company Makoo Jewels⁴, a web application that transforms a vocal message into an algorithmically generated geometry, turned into 3d printed metal jewellery, each with a secret code that allows the user (who receives the jewellery as a gift) to discover the original voice message on the website. This complex example demonstrates how to benefit from Parametric Design both on the conceptual and the technical level: it creates otherwise unobtainable morphological innovation within a multi-dimensional Solution Space (voice, 7 shape parameters, material and size), offering a creative experience to the user through a real time creator application (Choice Navigation) that also promotes post-purchase engagement (voice message discovery).



Image 3: Choice Navigation with co-creation on the Makoo website – jewel creator page

⁴ A video demo of the creation website can be found at vimeo.com/110444035. The collaboration included one of the authors, who have developed the algorithm necessary for transforming the voice into geometry within the browser window. Concept and graphics design originated from the founders of Makoo Jewels. The platform has since closed, mainly due to technological and compatibility issues.

In this case, the workflow was completely different from the previous example, since the project was developed from the beginning with the aim of a web application that fully automatises the personalisation process and relies on an online printing service (Shapeways) to outsource logistical efforts. While initial (simulated) design concept models were realised in the static Rhinoceros software, subsequently the 3D design development was carried out directly by coding a JavaScript application. The algorithm that reliably converts the voice into an aesthetic 3D-printable geometry evolved gradually, through countless iterations, that optimised not only the algorithm itself, but also the list of parameters required from the user. In contrast to the slow development, the users' main intervention, the voice is an ephemeral, unrepeatable input, reinforcing the uniqueness of the product and the consequent emotional connection.

While governing the software evolution, the designer/developer can gain an almost material-like sense of the software that is being shaped – even if only on a keyboard, not the patinated tools of an artisan. McCullough (1996) even argues that Craft skills can survive and flourish in the digital realm – if the digital artisan sees medium as just another material that guides the hand to get the best out of it, then it can be a rewarding experience. Here we can see an interesting connection to the concept of workmanship of risk, "using any kind of technique or apparatus, in which the quality of the result is not predetermined, but depends on the judgment, dexterity and care which the maker exercises as he works" (Pye, 1968).

Image 4: A range of products obtained with the same algorithm but different parameters. The rings are 3D printed in a range of metals: silver, bronze, brass.



According to this interpretation, designers with the craftsman's attitude can see algorithms as a material, to elaborate with the same care and explore with the same curiosity as they would do with a physical material; consequently, parametrically designed, personalised and digitally fabricated products can be seen as part of the craft world, as much as the design world.

Such a change of perspective, however, does not come intuitively, but needs the effort of well-structured digital drawings, because "an ordinary draftsman is unconcerned with the structure of his drawing material. Pen and ink or pencil and paper have no inherent structure". Instead, according to Sutherland (1975), the "computerised version of the design [should be] the master document from which all auxiliary information is derived, preferably with computer assistance" – this half century old idea is as useful for the new creative environment of makers, artisans and designers as it has been for the engineering community starting from the 1990's.

6. A new 'niche' of design

Without embracing simplistic formulas, and considering the amount of research and development that still remains to be done, we can already assert that Digital Fabrication leads us to new possibilities and open interesting challenges, where we cannot stop only at its formal potential.

The implications regarding the relationship between design and Digital Fabrication are deep and vast, certainly deserving further examination and experimentation. For design, this is not simply a question of using new tools, but a true opportunity to rethink its 'nature' and its skills.

Through our experimental projects – despite their limited number and work-in-progress status – we have observed that both the sensible attitude of an artisan and the abstract, formal thinking of an engineer are valuable for the meaningful personalisation of Digitally Fabricated artefacts. The integration of these forms of tacit and explicit knowledge can contribute to new functional and aesthetic qualities, producible through local options, strengthening the resilience of creative communities, while contributing to the development of new material cultures rooted in the specificities of the local community, environment and economy. If a designer wants to reach a broader public through the web, also software development and user experience skills are welcome; while uniting all these capabilities in a single figure can be exceptionally fruitful, it is also rather challenging.

Whether and which new skills can be integrated into the core of the design profession is an open question. Today, emerging technologies allow a single (well-trained) designer to switch virtuously between many tasks that

would have required separate professionals 20 years ago. Similarly, Digital Fabrication and Parametric Design can be transformative, not only as productivity tools, but also as promoters of a different 'nature' of design that can converge with craftwork.

What seems to be interesting is the possibility for design to regenerate itself as a new form of artisan, that we can call post-craft design.

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FUTURE SPACE

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Design the campus introducing a toolkit for developing creative learning spaces

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design the campus introducing a toolkit for developing creative learning spaces

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Abstract

Design education involves various teaching, learning, and designing activities, such as idea generation, writing, sketching, computer-work, planning, lecturing and listening to presentations, team work, discussions, model making, and prototyping. All these activities require particular environments. The question how these activities could be facilitated through the physical environment of the design educational institutions gained a lot of interest, recently. Designing such creative learning spaces in a way that triggers the best possible creative performance of the students, is relevant for both design educators and students who want to improve their individual classrooms, and architects or interior architects who are planning entire design schools. This paper presents a toolkit that can be used to facilitate design decisions in spatial design processes of creative learning environments. It consists of three card-sets: 1) a card-set with inspirational examples from other institutions, 2) a card-set to phrase the problem space, and 3) a card-set to sketch design solutions.

The underlying principles of this toolkit were developed based on a) a qualitative research approach using cultural probes among design students of two different institutions, and b) expert interviews with design educators and architects.

Keywords: modernisation, madhubani, indian traditional craft, decline

design the campus introducing a toolkit for developing creative learning spaces

1. Introduction

Following the assumption that the physical environment of a design school can have a significant impact on students' performance, creative output, and learning effect, a thoughtful design of creative learning spaces is crucial. Learning environments in design educational contexts are peculiar because design work involves many different types of activities - from traditional lectures to teamwork; from focused "heads-down" work to prototyping and model making; from exhibitions to presentations. All these activities might require different types of environments. These spaces can be located within the same building or even the same room; or they can be separated and distributed throughout the campus. Transferring from one space to another can be time consuming, but might also provide the opportunity for thinking, reflection, recreation, or meeting people. Combining several space types in one place might lead to distraction and a raise of noise level. The space itself can provide stimulation and inspiration. And knowledge can be stored within the space to be accessed by teachers and fellow students. The construct of a creative learning space is a complex system of different variables - improving one aspect might result in a degradation of another one. Hence, there is a need for a decision-support tool that informs the involved stakeholders about the possible impact of their design decisions.

Interestingly, the planning and design of such campus environments is often carried out by architects or campus planners, without involving the future users of these spaces - the students and teachers. Our previous research in selected design schools has shown that many students are not overly satisfied with parts of their work environments (Thoring et al., 2012a). This led to the idea to develop a toolkit that can be used by the design students and teachers together, to redesign their existing work environments, or by architects and campus planners together with students and teachers, in order to plan a new design campus from scratch and to gain insights about the spatial requirements of the future users of the space.

In the following we describe the methodology based on which we developed the toolkit (Section 2). In Section 3 we present the toolkit - three sets of cards that can be used by the respective stakeholders to define and articulate their individual spatial requirements and develop spatial concepts together. Section 4 outlines a possible usage scenario for working with the cards. And finally, in section 5, we discuss and reflect upon the suggested toolkit.

2. Methodology

2.1. Qualitative Study based on cultural probes: students' perspective (previous work)

As a first step we collected insights about the existing learning spaces in two different design schools - one being the Dessau School of Design (the design faculty of Anhalt University of Applied Sciences), and the other being the HPI School of Design Thinking in Potsdam, both located in Germany. We equipped 18 selected students - 9 per institution - with a set of cultural probes (Gaver et al., 1999) and asked them to self-document their working and learning environments, as well as to indicate positive and negative aspects of selected spaces. As a result we were able to identify five different types of spaces that are necessary to allow creative working and learning activities: spaces for **deep work**, spaces for **collaboration**, spaces for **presentation**, spaces for **making**, and spaces for **intermission**. Additionally, any space could contain certain *enrichment* factors that could enable (or disable) the identified activities: space can store or display **knowledge**, which would enable for example deep work as well as presentation. The **infrastructure** of a space could, for example, enable collaboration by providing groups of tables. The **culture** of a space could, for example, indicate that making (and the involved noise and dirt) is allowed. A space could enable **social interaction** by providing informal meeting points and hence enable collaboration. And finally, a space could provide certain **stimulation**, which could inspire, for example, making and prototyping. At the same time these factors could also have a negative impact on the workflow, for example when fixed chairs in a theatre-style auditorium would prevent collaboration, or an abundance of stimulation would result in a distraction and prevent deep work. Figure 1 illustrates an overview of these types of spaces and the related enrichment factors. The results of the study and the derived typology of creative learning spaces are described in detail in previously published papers (Thoring et al., 2012a, 2012b).

2.2. Expert interviews (previous work)

Since the first empirical study (mentioned above) focuses on the perspective of the students, only, and as it covered only two selected institutions, we expanded the study by several expert interviews. The range of selected interviewees included; 1) an architect, who was involved in the design of the Umeå School of Architecture, 2) an interior architect, who was responsible for the interior design of the HPI D-School in Potsdam and participated

in several interior design projects at Google, 3) a design manager from IDEO, a design consultancy that was one of the pioneers in creative office environments, 4) a design practitioner who is specialised in spatial concepts, 5) a design journalist and professor for design innovation from Parsons School of Design, 6) a design professor from Dessau School of Design, who extended her teaching environment by occupying abandoned buildings throughout the city, and 7) a design professor from the Design Akademie Berlin, which has a newly built architectural building. The aim of the interviews was to gain insights into the experts' ideas and perceptions about the possibilities of the space (furniture, room layout, or the architecture itself) to facilitate creative working and learning processes.

A detailed analysis of the expert interviews would also exceed the scope of this paper and will be published in a different paper.

Both, the insights from the cultural probes study, and the results from the expert interviews constitute the main resources for defining the list of spatial variables and concepts that is presented in Section 3.3 (Table 1).

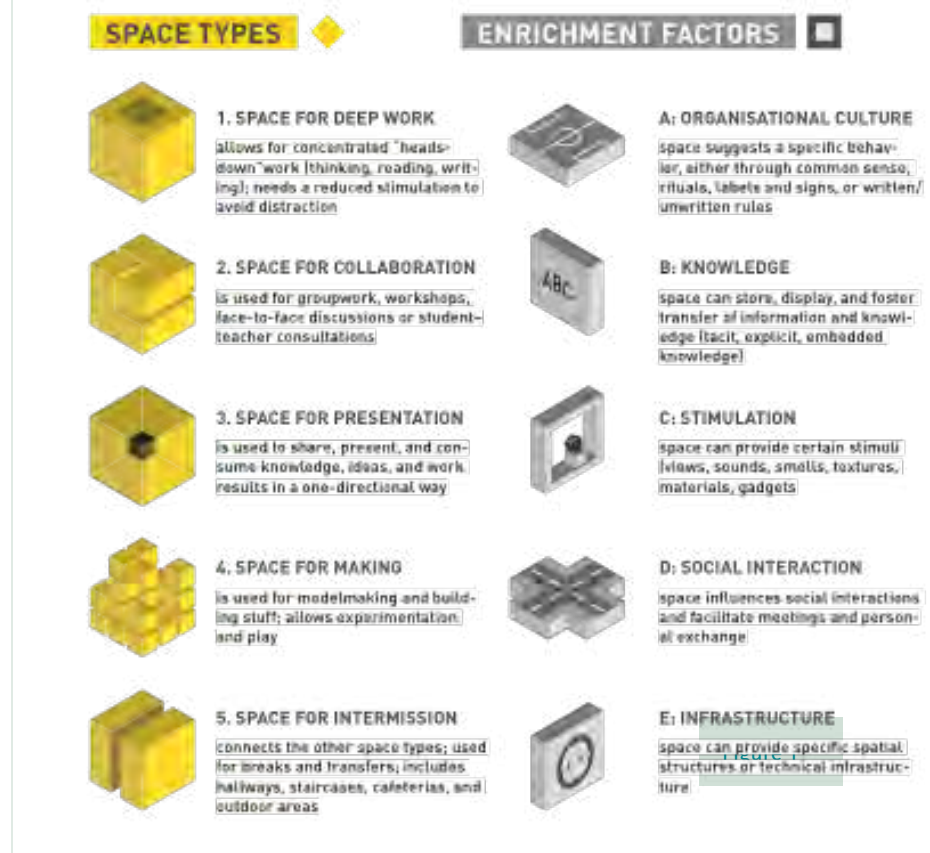
2.3. Case examples

For each identified spatial concept we identified best practice examples in existing creative learning environments: The first author personally visited 12 design educational institutions to look for interesting spatial designs, according to the identified variables. These institutions were selected based on the following criteria; a) they should represent a broader scope of different creative design disciplines (from architecture and interior design, to product design, to integrated design, to design thinking and entrepreneurship), b) they should represent different national cultures and not focus one country only, and c) they had to be accessible (in terms of their willingness to give us access to their space and provide us with information). So far, the selected design schools are based in only two continents, Europe and North America (USA), but we are planning to extend the scope of the study also to other areas such as Asia and South America. For some of the identified spatial concepts we were not able to find case examples – those were illustrated in an abstracted way (these illustrations can be replaced by real examples, later on).

Among the visited design schools were:

- Anhalt University of Applied Sciences, **Dessau Department of Design**, Germany
- **HPI School of Design Thinking**, Potsdam, Germany
- **Design Akademie Berlin**, Germany
- University of Applied Sciences Ostwestfalen Lippe, Department of Interior Design, **Detmold**, Germany
- **TU Delft**, Faculty of Industrial Design Engineering, The Netherlands
- University of **Twente**, The Netherlands
- **Umeå** School of Architecture, Sweden
- **Plymouth** College of Art, UK
- **ESAD**, Porto, Portugal
- **Politecnico** Milan, Italy
- **Parsons** The New School of Design, New York, USA
- **SAIC** School of the Art Institute of Chicago, USA

Figure 1: Illustrated typology of creative learning spaces



Although not all of the visited design schools and universities demonstrated a very innovative approach in terms of their creative work environment, each one of them had at least a few interesting aspects worth mentioning and to be included in the toolkit described in Section 3.

3. The creative space development toolkit

3.1 Related work

In the design field there are several card-based design tools (see e.g. Wölfel and Merritt, 2013, for an overview). These card sets span a wide range of topics from design method cards (IDEO, 2003), ideation cards (Golembewski and Selby, 2010; Lucero and Arrasvuori, 2012), elicitation of human values in the design process (Friedman and Hendry, 2012), design heuristics (Daly et al., 2012), task analysis (Tschudy et al., 1996), Biomimicry (Lynch-Caris et al., 2012), and data privacy (Luger et al., 2015). As a design tool, cards have the advantage of making a problem or design process tangible (Lafrenière et al., 1999; Lucero and Arrasvuori, 2010) and of enabling a better communication between designers and users (Beck et al., 2008; Wölfel and Merritt, 2013). Wölfel and Merritt (2013) identified three main card categories: general purpose/repository cards, customisable cards, and context specific cards. Our Creative Learning Space Development Toolkit can be classified as context specific cards because it focuses on the topic of creative learning space. However, because two of the three card decks in the toolkit can be filled by the designers and users and hence facilitate a participatory design approach, the toolkit can also be partly classified as customisable cards.

3.2. Conceptual approach

The goal of the toolkit is to provide the stakeholders involved in the design process with the necessary information to come up with appropriate design decisions about creating or redesigning their creative learning spaces. Among these necessary information are:

- a) an overview of the spatial variables that could be adjusted
- b) a framework outlining the different types of spaces that are necessary for creative learning and working activities, and possible spatial facilitators for enabling these activities
- c) best practice examples from other design schools.

Furthermore, the toolkit should allow the stakeholders to collectively develop ideas, define and phrase requirements, discuss possible problems and solutions, and decide on certain strategies for their spatial campus or classroom concept. Hence, it should allow group work.

3.2. Why a card set?

The decision to develop a card set as the main component of the toolkit was based on several considerations:

1) analogue cards are not dependant on a specific (technical) infrastructure, as it is the case, for example, with digital tools. 2) cards are mobile and can be used anywhere at any time, also by a larger group of people. 3) paper-based cards provide the opportunity to write and sketch on them, which allows the users to express their own requirements and ideas. 4) cards are flexible and agile. Different aspects can be aligned or clustered in order to define hierarchies, priorities, or thematic groups. And 5) a card set is a tool that is familiar to many designers, which can be inferred from the success of card sets such as the IDEO Method Cards (IDEO, 2003), for example:

Our card set consists of three decks that are described in the following subsections. All the cards are in DIN A6 format (postcard-size, 105 mm by 148 mm). See Figure 2 for an overview of the toolkit.

3.3. Deck 1: inspiration space

Deck 1 represents the heart of the toolkit. These cards provide information and examples of existing and envisioned creative learning spaces. It consists of 28 spatial concepts (each represented by a card) that have been derived from the previous two studies (students inquiry and

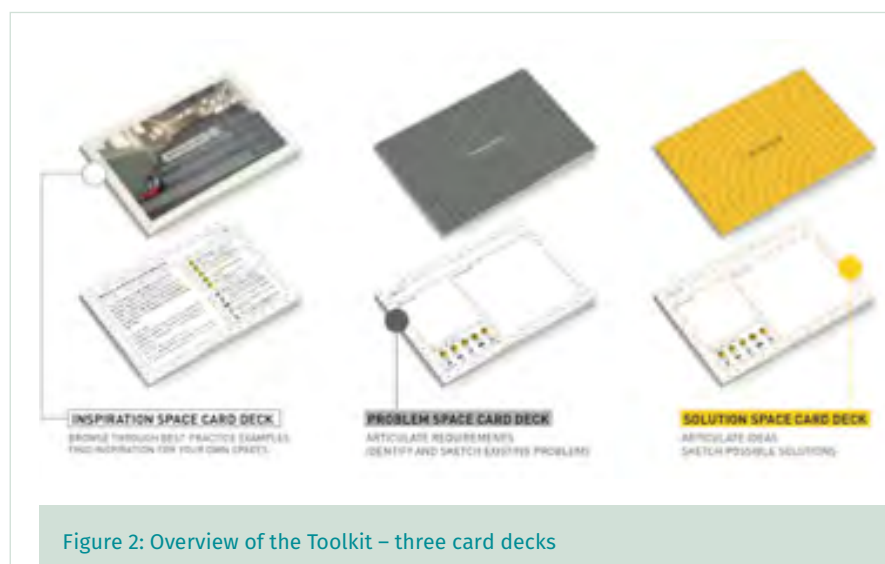


Figure 2: Overview of the Toolkit – three card decks

expert interviews) and where possible have been consolidated through real-life examples from the visited design schools. For each concept we articulated the insights about what enrichment factor it addresses and what activities it supports. A summary is presented in Table 1.

Table 1: List of spatial concepts

Nr.	Spatial Concept	Peculiarity + Goal	Mainly Addressed Activity	Mainly Addressed Enrichment Factor
01	Across-room vistas + transparency	Observe other people working, informal exchange of tacit knowledge	Space for Collaboration	Social Dimension Knowledge (tacit) Stimulation
02	Varied windows in different heights and proportions	Allow outside views from any position; watching natural or urban environment triggers ideation; lots of daylight	Space for Collaboration Space for Deep Work	Stimulation
03	Staircase as meeting and working area	Invite casual working in intermission spaces, where people would meet each other	Space for Collaboration Space for Intermission	Social Dimension
04	Outside views	View into urban or natural environment stimulates creativity	Space for Intermission	Stimulation
05	Communal tables in hallways	Work together with fellow students, varied neighbours, facilitate social interaction and knowledge exchange	Space for Collaboration Space for Intermission	Social Dimension Infrastructure
06	Writeable furniture and walls	Invite collaborative work; store and display codified knowledge	Space for Collaboration Space for Deep Work	Knowledge (codified) Infrastructure
07	Ceiling height + room size	Allows to "think big"; e.g. to make big models	Space for Making Space for Deep Work	Infrastructure
08	Informal library	Invites meeting each other; make use of waiting times	Space for Intermission	Knowledge (codified, tacit) Social Dimension
09	Furniture on wheels	Change space type; move furniture as necessary;	Space for Collaboration Space for Presentation	Infrastructure (flexible)
10	Instructional architecture	Building itself reveals material + structural insights (why is that built that way?); triggers curiosity	Space for Deep Work Space for Intermission	Knowledge (embedded)
11	Social Bulletin Boards	Display students photos with their respective skills to invite knowledge exchange	Space for Intermission	Culture Knowledge (tacit + codified) Social Interaction
12	Unfinished spaces and niches	Can be filled with students' own ideas, provide canvas for experimenting	Space for Intermission Space for Presentation	Culture Social Interaction
13	Secluded booths or shielded sofas	Specific areas to avoid disturbance; soundproof; do not disturb!	Space for Intermission Space for Collaboration	Stimulation (reduced) Infrastructure
14	White space as a canvas	Reduced decoration invites students to fill space with their work	Space for Presentation	Stimulation (reduced) Knowledge Culture
15	Invitation Stools	Empty stools at each desk invite to sit next to one's work desk	Space for Collaboration	Culture Social Interaction
16	Labelled areas, room names	Set the tone, get into the mood; be creative here!	Can be applied to any space type	Culture Stimulation

17	Graffiti wall <u>Infoboard</u>	Blackboards melted into graphically designed walls to create controlled "patina"; meeting point	Space for Intermission	Knowledge (codified) Stimulation Social interaction
18	Personal exhibition/ storage shelf	Space for each student to express themselves; store interesting objects, materials, tools; creates inspiring atmosphere	Space for Presentation Space for Making	Infrastructure Stimulation Knowledge (embedded)
19	Flexible Exhibition System	Chairs can be grouped and topped with a board to provide different levels of display space	Space for Collaboration Space for Presentation	Infrastructure (flexible)
20	Fold-away auditorium seats	Seat rows can be folded and slide into the wall; only activated when needed	Space for Presentation	Infrastructure (flexible)
21	Displayed tools, e.g. in open cabinets	Display of tools at the respective work station inspire to use them and explain their purpose	Space for Making	Culture Knowledge (embedded)
22	Gadget and Material Library	Invites experimentation and play	Space for Making Space for Collaboration	Culture Knowledge (embedded) Stimulation
23	Different horizontal work levels	Different heights provide different perspectives and views; creates storage space	Can be installed in any space	Stimulation Infrastructure
24	Climbing wall	Encourage bodily activity	Space for Intermission	Stimulation
25	Swivel Stools	Encourage bodily activity	Can be installed in any space	Stimulation Infrastructure
26	Team sports field (inside or outside)	Encourage bodily activity and play	Space for Intermission	Stimulation Culture Social Interaction
27	Indoor and outdoor sockets	Allow working anywhere, e.g. outside when weather permits	Necessary in any space	Infrastructure
28	Secrets ad Mysteries	Architecture provides secrets to be discovered, e.g. mysterious door, triggers curiosity	Space for Intermission	Stimulation
29	Access to urban supplies (cafés, material stores, research subjects, etc.)	Location within urban environment is important	Space for Intermission	Infrastructure Stimulation
30	Flexible storage systems	Combined storage with other functions (e.g. seating)	Can be installed in any space	Infrastructure (flexible)
31	Personal withdrawal spots	Quiet rooms, capsules, etc.	Space for Deep Work Space for Intermission	Stimulation (reduced)
32	On-Campus Food Supply	Provide meeting spots with quality food	Space for Intermission	Stimulation Knowledge (tacit) Social Interaction
33	Outdoor Workspace	Change of perspective, meeting people, fresh air	Space for Collaboration Space for Intermission	Stimulation Social Interaction
34	Reception Area	Represent the institution's culture, meeting space	Space for Presentation Space for Intermission	Culture Social Interaction

People can browse through these cards to find inspirations for their own creative learning environments. Each card contains the following information:

On the front page:

- One or more picture(s) showing examples of the phenomenon in existing creative learning environments;
Or, alternatively, an abstracted illustration where no adequate example from our visited design schools was found, because we did not want to limit ourselves to only existing spaces, but rather present also potential solutions.
- A short reference to the source of the picture(s).
- A number to identify the card easily when cross referencing from other cards or full text.

On the reverse page:

- A descriptive title.
- A number to identify the card easily when cross referencing from other cards or full text.
- Information about the placement of the phenomenon within the Typology of Creative Learning Spaces (Figure 1) outlining the degree of facilitation of the example for the different design activities (**Space Types**) and the reference to the spatial **Enrichment Factors**.
- A text describing the phenomenon and providing additional information about possible advantages and challenges of the phenomenon, including rhetoric questions to instigate a transfer of the concept to other areas, as well as cross-references to other cards, where applicable.

Due to limited page and word count of this paper, we present only three examples from this card deck (see Figures 3–5).

Card number 03 (Figure 3) from the Inspiration Space deck shows a large staircase at Umeå School of Architecture in Sweden. The staircase constitutes almost the entire building and invites students to sit on the stairs and work, have lunch, or chat with each other. Sockets and cushions provide the necessary infrastructure, and the adjacent wall can be used for presentations. This example demonstrates a clever use of the architectural structure and an intermission space to create a culture of casual meeting, chatting, and working. The so-triggered social interactions facilitate the exchange of tacit knowledge among students.

Card number 05 (Figure 4) from the Inspiration Space deck shows communal work desks that are placed in the entrance hall of the Industrial Design building of Delft University of Technology in The Netherlands. Everybody can take a free space and work on their projects. The infrastructure provides sockets, flexible chairs, and various boards to store notes, posters, and sketches. Varying neighbours guarantee a diverse stimulation in terms of different input through other students' work, as well as varied conversations.

Card number 18 (Figure 5) from the Inspiration Space Deck shows an abstracted illustration of a spatial concept for which no example could be found in the visited design schools. The concept suggests to provide combined

Figure 3: Example from the Inspiration Space card deck: Nr. 03 "Staircase as Meeting and Working Area"

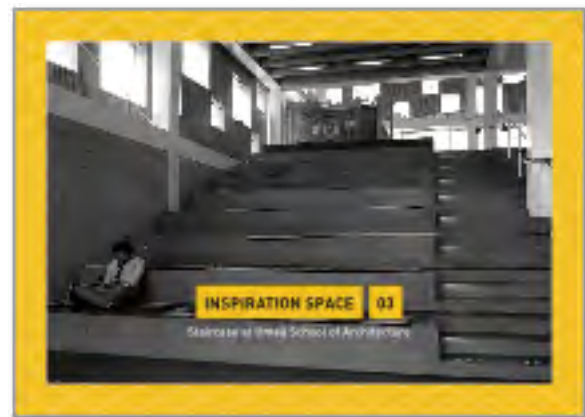
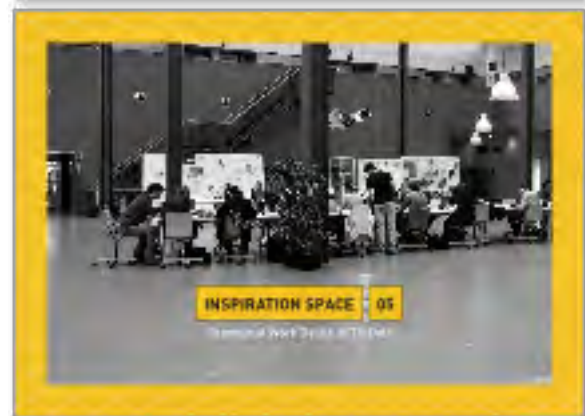


Figure 4: Example from the Inspiration Space card deck: Nr. 05 "Communal Work Desks"



storage and exhibition spaces for each student, for example in the form of a box-shaped shelf. Students could use this to express themselves in a creative way by arranging interesting objects, books, materials, tools, and work results. The benefit would be two-fold: the storage space would provide the student with more flexibility, and the displayed showcase would create an inspiring atmosphere for everybody.

3.4. Deck 2: problem space

This deck of cards consists of 50 cards that are all the same. They provide a structure and a blank space for the users to fill in the identified problems with the existing spaces, and/or their own requirements for the space. The structure on the reverse side of each card provides a template for filling in a descriptive title of the problem, as well as for sketching and/or verbalising the problem. An overview of the typology icons for the space types and spatial enrichment factors is provided. Here, the user can indicate which category he/she is addressing with his/her description (by e.g. encircling the respective icon).

3.5. Deck 3: solution space

This deck of cards also consists of 50 cards that are all the same. They provide a structure and a blank space for the users to fill in their own ideas and possible solutions for the previously articulated problems and spatial requirements. The structure on the reverse side of each card provides a template for filling in a descriptive title of the idea, as well as for sketching and/or verbalising the suggested solution. An overview of the typology icons for the space types and spatial enrichment factors is provided. Here, the user can indicate which category he/she is addressing with his/her description (by e.g. encircling the respective icon).

4. Usage scenario

An additionally provided flyer contains instructions and suggestions on how to use the card sets, and explains the used icons for the different types and enrichment factors of spaces.

Working with the card sets would usually involve a group of 3 to 6 people that represent the different stakeholders of the to-be-designed creative learning environment. The participants would include the actual users of the space - students and/or teachers who want to change and improve their classrooms or studio space. Additionally, also the decision makers (university management) and/or architects or spatial planners, could be involved, especially when the planned makeover of the space involves bigger (and hence more costly) changes that cannot be decided by the students (and possibly also not by the teachers) alone.

Similar to a traditional brainstorming session (e.g. Rawlinson, 1986), there would be one moderator who structures the session, explains the goal and process, and encourages participation, where necessary. The session would typically last about 30 to 60 minutes, but this could

Figure 5: Example from the Inspiration Space card deck: Nr. 18 "Personal Storage/Exhibition Space" abstract Illustration)



Figure 6: The Problem Space card deck (approximately 50 cards of the same design)



also be extended when desired by the participants. The process would start with each participant defining one or more problems they experienced with their existing space, or their individual requirements for a new space, respectively. These problems and requirements are verbalised on one card from the *Problem Space* deck, each. The identified problems would then be discussed by the group and clustered, if appropriate. Collectively, the group would decide on the most interesting or urgent problems. In the second step, each participant would generate ideas for solving the identified problem and sketch these on one card from the *Solution Space* deck, each. Subsequently, several of the identified problems could be dealt with in several rounds. For inspiration about possible problems and solutions likewise, the participants can select cards from the *Inspiration Space* deck, whenever they want. When a desired number of solutions is reached, the cards are discussed among the participants and then grouped or rearranged according to their thematic affiliation or according to a specific prioritisation.

In general, we do not suggest any strict rules for using the cards. If people find other ways and modes of working with them, this is strongly encouraged. The users might want to explore other tools for articulating their requirements and ideas for their own spaces. Hence, the *Problem Space* and the *Solution Space* card decks are an optional choice and not necessarily required for using the toolkit, but could also be replaced by other tools, such as post-it notes or whiteboards.

5. Discussion

5.1. Summary

This paper presents an innovative card-based toolkit that facilitates design decisions for creative learning environments. The toolkit can be used by stakeholders involved in the process of (re)designing creative learning environments, such as individual classrooms, campus layouts, or furniture solutions. Among these stakeholders are the students and teachers as the users of the respective environments, or the decision makers, such as architects or the university's management. The toolkit consists of three card sets that provide inspirational best-practice examples, as well as frameworks to articulate spatial problems and requirements on the one hand, and spatial ideas and solutions on the other hand. In a co-creation approach, the stakeholders can use these cards to facilitate their spatial design process and to develop and discuss each others' ideas. The paper briefly outlines the scientific approach for developing the toolkit, and provides a few examples of selected cards.

5.2. Contribution

The card set constitutes the agglomeration of three years of research on the topic of creative learning spaces. The cards from the *Inspiration Space* deck provide insights from several case examples and two empirical studies in a very compressed form. Moreover, they present abstracted spatial concepts and rhetorical questions that can be adapted to the individual spatial situation of the user(s) and trigger new ideas for designing creative learning environments. Hence, the card sets are considered a valuable tool to facilitate space-related design decisions in design educational contexts. Nevertheless, we do not suggest to precisely copy any of the presented design solutions but rather hope to inspire design educators through the best-practice examples, and we offer a pragmatic framework – the typology of different space types and enrichment factors - that could be helpful when identifying requirements or solution principles.

5.3. Limitations and future work

One of the major limitations of our suggested toolkit is that it has not yet been tested and evaluated. We are aware that this is a crucial part for a design science approach like this, and hence an evaluation workshop with the respective stakeholders is scheduled as the next step. Questions to be addressed in this workshop are whether people can use the toolkit autonomously without any expert supervision, and if all three card decks are used equally. Furthermore, the list of cards from the *Inspiration Space* deck is certainly not complete, but will rather be extended constantly, whenever new insights emerge. We consider the presented toolkit as a preliminary and “living” tool that will constantly be updated and improved.

Figure 7: The Solution Space Card Deck (50 cards of the same design)



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the urban public space and design as tools to promote

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Abstract

We live in a rapidly changing world, where the way we live, work and interact in the cities and with each other is constantly transforming.

Through need-finding, and understanding of the community requirements that depends of the context, designers and managers could decide pertinent strategies and develop future scenarios for creating new stories. Is not just about designing spaces, is about creating stories, designing services and experiences that happen in the space and reinforce social interactions and relationships.

Is in the public space where relations and encounters happen spontaneously.

The scope of work suggests a new approach to identify, design and develop more efficient places, in terms of cost and social benefits, through a systemic perspective, focused in the emotional process of interaction in order to find the meeting point between the system components.

This research raises open possibilities for designing spaces through understanding and studying interactions from a human centred perspective and promoting social innovation. By understanding the community needs and involving it in the design process, this model proposes new ways to construct citizenship that could generate more interaction, social innovation and quality of life.

Keywords: public space, social interaction, experience design, systemic thinking

the urban public space and design as tools to promote social interaction

1. Introduction

In this communication era, the only thing that is constant is change. We live in a rapidly dynamic world where the way we live, work, and interact with each other is in continuous transformation. People's lifestyle and interests have been modified; we interact in different ways and dimensions, also using new platforms. Living is constantly modified by new technologies, but life is also shaped by common habits. People need to share and interact with each other even if the stage changes.

We all have the desire to share experiences with others, and public spaces are the natural place to coincide and interact with each other. The public realm is where people find the place for relationships; identification, expression of different opinions, coexistence among citizens, contact and exchange of ideas. It is the place where the community development is reinforced and the ideal platform for promoting social values; such as respect, tolerance, compassion, and empathy, among others. Is in the public space where people can build healthy, constructive relationships, between different society spheres.

As everything in life, public spaces should allow new settings for community life development, and must understand the contemporary living and offer a common space to connect, interact and share our personal stories.

Public space is the setting where we perform our daily community life. The main concern is to develop stories and experiences in the space, reinforcing social interactions and relationships. It is not just about designing the space, it is about creating stories, designing services and designing for experiences that are going to happen in the space.

By understanding the most important needs of the community and involving them in the design process, the possibilities for constructing citizenship would generate more interaction and improve the quality of life. The importance of the experience resides in the idea that we relate to our environments emotionally, we live stories and situations in the space.

Public space and experiences

The emotional experience in the cities has been discussed by many theorists, in different disciplines like Urbanism, Sociology, Psychology, and Anthropology, among others, becoming more relevant in recent times.

The modern postulates implicate a way of life subordinated to technology, in which people should adapt to a new order dictated by the Industrial Revolution and the technological changes. In the second half of the twentieth century some authors like Jane Jacobs and Jan Gehl started to question the way the public spaces were planned, and started to claim spaces for the people and not for the machines (Gehl and Svarre, 2013).

Through history evolution, public spaces were modified with the society and changed to whatever they needed, but since the Industrial Revolution, people started to change and adapt to the new possibilities that technology allowed, which is not necessarily a negative aspect. However, the evolution of the public spaces and life models should be a dialogue between people experiencing the public realm and new lifestyles dictated by technology, it should be a round trip language in which both parts interact.

We are currently experiencing changes in daily life. Overcrowded cities like Mexico City, Mexico, where heavy traffic, insecurity and social differences are everyday problems, it looks like the transformation happens faster than normal. It seems that urban residents had been denied the opportunity to enjoy the public space pleasures like sitting in the park and interacting with each other, playing with the children, or strolling at night. We need to realise that the public spaces are means to a way of life. We just need to make decisions and start taking actions to achieve a lifestyle that gives us happiness.

Happiness and public spaces

Charles Montgomery (2013) argues in his book *Happy City, The Power for Urban Design to Make Happiness*, that the public spaces and cities are capable of improving people's happiness, through pertinent design decisions and the chance to interact with each other, with nature, and everything the public space offers itself.

To talk about happiness it is necessary to understand what happiness is. It is impossible to define it; it depends on the individuals, their ideals, aspirations, cultural context, emotional status, age, gender and endless aspects that make the concept of happiness personal and unique for each individual.

However, through history, psychologists, economists, philosophers, sociologists and other disciplines have studied happiness and how to measure it. What is most common is that everyone translates their ideas of happiness into experiences.

Greeks had the idea of happiness, called *Eudaimonia*, and each philosopher interpreted his own version of the concept. However, Aristotle argued that individual pleasures like health, power, good fortune and recognition are not enough, but that men could achieve happiness only by embracing their full potential. He considered that the polis was the only vehicle to achieve *Eudaimonia* (Montgomery 2013).

This relation between the civic and the individual life was evident in ancient Greek cities, where people could gather together in a shared space to discuss, express opinions and interact with each other.

Jeremy Bentham (1907) in *The Principle of Utility* argues that every action appears to augment or diminish the happiness of the party whose interest is in question. He devised a complex set of tables called "*Felicific Calculus*" where he proposed a classification of 12 pains and 14 pleasures, by which we might test the "Happiness Factor" of any action.

However, emotions cannot be pigeonholed in a set; it is so much more complicated than that. Emotions are not easy to measure, understand, describe and let less to design, however, understanding the cultural context, where people, tradition, and space converge is essential for planning spaces that reinforce well-being.

Economists tried to measure happiness, after Jeremy Bentham's theory, into something calculable, so they studied money and people's decisions of how to spend it. However, happiness is not just about wealth and comfort alone.

Abraham Maslow (1970) described human needs in a hierarchy in which once people cover basic and safety needs such as food, shelter, employment and resources, the subsequent are not related with economic wealth, but to psychological needs such as friendship, family, self-esteem, and confidence, and at the top of the pyramid the need for self-realisation.

Carol Ryff (Institute of aging, 2016) researched how social structures have a direct influence on several aspects of psychological well-being. Her study focuses on six dimensions of well-being:

- Autonomy
- Environmental Mastery
- Personal Growth
- Positive Relations with Others
- Purpose in Life
- Self-Acceptance

Ryff comments "*Eudemonia* is about getting up every day and working very hard toward goals that make your life meaningful" (cited in Montgomery, 2013 Kindle Location 558)

Another psychologist, Csikszentmihaly (1990) studied the optimal experience "Flow" in which people feel happy. He proved that the quality of life depends on two main aspects: The way we experience work, and how we relate with other people. By nature, we are programmed for being around people, and interact with each other. The way we handle our relationships influences directly in our happiness.

The most important psychological effect in public spaces is the way it establishes relationships between people, those give satisfaction to our lives. But relationships are not just about sympathy with each other; it is also about trust, the more we trust one another, even with an unknown person, have a significant influence on happiness and well-being.

Human beings are social animals, we need to live in communities in order to survive; animals that live in groups and cooperate with each other are more successful and accomplish almost unbelievable tasks such as ants, bees and so many others.

Jonathan Chapman (2005) suggests that we should co-depend from each other in order to experiment the individual being. In other words, individuality couldn't exist without society, and vice versa, society depends on the presence of individuals.

Relations with others can make us extremely happy if they are good, or miserable when not working well. People are the most flexible and changing aspect of the environment in which we deal. The same person could cause a pleasant situation and after a few hours cause an unpleasant one. That is why the person who learns to get along with others makes a change for the better in their quality of life. People are not only important because of what they can give us or help to accomplish; they are the most satisfactory source of happiness.

This flexibility of relationships is what allows us to transform unpleasant interactions into tolerable and even exciting ones. How we define and interpret the social situation makes a big difference in how people treat each other and the feelings that they experiment while doing it.

As in Hassenzahl words (2013) the pursuit of happiness requires procurement of positive and meaningful experiences on daily life. Through a commitment to the world, people can take control of their experiences (as possible) and thus increase or reduce their happiness.

This gives designers a great opportunity to work in different spheres, if designers can help people experiment positive experiences in their daily life, the natural place for this to occur is the public space where encounters happen spontaneously and all society spheres find a meeting point.

The potential benefits of designing for the experience of the lived space creates a better understanding of the cultural phenomena and develops effectiveness design strategies that works satisfactorily in specific socio-physical conditions. By discussing how people feel about public spaces in different contexts and circumstances, we can come up with pertinent design solutions that enable social participation and, in this way, people could create appropriation dynamics.

Designing experiences

The term Experience Design is commonly used specially in the digital realm, its main concern is how people feel while using a product or accomplishing an activity.

However, designing experiences is impossible to achieve. As Elizabeth Sanders (2002) comments, experiences are constructing activities. It requires two parts: the one that sends the message, and the one that receives that message. What designers work with is the process of designing the communication for people to receive the message. Designers should have access to the experiences that influences the reception of the message.

The importance of accessing experiences allows designers to understand people and learn from them. Sanders enlisted different ways to learn from people and the scene from different aspects :

- Listen
- Interpret and make inferences of what they think.
- Watch what they do
- Observe what they use
- Uncover what they know
- Try to understand what they feel
- Appreciate what they dream

Each route allows us connect in different levels, which Sanders divides in four:

- Explicit. Letting them express their selves; however, they only show what they want others to hear.
- Observable. Watch what people do provide observable information that can give a different perspective than just listening; in this case every component plays an important role.
- Tacit. Understand what people feel gives the ability to empathise and sympathise with them.
- Latent. Although is a tacit knowledge, understanding what people expect from the future reveals latent needs that allows designers to work in different directions.

There are numerous tools that allow designers to understand and empathise with people in these different levels. Even the traditional ones such as observation, or non-conventional ones that include acting and creating as emotional toolkits (people create artefacts to tell their stories and dreams) or cognitive toolkits (maps, 3d models, diagrams of relationship among others). What is important about these tools is that they allow end-user to get involved in the design process, and let them share their own needs and desires into their ideal experiences.

The more designers allow users to express and participate in the design process, the more effective and pertinent it would be for the community. Designers in all levels should understand and use different resources in order to be emphatic with the people, traditional design methods are not enough; different disciplines need to work together in order to develop new ways to approach the community.

As Sanders (2002) claims, *Post Design* is a visual language that people can use to express and interpret ideas, is an attitude, is recognising that everyone has something to offer, understanding the people who experience spaces, it allows the participation and collaboration, and it is a continuous process of changing and learning. It is a new way to conceive design.

It is possible to develop projects with this perspective; there are several examples of intervention in public spaces that reflect good practices, for example, the *Klyde Warren Park in Dallas, Texas, USA*. The park is a 5.2 acre (21,043.7 sqm), deck built over an eight-lane Freeway. It links the downtown cultural district with the mixed-use neighbourhoods to the north. The main purpose was to connect people to the heart of the city. The design process engaged stakeholders through community meetings, project workshops and park-feature surveys, in order to develop a project for the specific community that satisfied their necessities. The results were clearly successful. It is well connected to the city, and people can arrive by bicycle, Trolley, DART, or by car. The landscape of the city changed

radically, and it created a new place for people to gather together. The park features include Performance Pavilion, Walking Trails, Dog Park, Children's Park and games area. Almost every day the park has different activities for free and it created a new scenario for people to interact with each other. During the park's first year, it attracted over one million visitors. (Abendroth and Bell, 2016 pp. 286-288; Klyde Warren Park, 2015)

Another interesting case is the *Lafitte Greenway Revitalisation Project*, in New Orleans, Louisiana, USA. This park crosses over seven neighbourhoods in New Orleans, so it provided the city and the community an opportunity to interact and allow encounters. Because of the strategic location, different community groups were ready to participate. The design team researched about the community needs during different workshops and activities, such as: focus groups; *Chip Game*, a collaborative exercise which allowed the community to suggest what types of parks facilities and landscape treatments they felt appropriate for the *Greenway*; *public open house* where the participants suggested where programmatic uses should be located, and which design inspirations the *Greenway* should follow. Other resources were kick-off meetings where they focused on three major topics: interests, goals and programming for the *Greenway*. They also performed several on site observation accompanied by demographic, traffic patterns and land use maps. The main goal was to use *greenway* investment to catalyse sustainable neighbourhood development.

The project includes a master plan that provides better connectivity and increases the land value of the adjacent neighbourhoods, it also provides a space for people to interact with each other and to develop different activities. Numerous events and workshops gather the community around and create scenarios for people to construct significant stories and improve quality of life. (Abendroth and Bell, 2016 pp. 274-277; Friends of Lafitte Greenway, 2014)

In Mexico there has been multiple voices that create scenarios for discussion looking to generate better solutions for public spaces, in order to reinforce social interaction and community making, such as *W.E.Y.E.S. Collective*, a multidisciplinary group that enables dialogue between individuals, through strategic interventions around the country. This collective creates new ways to revitalise public spaces and build relationships, enabling social values such as cooperation and empathy among others. They claim for collaboration with others in order to create a collective society where everyone's contribution counts and improves the quality of life. They also believe in the community potential to generate positive societies where people are the most valuable resources. (W.E.Y.E.S., n.d.)

Conclusions

Experience Design puts forward a more empathic approach to design the urban realm by understanding feelings and cognitive aspects of the people.

We need a new approach for designing public spaces focusing on the potential to create relationships and interactions that offer freedom and autonomy to individuals and in this way, improving life quality.

By understanding people's context and specific needs designers can adopt an informed position and bring pertinent solutions in terms of social benefits.

By developing the ability to observe, listen and learn from those who experience the space is fundamental for the creation of optimal public spaces and happiness. Professionals should become more prepared to accept and learn from the spontaneous and unexpected situations of everyday life. This spontaneity is really significant for engaging individuals and groups in the citizen practices.

It is also necessary to be more flexible and empathic in the way the public spaces are planned and designed, it is urgent to evolve different disciplines in the designing process, and it is vital to understand the specific context and needs in order to purpose efficient and meaningful spaces.

The design practice is not static, and depends on various factors; however, it is important to consider leading ideas from different disciplines in order to enrich the experience of the public spaces. The more designers are concerned about living experiences, the more individuals would relate and create symbolic and meaningful references to places, and create healthy relationships and citizen construction.

It is necessary to adopt theoretical methodologies that allow designers to generate social change through dialogue and commitment. There is no room for traditional practices based on imposition. It is urgent for designers to constantly revise and adapt their working methods in order to create a complete picture of the contextual situation that shapes the community and the space.

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empowerment started with a mug of herbal tea – oi!, a case of art integration in communities in hong kong

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Abstract

“Oi!” is a surprisingly successful experiment and historic building re-activate project. Oi! is an art space located in a grade II historic building in North Point, a region on Hong Kong Island. The transformation of this colonial building from a former clubhouse of the Royal Hong Kong Yacht Club, to an art space which is a platform and contact point for different communities, demonstrated how the respect of tradition, culture and the involvement of art communities can create a strong bonding of different parties and communities. Through sharing, collaboration and empowerment, Oi! has successfully attracted different art communities to curate exhibitions and events in this art space, and also successfully attracted different publics to participate in different levels. These efforts have changed the public’s concept and value towards art.

Keywords: art space, empowerment, public engagement, community art

empowerment started with a mug of herbal oi!, a case of art integration in communities in hong kong

1. Introduction

Public engagement and empowerment in art as cultural institutions' mission are nothing new. This can be traced back to the Round Table of Santiago, which aimed at promoting the development of museums, organised by International Council of Museums (ICOM) in Chile in 1972, three years after a symposium, which took place in November 1969 at the Unesco Headquarters in Paris, discussing the future development of museums in the aspects of positioning, function and the running model. Experts and scholars from the fields of museums, education, sociology and science gathered at the Round table of Santiago to explore how the modernisation of museums could catch up with the social and economic changes. The result of the intensive discussion then led to the Quebec Declaration in October 1984, which laid down the basic principles of New Museology. The Declaration of Quebec launched the movement of active museology, emphasising the integration of the museum users and its community, and the practice of museums and cultural institutions should serve the public according to the social context. (MINOM, 2010) The public was seen as the owner of cultural heritage, and it should have the equal right and opportunity of accessibility, both physically and intellectually. (Smith, 1989: p.8; Lang, 2006: p.31-32)

Responding to New Museology, the cultural context is taken care, and museums recognise that the public is not a collective total, but is a collection of individuals with different cultural background and needs. (Lang, 2006: p.5) Museums started looking for innovative ways to enable and encourage public's participation and involvement. These include, but are not limited to the accessibility both the physical space and the collections, participation in the process of curation, and interpretation of the cultural legacies. (Smith, 1989: p.20; Ellis, 2013) In other words, museum's role changed from authority of managing the interpretation and collection of cultural legacies, to become facilitator fostering knowledge building and public engagement. (Wright, 1989: p.137-138) "Oi!" is among one of the many museums and cultural institutions that adopt the principles of New Museology, starting experimenting with different ways and methods while revitalising a grade II historical building as an art space to engage and empower the public through community art. By observing the Xchange project and the reaction of the visitors at Oi! for the last three years, this paper is to explore how "Oi!", as a historic building revitalisation project and government-owned venue, successfully brought different communities together and changed their, especially the neighbourhood's, concept and value towards art.

2. Creating a space for everyone

Image 1: The historical building was transformed into an art space "Oi!" committed to community art



The colonial building of the art space “Oi!” (Image 1) was formerly a clubhouse of the Royal Hong Kong Yacht Club sitting at Oil Street in North Point Region on Hong Kong Island. Being one of the public venues under Art Promotion Office, Oi! has a very distinctive style in the neighbourhood, which marked the historical trace of the colonial era of Hong Kong. Unlike the other government-owned venues such as Hong Kong Museum of Art and the Hong Kong Visual Arts Centre, the Oi! team’s mission was to transform the space of the over one hundred years old grade II historical building into a platform to promote art by involving the public through community art (Hurley, 2013).

In Chinese, which is the main spoken language in Hong Kong, Oi can be a greeting amongst friends and neighbours, and can also be a way of getting attention from people to whom one would like to address. The name alone conveys the attitude of Oi!’s concern of the community, which is very diverse, especially the neighbourhood, comprising the Middle class that inhabits the residential area at the water front along the Victoria Harbour and the apartments spreading out along the main road parallel to the Harbour, the working class that accommodates in older and lower blocks scattering in between, and in contrast to them, the millionaires who are stretching along the hillside. There are also schools of different levels settling along the Fortress Hill Road uphill. At the same time, in order to escape from the high rent of central business district, professionals like designers and architects explore the outer skirt of the centre such as North Point for a less expensive workshop and office space. Therefore, a mixture of older and lower buildings and high-rises marks the cityscape of the region. Along the diversified neighbourhood of North Point is a challenge for the Oi! team – a wide spectrum stretches from working class to millionaire, from primary school students to professionals like designers and architects.

Though security could be a very critical issue for every public space, there is no sight of uniformed security guards who are now amiably under a polo shirt instead or ticketing booth at both entrances like other government-owned venues, making the site becoming more inviting. Visitors are free to come in and out without feeling being under permanent surveillance. Besides the office spaces, every inch of the venue including the courtyard can be transformed into spaces serving different purposes accordingly. With the support of an open and free environment, the team invites different parties to work as partner on art projects to be presented in Oi! under the framework of community art to pull different publics together. All these measures are taken to eliminate every bit of hindrances in favour of creating a space for everyone.

3. Stage for concepts, realisation and participation

Since inception Oi! has committed different parties to realise different projects in its space. The programming process is not a purely top down action, but a partnership through inviting different stakeholders to be the working partners of the team from the beginning of each project. Often the works are site specific and contextualised in relation to the community, which required considerable effort of research.

One of the kicking off projects, ‘Embark! Beyond the Horizon’ (2013) presented installations from four artists whose ideas of the works were inspired by the history and the environment. A collage of sound collected in and around Oi!, seawater transformed to rain imitating the water cycle, the projection of tsunami flooding inside the gallery, and together with the man-made tidal mist reconstructed the atmosphere of the former Royal Hong Kong Yacht Club’s long lost coastline caused by land reclamation. These extracted slices of history have created a heterotopia in the art space where the visitors could dwell on for a while to experience the past in present tense.

Co-organised with the School of Everyday Life, ‘In-Situ!’ (2014) re-staged the tedious and repeating past life of North Point when the manufacturing industry in Hong Kong was booming with an installation. Artists and invited groups inhabited the installed set for 80 days, where their daily life and interaction with the visitors became part of the exhibition. The interference of one’s private life is intimidating, but intrusion was transformed into participation in the context of ‘In-Situ!’. The visitors were welcomed



Image 2: ‘Bâtiment’ (2014) by Erlich Leandro (Courtesy of Oi!)

to step into the inhabitants' daily life with dialogues; thus a two-ways communication emerged, via which the inhabitants of the installation presented and shared their first-hand experience of the past life, whereas the visitors gained a touch of the daily routine not only through passive observation, but also through conversation with the inhabitants on their own will.

Many projects at Oi! are waiting for the participation of the visitors. Leandro Erlich's 'Bâtiment' (2014) (Image 2) can be one of the most successful examples of luring the visitors to give meaning to the virtual mirror image of a facade that blended naturally into the environment of Oi! through participation. The mirror effect was so magical and inspiring that the visitors kept lining up and bringing with their stories into the tailor-made installation that became the backdrop of their narrative. The staging was often refined meticulously by stage properties and costumes (Image 3).

Image 3: The staging was refined meticulously by stage properties and costumes with the support of Erlich's Installation as backdrop (Courtesy of Oi!)



The engagement of guest curators, young artists and the visitors has brought dynamics to the works that had been changing over the time for the whole exhibition period. Oi! team builds a platform for all stakeholders as a stage for letting loose imagination, conceiving creative ideas, realisation and participation. The process of 'seeing' and 'to be seen', and the interaction between all parties has created spiral effect in their involvement, which is further strengthened by the 'Xchange' project running concurrently in the Activity Room of Oi!

4. A mug of herbal tea to facilitate the participation of the community

In Oi! barter has been used in a creative way. One of the very first projects was the 'Imperfect Xchange' (2013-2015) conceived by CoLAB, a collaborative platform for social innovation through design established by two Hong Kong designers Eddy Yu and Lam Hung, who have transformed the Activity Room (Image 4) of Oi! into a herbal teahouse. On a trip to China visiting a ceramic factory, the duo, Yu and Hung, noticed that hundreds and thousands of white ceramic, which looked totally fine, were dumped piled up alongside the road to the factory. They then discovered that all these ceramic products were

Image 4: Activity room was converted to herbal tea house two year ago, and now is a social gastronomy



Image 5: I'mperfect mugs (Courtesy of Oi!)



labeled as imperfect and with defect perhaps only a very small black stain somewhere on the surface of the glaze. The duo saved some of these ceramics and blended the defect into the design (Image 5). Imperfect perfectly became part of the concept, and brought something very human to the almost perfectly sterilised white ceramic. Embracing imperfect graced with human touch confers the defect a new and positive meaning. The duo decided to invite the public to explore the meaning of imperfect with it in the Activity Room.

Image 6: I'mperfect coaster.



From the very beginning they were considering to set up the place

as a cosy space where people could stay and interact. The final decision was to furnish the activity room as a herbal teahouse where people could chat or rest while enjoying a mug of traditional herbal tea, instead of creating another café which already becomes inevitable in the Hong Kong cityscape. Herbal tea is not a replacement for water, but just something the Guangdong people would take for keeping themselves healthy. In the old days almost every mother knew the right match of herbal tea, season and health problems. Although today many households are not making the herbal tea themselves anymore, buying the ready made ones in herbal teahouse or supermarket instead, herbal tea still comes into one's mind when season changes, or for health sake, even just for relaxing. Taking herbal tea is a tradition and nostalgic part of daily life.

(Translation of the text on the left coaster):

What is imperfect in me

Is a mole on my face. Yours imperfection is too much into love of beauty

There is nothing wrong with love of beauty

You really need self-reflection

(Courtesy of Oi!)

The daily fresh-made herbal tea served in the I'MPERFECT mug was not for sale, but for exchange of a piece of information. Visitors could exchange a mug of herbal tea with their personal imperfections written on a coaster (Image 6), which was prepared and placed on the long table in the herbal teahouse. All these I'MPERFECT messages were collected and exhibited on the long table where the visitors could read through. The sharing of personal imperfection anonymously has struck a responsive chord, therefore many of the visitors did share their imperfection without inhibition. The exhibition of the coasters loosely on the table has added a very soft and human dynamic to encourage the engagement of visitors, on the one hand other visitors who read through the messages are motivated to participate, on the other hand a non-linear communication among the visitor emerged, no matter through contributing I'MPERFECT messages, or just as an observer sipping an I'MPERFECT mug of nostalgic and cosiness enjoying what the coffee shops a few steps away lacked.

5. Collaboration and evolution

Though promotion of the project relied almost only on word of mouth, I'mperfect Xchange had successfully attracted hundreds and thousands of contributors and linked them together with I'MPERFECT messages. Many of them return occasionally, brought with them companions and linger in Oi! regularly or even daily. With the positive resonance from the public, I'mperfect Xchange, which was planned actually for half a year, was extended. The curators worked together with the two designers to modify and further develop the project, so that the event stretched across the timeline accumulating more layers of interpretation from the visitors, and the output would be enhanced. The Oi! team adopted an additional approach to collaboration and partnership, trying to enhance the project through evolution. In the second stage, the visitors were invited to comment and feedback on the existing I'MPERFECT messages, and then in the third stage on the comments and feedbacks of the messages. Through this way more visitors who did not know each other communicate and interact with each other in a even more dynamic way, stimulate the participants to think not only their own imperfections, but also the others. Because of a mug of herbal tea, all the participants became part of the action designed by the duo of CoLAB.

6. Conclusion

As a government-owned venue, Oi! is extraordinarily flexible and open, and this is one of the most crucial factors affecting the accessibility of the venue. The team has been trying hard to eliminate as many unfriendly factors as possible to shape the environment, so that Oi! becomes more inviting for the public. Although Oi! has its own agenda, the team does not dictate to the guest curators, artists and the public, and takes them as partners and works closely with them. Throughout the co-curation and co-creative process, the team provide guidance and advice to the partners, to facilitate the partners' work and at the same time ensures the accomplishment of the objectives of the art space. Projects continue to evolve without a pre-designed outcome, and to be enriched further with the public engagement. The friendly set up of the space is to enhance the physical accessibility of the venue, and contextualisation of the works that based on the history, tradition and life of different communities create opportunities for intellectual accessibility. To conclude Oi! team's practice and experiments, the venue is a space providing platform for realisation and contextualisation of works through engagement and empowerment of different communities that are linked and blended in the process of experiencing art in their own ways

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rephotographing place together: japan and the challenger expedition

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Abstract

Locating the vantage point in historical photographs and making contemporary images of the same views, “rephotography” is a range of photographic practices that asks viewers to consider their relationship to time and change (Klett et al 2006). Inviting viewers to participate in an act of rephotography, the method also provides a platform for the discovery of alternative viewpoints and understandings. This paper draws upon a practice-led inquiry into photographs of Japan made during the *Challenger* expedition, a 19th century voyage to further knowledge of the world’s oceans. Having made rephotographs of the locations in 2006, the experience initiated a methodological shift in the author’s practice away from straight photography and toward gathering and compositing photographic fragments. Viewed within an accumulation of misrepresented knowledge (Latour 1988), both the original photographs and those rephotographs were considered to have omitted local voices from production. Therefore, returning to the same locations in 2015, contemporary residents were invited to rephotograph and collectively document the locations, and make collages in response to the experience. This paper discusses their collages within the context of rendering local voices explicit and proposes that rephotographing with participants activates a place in the past through creative engagement with the present.

Keywords: rephotography, challenger expedition (1872–1876), place, participation

rephotographing place together: japan and the challenger expedition

1. Introduction

Rephotography is the act of revisiting a location in a historical photograph and making a new photograph from the same vantage point. A popular approach for visualising change, emphasis is often placed on the rephotographs created rather than the experience had. Departing from that trend, this paper presents findings from the author's practice-led inquiry into photographs of Japan produced during the *Challenger* expedition, a British survey expedition conducted between 1872 and 1876 charged with furthering knowledge of the world's oceans. The expedition's photographs were at odds with its official objective "to document native races to one scale" (Royal Society 1872), recording places visited such as temples and waterfalls. Viewed within an accumulative cycle of misrepresented knowledge (Latour 1988), the expedition's photographs arguably contained only one viewpoint (that of the visitor) despite implied contributions of multiple crewmembers (e.g. the expedition artist, on-board scientists) and possible contributions of local people (e.g. guides, interpreters) in their creation.

In previously rephotographing the locations in 2006, and again in 2007, the rephotographic experience initiated a shift in my creative practice away from recording a single moment of time (straight photography) to collecting and compositing moments over a period of time (McLeod 2008; 2009). Production of the resulting images would not have been possible without local people who contributed to identifying, finding and visiting the location, but their involvement was not recorded within them. Like the expedition's photographs, my rephotographs also represented a single viewpoint and were therefore only descriptive of my engagement with the place over time.

In more recently asking contemporary residents of Japan to participate in the process of rephotographing these locations using digital cameras and other visual means of recording (e.g. sketches, notes), my practice-led inquiry aimed to explore others' experience of place and how they responded to it creatively. This paper presents a sample from that inquiry. Following a brief overview of the genre of rephotography, the paper introduces locations in the expedition's photographs of Japan as places returned to over time. Drawing upon initial findings from rephotography conducted with 29 participants between April and June 2015, a case is made for rephotography to activate a place in the past through creative production with others in the present and hopefully bring others into that dialogue in the future.

2. Rephotography

In 1888, Sebastian Finsterwalder used photography to survey mountain glaciers in the Tyrolean Alps. By establishing camera stations and producing yearly photographs, slow subsiding change over time was documented and measured (Hattersly-Smith 1966; Rogers, Malde and Turner 1984). Regarded as "Repeat Photography" within Earth Sciences, the method has since been a useful means of collecting visual information over time, albeit in one of two forms. Malde (1973) offered a practical method based on the visual judgment of the photographer, whereby he/she must identify an imaginary line, which must be used to align the background and foreground with that in the original image. By contrast, Harrison (1974) proposed a mathematical method whereby the photographer draws lines on a copy of the original image, calculates distance ratios between significant features, and then applies these ratios to the existing scene. In either method where an exact match would be difficult to obtain, a close enough location would be chosen and the precise position described in accompanying field notes. Similarly, any obstructions (e.g. hedge, building, fence) would involve the photographer producing an alternative composition (e.g. the same view but including the obstruction) providing that a new camera station was established nearby (Boyer, Webb and Turner 2010). In recording information over long periods of time, a central tenet of repeat photography was (and continues to be) ensuring precise future replications of the same view.

Outside of Earth Sciences, repeat photography has taken a different tack. During the 1970s, the *Rephotographic Survey Project* (RSP) led by Mark Klett adopted repeat photography for documenting change in America's landscape. Working from historical survey photographs taken during the 1860s and 1870s, their approach sought accurate replication of the original images, reproducing not only the same camera angle, but also the same time of day, time of year, and weather conditions (Klett et al 1984). Coining the term "rephotography", Klett and his colleagues saw that replication was not only important to understanding change but also important to how that change was perceived (Klett et al 2006). Since then, many rephotography projects have acknowledged the influence of the RSP and worked to replicate the vantage point from old photographs; the most notable being projects that revisited the work of canonised photographers such as Berenice Abbott (Levere, Yochelson and Goldberge 2005) or Eugène Atget (Rauschenberg 2007). Other projects have sought to draw attention to the efforts of less-known Victorian photographers such as John Burke (Norfolk et al 2011) or Henry Taunt (Diprose and Robins 2007). Significantly, the gradual digitisation of archival imagery and a general increase in the photographic capabilities of "everyday

camera users" (e.g. amateur photographers, camera enthusiasts, domestic photographers, prosumers) led to a popularisation of rephotography that can be categorised as one of two particular approaches for illustrating historical change: a "then and now" comparison whereby the contemporary image is placed alongside the original image, and a contextual comparison whereby either the contemporary or original image is laid over the other and presented in such a way that visual components are aligned or merged (Klett 2011; Wolfe 2011). The rephotographs of Sergey Larenkov (2010), which depicted photographs of WWII "dissolved" into contemporary scenes, drew attention to numerous attempts to mimic his style. Similarly, a photograph by Michael Hughes showing his hand holding a postcard of the Statue of Liberty in front of the real thing later spawned a Flickr group dedicated to holding historical photographs in front of the camera lens within contemporary scenes (Hughes 2008; Powell 2009). That rephotography has become popular in this way is indicative of its potential to get everyday camera users (e.g. amateur photographers, domestic photographers, casual photographers, camera enthusiasts) looking at historical imagery and engaging with it. Unfortunately, much of this rephotography places attention on the outcome rather than the experience of achieving that result.

Twenty years after completion of the RSP, Mark Klett collaborated with Byron Wolfe, Kyle Bajakian, and Toshi Ueshina on the project *Third Views, Second Sights* (Klett et al 2004), which aimed to rephotograph the same views from the RSP but used an expanded methodology to explore changes in their perceptions of the landscape as well as the landscape itself (Klett et al 2006, p. 4). For Klett and his collaborators, rephotography "was less the goal of the journey now, and more of a starting point." (Fox 2001, p. 289) A collaboration between Mark Klett, Byron Wolfe and Rebecca Solnit to rephotograph Yosemite National Park as once documented by Eadweard Muybridge, Carleton Watkins, Ansel Adams and Edward Weston (Klett, Solnit and Wolfe 2005) later freed Klett and Wolfe from the early rigid principles of the RSP, and inspired an exploration of the panorama as a tool for layering historical images amongst contemporary ones. Through further collaborative and individual rephotography projects, they have since allowed their experiences and collaboration to influence the ways that they juxtaposed contemporary views with the original images (Klett et al 2012). "Rephotography is a great way of extending a conversation about place over time" (Klett et al 2006, p. 5), but the majority of rephotography projects tend to be directed at the viewer. Use of crowdsourcing suggested that the viewer could be brought into that conversation as a participant. Inviting everyday camera users to return to old family photographs and engage with personal memory through making contemporary photographs, the projects *Young Me, Now Me* (Frank 2009) and *Dear Photograph* (Jones 2010) highlighted the power of rephotography for others to share stories, but participation was a matter of working according to a simple model. Rephotography projects are therefore yet to bring everyday camera users into a framework that facilitated and explored a creative perception of change, as that experienced by Klett and Wolfe.

3. HMS Challenger in Japan

The *Challenger* expedition arrived in Yokohama, Japan in April 1875 and stayed for approximately two months. According to crew members' accounts, the experience was visually rich, promoting comparisons with home as well as other destinations visited (Campbell 1877; Moseley 1892; Rehbock 1992; Spry 1877; Swire 1938; Wild 1878). Taken by Jesse Lay¹, the expedition's photographs of Japan appeared to document places of interest rather than follow an issued objective "to document native races to one scale" (The Royal Society 1872), making multiple photographs of particular sites visited in Yokohama, Yokosuka and Kobe.²

Happening across the expedition's photographs of Japan while living there in 2006, the contemporary locations were revisited with the help of two local volunteers and resulted in 15 rephotographs made with a prosumer level digital SLR (Figure 1). While the resulting "then and now" images approximately replicated the original vantage point, the time taken to produce the images was a fraction of the time required to make the original glass plates (McLeod 2008; 2009). Dissatisfaction with the lack of duration in the digital images led to a second visit in 2007, where the sites were rephotographed using a "hybrid" camera comprising the same digital SLR but combined with a brass Victorian lens similar to one employed during the *Challenger* expedition (Figure 2). The combination resulted in a process of accumulating photographs as momentary pieces over a period of time (e.g. 30 minutes) and reassembling them to form a view in its entirety. Sharing similarities with the practice of panoramic photography but observing a tendency in the *Challenger* expedition to photograph large vistas as multiple overlapping pieces, those rephotographs emphasised the gap in time between each piece and effected a shift in my photographic practice from the recording of a single moment to the gathering and compositing of moments (Figure 3). As "rephotography is particularly good at asking viewers to consider their relationship to time and change." (Klett et al 2006, p. 6), reflection upon that shift gave cause for further studying the impact of rephotography upon creative production with others.

¹ The expedition had three photographers during the expedition. Jesse Lay was the third (Brunton 2004).

² That no photographs were made by the Challenger photographer in other places visited (e.g. Tokyo, Osaka, Kyoto) is peculiar but perhaps owing to restrictions on foreign travel into Japan's interior, or an existing souvenir market targeted at foreign visitors.

Between 2009 and 2013, an online project *SNS Challenger* (McLeod 2013) was carried out to collectively rephotograph locations around the world visited during the *Challenger* expedition. Working remotely in collaboration with local residents, participants reported similar experiences of reconsidering time and change (Chesney-Green 2010; Linares 2010; Muller 2010; Ponce 2010). Continuing to conduct research into production of the expedition's photographs implied the possibility of collective efforts: crewmembers reported relaying instructions to the photographer (Campbell 1877, p. 145), and the official expedition artist suggested working alongside the photographer (Wild 1876, p. 120). Furthermore, local residents in Japan were employed as guides who had potential influence (Campbell 1877, p. 357) and possible awareness of how their country was to be viewed by foreign eyes (Satow 2006). That these possible contributions were not explicit in the photographs or written accounts is indicative of what Bruno Latour (1988) described as "asymmetrical distortion": incomplete information that was misrepresented as fact. As such distortion accumulated at a centre far removed from where the information was collected, it became necessary to visit the locations again to address that distortion: first in 2014 with one contemporary resident and again in 2015 with 29 contemporary residents. Within this second sample, participants were asked to visually document their experience and then produce a collage that described their rephotographic experience. In conducting these samples a second methodological shift occurred in my photographic practice: from the recording of a single viewpoint to the collective recording of a shared experience. Of more interest for this paper was the participants' creative engagement with the past and present. The following section discusses participant's rephotographic collages in view of their creative production. First names are used for brevity within discussion and surnames are used for citation.



Figure 1: Left: "Entrance to Shinto Temple" by Jesse Lay (1875) from the Challenger expedition (1872–1876) © Trustees of the Natural History Museum, London. Right: A contemporary rephotograph of the same scene as taken by the author in 2006 using a prosumer digital SLR.



Figure 2: The "hybrid camera" comprising a brass Victorian lens similar to one employed during the Challenger expedition and the previously used prosumer digital SLR. The combination resulted in a process of accumulating photographs as momentary pieces over a period of time (e.g. 30 minutes) and reassembling them to form a view in its entirety.



Figure 3 "Entrance to Shinto Temple" (2007) taken by the author using the hybrid camera (Figure 2). The process emphasised the gap in time between each piece and initiated a shift in the author's practice.

4. Rephotographing Japan collectively

Public calls for volunteers were posted on two popular language exchange websites in Japan between March and May 2015,³ which resulted in 29 participants taking part in workshops at three locations featured in the expedition's photographs.⁴ Iseyama Kotai Jingu (Figure 4) in Yokohama was visited twice over two afternoons: once on 25 April



Figure 4: "Shinto Temple, Yokohama" by Jesse Lay (1875) from the Challenger expedition (1872–1876) ©Trustees of the Natural History Museum, London. The location in Japan is known as Iseyama Kotai Jingu.



Figure 5 Waterfall, Kobe" by Jesse Lay (1875) from the Challenger expedition (1872–1876) ©Trustees of the Natural History Museum, London. The location in Japan is known as Nunobiki-no-taki.

(Saturday) with 10 people and once on 26 April (Sunday) with six people. Two locations in Kobe were visited in separate months: Nunobiki-no-taki (Figure 5) on 10 May (Sunday) with 11 people, and Tenjoji (Figure 6) on 14 June (Sunday) with six people.⁵ At each location, participants were asked to first identify and replicate the vantage point in the original image, and secondly asked to visually document the experience.⁶ Following each workshop, participants' photographs were collected and shared amongst the rest of each group. From that pool of visual material, participants were asked to make a collage that described their rephotographic experience. During that time, documentation of the workshops as well as progress of my own collages using the same visual material was posted to a Facebook group. Participants were also introduced to a collection of rephotography projects for reference during this stage.⁷ Adopting this transparent approach led to each location being documented



Figure 6: "Kobe, Japan" by Jesse Lay (1875) from the Challenger expedition (1872–1876) © Trustees of the Natural History Museum, London. The location was a temple known as Tenjoji, but is now a set of ruins.

3 Use of language exchange websites in Japan is common. As the workshops were conducted using English, the opportunity to practice English communication skills in a goal-based activity served as a reward for participants' involvement.

4 These locations were chosen for workshops because they were convenient for participants to reach and also photographed more than once by the Challenger photographer.

5 Four of the six participants visiting Tenjoji had also previously joined the activity at Nunobiki-no-taki.

6 In addition to digital cameras (ranging from semi-professional DSLRs to smartphone devices), one participant used the activity to test an old film camera, and other visual materials were collected (e.g. Omikuji, a fortune telling slip that can be purchased at shrines).

7 This collection of rephotography projects was adapted from lectures given to university students about the genre of rephotography between 2012 and 2015. It was also given at the participants' request.

slightly differently. For example, during the first workshop, participants opted to use only digital cameras but during the third workshop, participants were asked to use blank postcards and post-it notes to additionally record their thoughts and feelings (Figure 7).

In attempting to replicate the vantage point of the original images, participants' rephotographs varied in accuracy. Using a "piling" technique to obtain an average view,⁸ points of shared interest in the scene were highlighted rather than a single "correct" position. For example, at Nunobiki-no-taki in Kobe (Figure 8), the arc of one waterfall appeared as the most common element and was subsequently used to align the multiple images. Similarly, at Tenjoji, the stone foundation of the building was considered a common element of the view and a point of reference for comparisons. Visual documentation of their experiences culminated in 1455 photographs taken at Iseyama Kotai Jingu, 578 taken at Nunobiki-no-taki, and 479 at Tenjoji. Although participants generally documented the experience more than replicating the vantage point, Mieko and Sumiko appeared to take more photographs of the vantage point, which suggested uncertainty regarding expanding the task, a point confirmed on site during informal conversation with Sumiko (Kameyama 2015a). However, when visiting Tenjoji, Sumiko then took more photographs of her experience than when replicating the vantage point, suggesting that the task had become easier for her. Of the other three participants that visited both locations in Kobe, the number of photographs taken by Thomas similarly increased at Tenjoji on account of his increased enthusiasm (Manuell 2015), whereas



Figure 7 During the third workshop, participants were asked to use blank postcards and post-it notes to additionally record their thoughts and feelings. The postcards were later completed and mailed to the author.



Figure 8 Using a "piling" technique involving overlaying multiple photographs, an average view could be seen, as well as shared points of interest (e.g. the arch of the waterfall at Nunobiki-no-taki in Kobe).

⁸ Although notably used in projects by Ken Kitano (2008), Mishka Henner (2010) and Corinne Vionnet (2012), the technique was first developed by Francis Galton during the 1880s to record a typology (Jay n.d.).

contributions from Masayo and Megumi 3 decreased, suggesting more familiarity with the task.

Using the shared visual material, 16 collages were submitted by 11 of the 29 participants. These were then annotated and used to elicit feedback through structured questionnaires, which helped to contextualise participants' aesthetic decisions. For example, regarding the inclusion of cable cars in his collage of the second waterfall at Nunobiki-no-taki (Figure 9), Thomas replied, "I loved looking at these cable cars when we were there so I really wanted to include them even if they aren't quite to scale. I also thought they were a good way to show a contrast between the



Figure 9 "Nunobiki-no-taki", a rephotographic collage by Thomas (2015)



Figure 10 "Tenjoji", a rephotographic collage by Masayo (2015)

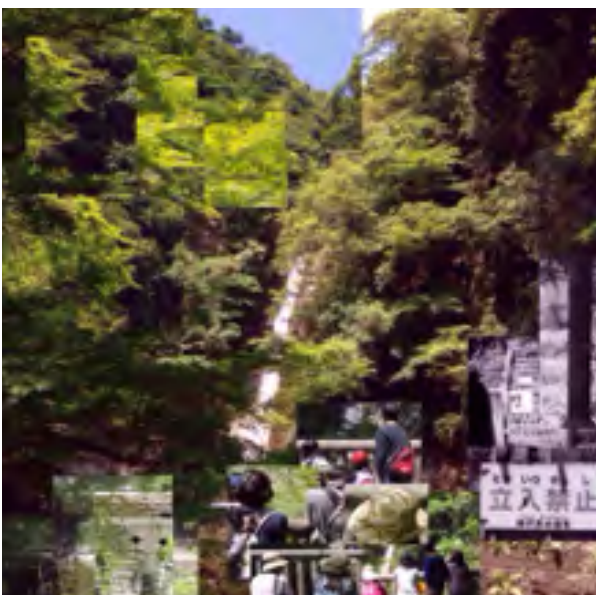


Figure 11 "Nunobiki-no-taki", a rephotographic collage by Mieko (2015)



Figure 12 "Tenjoji", a rephotographic collage by Megumi 3 (2015)

original shot and the location nowadays" (Manuell 2015). Similarly, asked why two views at Tenjoji were placed opposite each other as if mirrored (Figure 10), Masayo replied, "My experience of Maya-san was 360-degree. So I wanted to make this collage to show so as much as possible." (Yasumoto 2015)

The survey feedback also helped to identify commonalities. Firstly, it was noted that pieces of participants' collages were distorted, possibly due to limitations in tools used. For example, in using a free iPhone application for her collage (Figure 11), Mieko noted being limited by the simplicity of the functions and could not achieve the result she wanted (Matsumoto 2015). Secondly, of the 11 participants who submitted collages, four considered them unfinished. For example, in her collage of Tenjoji (Figure 12), Megumi 3 noted that she would have liked to change the size of some pictures so that the collage looked more consistent (Yamamoto 2015). In asking why particular participants considered their collages finished, Masayo's response suggested that she had given them a lot of thought and that to change something would result in a different collage from the feeling she had (Yasumoto 2015). In contrast, Sumiko noted her collages (Figure 13) were finished because she had no more ideas (Kameyama 2015b) suggesting that an exhaustion of ideas equated with completion. Moreover, Emi's response suggested her collage (Figure 14) was completed but unfinished when she wrote, "I think so. I hope so." (Kadoi 2015) Thirdly, seven of the 11 participants

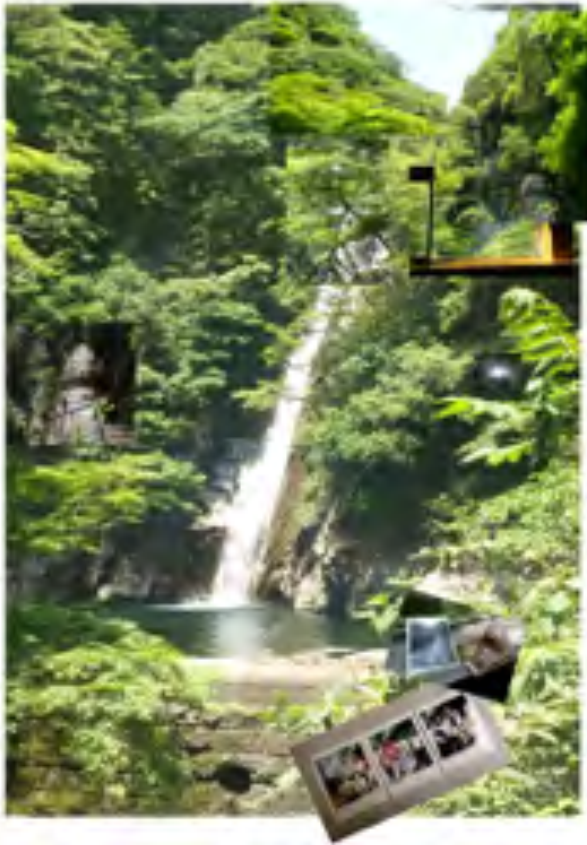


Figure 13 "Nunobiki-no-taki", a rephotographic collage by Sumiko (2015)



Figure 14 "Iseyama Kotai Jingu", a rephotographic collage by Emi (2015)



Figure 15 "Iseyama Kotai Jingu", a rephotographic collage by Saori (2015)



Figure 16 "Iseyama Kotai Jingu", a rephotographic collage by Megumi 2 (2015)

acknowledged using photographs taken by other participants and their responses suggested respect for such contributions. For example, Masayo noted that others' photographs could "show my feeling or impression clear much more than mine" adding that they reminded her of some of her impressions there which she had not recorded (Yasumoto 2015). Similarly, Saori noted that her experience and resulting collage (Figure 15) "didn't exist without them" suggesting a reliance on other participants' views (Takahashi 2015). Fourthly, of the 11 participants, five included an image of the hybrid camera or me in their collage. Asked about inclusion of the lens in her collage (Figure 16), Megumi 2 drew attention to looking through history when she noted, "It's photo session. We saw through the lens" (Hoshino 2015). Similarly, Masayo felt that the lens symbolised eyes (Yasumoto 2015), and Emi regarded it as "the door to the Victorian era" (Kadoi 2015). Other participants noted being inspired by my method of making pictures (Manuell 2015) or other examples of my photographic practice (Sawada 2015), thereby raising the possibility that the compositing of other participants' collages may have been influenced in the same way. Lastly, their collages suggested that the process encouraged a critical view towards contemporary surroundings. For example, Mieko included pictures of warning signs placed around the waterfall, noting that although such signs were necessary, they should be more in harmony with nature (Matsumoto

2015). Similarly, Megumi 2 included a picture of a sign warning not to tie omikuji to the tree,⁹ noting a contradiction in tying the sign to the same tree (Hoshino 2015); a point echoed by Emi who expanded upon a similar contradiction whereby shrines “entertain people to survive” but also “discipline people to be sacred” (Kadoi 2015).

Further feedback revealed more information about how participants approached the task on location and in making their collages. For example, Saori noted how she had started the activity on her own but gradually found herself working with other participants later on (Takahashi 2015). Similarly, Masayo recalled a simulated feeling of the *Challenger* crew walking around the location as she herself was reflecting upon what other participants were also doing or thinking (Yasumoto 2015). Whereas the majority of responses revealed only the tool that they used (e.g. Microsoft Word, iPhone application, etc.), two participants elaborated further: Emi described how she had edited her photographs with photo-applications and printed them out before cutting and pasting them into a notebook, which she felt expressed a travel notebook style (Kadoi 2015); and Sumiko noted that she followed her “sixth sense” while using Microsoft Word as compositing tool (Kameyama 2015b).

5. Further discussion

Rephotography typically involves the juxtaposition of a contemporary image with an older image of the same location, sharing the same single vantage point but at two different points in time. However, in contrast to repeat photography, where rigorous efforts preserve the collection of future data, rephotography can be seen as “an exploratory, process-oriented form of visual communication” that can expand methods beyond simple “then and now” comparisons (McLeod et al 2015, p. 52). As Klett noted, “rephotography is particularly good at asking viewers to consider their relationship to time and change.” (Klett et al 2006, p. 6) In inviting local residents to engage in rephotography as participants, this paper considered their creative responses as a means for understanding a place in and over time. While only a small sample, participants’ summary of their experience further indicated potential for participation within rephotography for future studies. For example, Emi noted that through the process, she learnt to “express not only what I think and experience but also what we share in a single photograph” (Kadoi 2015). Similarly, Saori noted, “doing rephotography is a good way of reviewing and organising what we saw and experienced before” (Takahashi 2015).

While the sample highlighted potential for participation in rephotography to render local voices explicit, it also drew attention to concerns for future studies. Firstly, although “then and now” rephotographs are a common sight in museums and online, this is perhaps because such juxtapositions are easier to achieve with less time and few resources. During this sample, Sumiko’s response in particular highlighted that expanding upon the replication of the vantage point was difficult, a point echoed by Megumi 2 who noted that “everything has story and it is hard to express its story with pictures, but fun if you can make it.” (Hoshino 2015) Moreover, this sample showed that while numerous participants volunteered their time for a single afternoon, asking them to make a collage after the workshop and within a set period of time required more attention than could be given. Replication of a vantage point and creatively responding to the experience is time-consuming, especially for everyday camera users who may have other demands on their time (e.g. employment, family, other interests, etc). While this sample attempted to make the process compact (e.g. one rephotograph per workshop requiring two hours, compressing visual material), additional ways are sought to balance full participation with maintaining their interest.

A related concern was that the length of time required for the rephotography workshop was perhaps connected to how participants responded to the experience. For example, as the location of Tenjoji was on a mountain plateau and required taking a cable car and hiking to reach it, the journey of getting there to make rephotographs fed into the experience. By comparison, the locations of Nunobiki-no-taki and Iseyama Kotai Jingu were nearer to stations and took less time to visit and complete the activity. That participants’ collages from Tenjoji included more documentation of the journey than was apparent in participants’ collages from the other two locations is an indication that experiencing rephotography as a journey can help participants to respond creatively to the place. Future studies would be mindful of the role duration plays when engaging in the rephotographic experience.

A third apparent concern was that the researcher being present on location with participants during rephotography could present a challenge to conducting research objectively. While care was taken not to introduce participants to a range of rephotography projects prior to each workshop, participants would have been able to research such information themselves using the Internet. Similarly, when rephotographing at each location, care was also paid to not direct the participants or intentionally influence their method or approach, opting instead to participate in

⁹ Omikuji is a slip of paper that describes the fortune of the person who blindly picked it from a box at a Japanese shrine. These can vary between “very bad luck” and “very good luck” with more variations of predictions within those. Typically, if someone receives an unlucky omikuji, it is usually tied to a tree at the shrine, and later burnt along with other unlucky ones.

the rephotographic process as well. Choosing to gather photographs using the hybrid camera during the workshop initiated conversations about looking (Figure 17), but it could also have influenced participants' own processes. For example, Thomas' documentation suggested that he also attempted to photograph Tenjoji as a collection of pieces, thereby emulating my approach with the hybrid camera. While exhibitions presenting the participants' collages alongside my own collages raised questions for the direction of my creative practice (Figure 18), the presence of the researcher may be considered too strong an influence for other inquiries engaging participants within a rephotographic approach and must therefore be taken into account.



Figure 17 The author talking about the process of the Hybrid camera with Megumi 3 at Nunobiki-no-taki, Kobe. The photograph was taken as documentation of the process by Aki.



Figure 18 "Then, Then Again, Now" (1875–2015), an installation of 86 folded prints presenting the original photographs, the author's rephotographs from 2006 and 2007 as well as rephotographic collages by the participants, within a circle arrangement as installed at Zuishoji Art Projects in Tokyo in September 2015. Images were not labelled with authors and visitors were invited to view the collages in their own time and form associations. Displays of the collages such as this raised questions for the direction of the author's own photographic practice.

This paper showed that bringing local contemporary residents into the rephotographic process as participants could counteract an accumulative misrepresentation of knowledge by rendering explicit the contributions of others. Moreover, it generated a variety of creative responses to a specific place both in and over time. While more studies are needed to refine such workshops, the findings presented here suggest that participation in rephotography has much to offer for learning from surroundings.

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impact of future space from a masters' student experience

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Abstract

A transdisciplinary approach that combines architecture and industrial design education into a new hybrid profession can have a lasting impact on education from a masters' student perspective. Living in urban city centres allows for residents to be inclusive within society and in close proximity to their daily needs and activities. Urban cities are dense and culturally conceptualised to be crowded. For a creative production in expansion for future place in an urban city, an innovative approach must be applied, transforming a cube into a living place for individuals and cohabiting residents. A design transformation has been explored to situate the cubes on top of existing buildings, creating an expansion within the city. Integrating different disciplines; design and technology, three main technical features were explored; folding, sliding and rotating. Roof articulations generate a direct relationship between the indoor and outdoor environments. This direct link enhances the future place visually and decreasing crowdedness. Adapting such a user centred design approach improves the quality of life and inclusiveness within society. Ensuring that the future place produced meets the users' needs. This design approach creates an opportunity for future design research and education, ensuring a lasting impact is formed.

Keywords: user centred design, architecture, industrial design, future space

impact of future space from a masters' student experience

1. Hybrid profession: architecture and industrial design

1.1. Architecture

Historically different definitions have been identified for architecture as a discipline. Ancient Greece viewed architecture as a *Techne*, which translates to “craftsmanship.” Medieval Europe looked at architecture as a mechanical art where as renaissance Italy regarded it as an art. And finally Europe viewed architecture as a fine art in the eighteenth century. If architecture were to be defined today, it would be looked at differently. Architecture is seen to be a combination of all four definitions. Architecture is the art, science and the business of the building (what-is-architecture-2014). Jan Henriksson, an architecture professor at the Royal Institute of Technology in Stockholm, says that the creative angle in architecture is the architect’s interpretation of a place. Starting with sketching as an instrument it then transforms into form then moving to reality (Parment 2000). Architecture transforms the abstract to reality (what-is-architecture-2014, Parment 2000). Driven by belief in the nature of the real and the physical, there are different principles in architecture (Rattenbury 2012). Le Corbusier defines architecture as “the masterly, correct and magnificent play of masses seen in light” (Elizabeth 2013). Massing is a fundamental principle of architecture. Shaping a building to create a certain effect (like breaking up a façade) defines massing. The way the masses conform shapes the space inside the building (Architecture 1987, RAIC 2010). The principle of proportion in architecture is seen as how the elements of a building relate to each other. Unity of materials and products and how they join in a cohesive manner is the third principle. Finally, the detailing of a building enhances and makes a big difference (Architecture 1987). Steven Holl similarly uses three key words to explain architecture. Use, space, and idea is what architecture is. He explains the difference between art and architecture through the term use. He says architecture defines the use whereas art lacks use (what-is-architecture-2014). The “use” of architecture is meant to move the user (what-is-architecture 2014). Architecture is the art of space (what-is-architecture-2014). It not only designs a building, but the space around the building (RAIC 2010). Henriksson says, “People are the positive form where as the building is the negative form, which the people make use of and are enveloped by”; this is what we call place and space (Parment 2000). Third term Steven Holl uses is “Idea.” The idea is the organic link between concept and form and how, space, light, material and detail all come together to convey architecture (what-is-architecture 2014)(Architecture 1987). Geogier Schotts looks at architecture differently by highlighting the importance of architecture in a more user centric way. He says that the important aspect of architecture is “not the structure itself, but the effect of the structure on the human spirit,” ensuring that the structure should be judged based on how the users experience the building as they walk through it (Hussey 1938).

1.2. Industrial design

Industrial design is “something unknown and it can intentionally emerge from what it is known” (Hatchuel and Weli 2003). This statement shows that most designs that exist have been inspired by the evolution from past products, emphasising the past as an important focus of study to develop products today (Eckret and Clarkson 2005). Industrial design originating from a holistic approach helps in creating products that serve the purpose of resolving problems. This user centric discipline addresses different aspects around the user, varying from their needs to the emotional relationship between the product and the user (Woelfel 2013). According to the IDSA, industrial design as a profession is a service that creates and develops concepts and specifications that optimise the function, value and appearance of products and systems for the benefit of the user and manufacture (IDSA 2010). It does this by preparing clear and concise design options using drawings, models and verbal descriptions. There are two main approaches to product design; meeting the user needs and the technical process and requirements of manufacturing that ensures that the materials and technologies used are effective. The discipline’s unique contribution is in design, whether it is the product or the manufacturing that relates directly to the human characteristics, needs and interests (IDSA 2010). Product design blurs the boundaries between specialist areas within it, whether it is furniture, kitchen appliances, etc. (Milton & Rodgers 2011). It is seen to enrich the quality of life of the people. Not only does this profession improve function and appearance but more important it resolves unanswered needs (Milton & Rodgers 2011) (IDSA 2010). The client and designer relationship within product design is vital. Both the client and designer rely on each other yet are anxious of the other. The client expects the designer to look at the problem and find solutions that they approve of. The designer expects to have freedom and variation in order to be creative and produce an innovative end result. The designer is required to interpret the problem, analyse it, to set and highlight sub-problems and opportunities, to resolve the problems, ensuring that the product appeals, pleases and challenges the end user (Hatchuel and Weli 2003).

1.3. Combining the disciplines

Architecture and Industrial Design are two disciplines that can complete each other when merged. As Krampen says, there are major differences between architecture and industrial design, but they both develop upon each other. The designer plays the role of merging between different aspects; such as technology, communication, ergonomics, user experience and aesthetic dimensions (Anselmi, 2012). A transdisciplinary approach that combines architecture and industrial design into a new hybrid profession can help solve problems of tomorrow's changing world. An exploratory learning approach can be obtained to create an opportunity for future design research and education ensuring a lasting impact is formed. Talking from a didactic perspective, using a technique that can be applied during any design stage will enable a young designer in understanding people's needs and desires not only on the physical and cognitive level, but on the emotional level as well (Anselmi, 2012).

2. Residential preferences: where the non-committed households prefer to be located

Deciding where to live is a choice taken by most individuals throughout the span of their life. The residential choices made by the people of where to live are influenced by different factors. These factors vary from the number residents that will live in the space, to their age, which constrains both the amount of space needed and the property required (Fontaine, Rounsevell, 2014). Other factors that influence the choice are; the social environmental, job location, and amenities. Older people care more for green areas and a view as compared to other age groups (Dökmeci, Berköz, 2000). The 'living space' designed targets the non-committed households, which are singles and cohabiting couples without children. The non-committed households usually prefer to live within close proximity to the urban city if not in the centre. Some non-committed households are located further from city centres where it is less dense providing larger properties at a lower price. But they remain well within the boundaries of urban areas (Fontaine). Due to the proximity of jobs, urban services (such as; culture, healthcare, recreational) and the concentration of areas, non-committed households are fond of living there (Fontaine, Rounsevell, 2014). The majority tends to live within the centres (Dökmeci, Berköz, 2000).

2.1. Urban centres: density and crowding

Urban centres are always seen, as the dense areas of the city where they are considered to be 'crowded'. Properties are usually smaller in the city centre and thus are often occupied by singles and couples for various reasons (Dökmeci and Berköz, 2000). Urban residents have to face not only the effect of density, but also spacious homes are limited and high in price, resulting in non-committed residents living in tight homes (Chan, 1999). There is a clear distinction between density and crowding that researchers tend to equate with each other. However a clear distinction in definition has to be defined between both density and crowding. Density is strictly a physical meaning. It is an objective measure of the physical environment, while crowding is subjective interpretation of objective reality (Chan, 1999).

Crowding on the other hand is a personal, subjective reaction, purely a psychological concept. Crowding represents more of a social interaction that is desired by the individual, occurring when the feeling of control is lost within a space. Negative interpretations of density in the environment are the result of the residents' personal interpretation of the space (Baum, Paulus, 1987). Crowding happens when the interaction of a relatively high density of people with other social, personal and physical-environmental variables (Chan, 1999). Conflict with others may lead to the feeling of crowdedness (Westin, 1970). Through his paper, data was collected from the interdisciplinary research done in Hong Kong. Westin analysed the space, housing type, achieved privacy, satisfaction, conflict with space and the perception of crowding. Amongst the different findings obtained, it was found that 82.5 per cent of those questioned, were found to have experienced the feeling of crowdedness due to the limited space available for activities. Proving that limited space is a critical reason for residents to perceive crowdedness (Westin, 1970). Privacy is achieved when the user is able to control the space and therefore the under-achievement of privacy is a source of conflict with other members in the household (Chan, 1999).

Physical design may modify people's perception of space, and consequently affect their satisfaction with their living environment. It also allows for the presence of private, public, semi-private and semi-public spaces. As the density increases the functional and psychological importance of outdoor areas increases too (Friedman, 2013).

Urban problems are unpredictable. The population changes over the years and opinions change within days altering the energy and resource requirements. Seasonal changes and traffic variations every second creates non-stationary issues (Gershenson, 2013). Solutions to these problems have to be adaptable to match the changes that take place. Living technology is adaptive, learning, evolving, robust, autonomous, self-repairing, and self-reproducing (Gershenson, 2013). Systems can adapt constantly to changes in their environment. It can be said that technology will be "more living" as it has more of the core properties of living systems (Gershenson, 2013). Human-made physical and social environments can be modified to produce a higher level of satisfaction amongst urban dwellers. Privacy includes elements other than the availability of space; to achieve reserve and solitude for example, an individual does not necessarily depend upon available space in the home and needs no direct involvement with

other household members (Chan, 1999). There are four states of privacy proposed. The first is the solitude level. This is the state of being alone and unobserved. Intimacy is the second level, which is the establishment of intimate relationships with fellow members in various small groups. The third level is anonymity, which is the potential to remain unrecognised in public places. And finally reserve level of privacy, which is the ability to protect personal information whilst maintaining psychological barriers (Westin, 1970).

2.2. Community: living within a community and attachment

Residents with a higher level of education seem to be less attached to their community or neighbourhood (Arnberger, Eder, 2011), leading them to prioritise living close to their job. Proximity to job location is the most important factor for young people's residential preferences (Dökmeci, Berköz, 2000). Those living in the urban and large cities are less attached and lack the sense of communities. A sense of community is essential as it can lead to a positive effect on people and surrounding environment. Natural features and open spaces play a significant role in creating a sense of community (Arnberger, Eder, 2011). Positive relationship is found between perceived public green space quality and community attachment. Public and private open spaces are commonly regarded as essential features to the quality of life for each resident and the community as a whole (Friedman, 2013). The technical and functional aspects of a building create a healthy and an enjoyable environment, more importantly the residents' interaction with the environment (Lee, Cho, Kim, 2012). People's value towards open space, a clean and quiet environment is usually the result of the architect's work (Dökmeci, Berköz, 2000).

Private spaces can be created outdoors as well as indoors. By having a private outdoor space on the ground floor, a direct relationship can be enhanced with both the neighbouring buildings and public open spaces. Private open space creates an indoor / outdoor connection. This relationship can be created using balconies and patios with sliding glass doors providing the direct link. However, visual privacy must be achieved for the residents (Friedman, 2013). Outdoor spaces are to be designed to foster a sense of identity and unity while maintaining privacy (Friedman, 2013) to reduce conflict with neighbouring residents and reducing the feeling of crowdedness. Outdoor areas provide opportunities for informal interactions to create a sense of community but also allows for natural light and ventilation, creating a visual enhancement and a healthy social web. Separated into two main categories, Friedman says there are on grade areas and above grade areas. On grade areas refer to the front, back and side yards as well as courtyards whereas the above-grade areas being the balconies and roof terraces.

Public spaces and private spaces are two stages in design that must occur in parallel to the conception of community. They are the central focus to create a sense of community identity, which creates a larger opportunity for social interactions. Communal spaces are also an added significance to the visual and functional stimulation of the space (Friedman, 2013). Typical townhouses benefit in terms of density as they accommodate more people within one particular area (Friedman, 2013). The grouping of units into clusters of three or more provides significant construction and energy savings as well as creating a sense of community (Friedman, 2013). Taking into consideration the different elements found in the literature review, the living space cube designed has fostered the various features in different ways.

3. Designing the 4.5m cube as a living space

3.1. Philosophy

The design requirements for this particular project was to design a 4.5 by 4.5 by 4.5 metre cube into a living space that targets a particular user group to create an innovative design meeting a particular need. The philosophy behind the designed cube is to create an innovative design that allows the residents to eliminate having the feeling of "crowdedness" in a dense city. In order to achieve this, a direct relationship with nature has to be designed, by creating a direct indoor / outdoor link. In addition, combining several cubes together rather than having a solitude cube establishes a sense of community. Inspired by the following quote, by the famous architect Renzo Piano, "When you walk 25-30 feet above ground, it is a miracle, because you are still in the city... but you are flying above the city. You are in the middle of trees, and that is a moment of beauty." The philosophy behind the design of the cube is abstracted from the quote as well as the information from the literature review obtained. Renzo Piano speaks about walking above the ground whilst being in the city, the "living space" designed, will be located within the urban city on existing buildings, allowing for an expansion within the city centres. By being on top of the existing buildings, they are "flying above the city with nature, creating the "moment of beauty." Integrated within the urban city centre, the four and a half metre living cubes will correlate with both traditional and modern buildings. Simplicity is a key element to the living space. The living space highlights key architectural design features through its design to meet the users' social needs. Several key features have been incorporated within the cube to eliminate the feeling of crowdedness. Natural ventilation and lighting has been established by using different technical features that break up the cube. Targeting non-committed residents, the four and a half metre cube is smaller than an average sized home. A visual enhancement has been created using different

architectonics allowing for the cube to break open (see figures 1 and 2). Three main technical features have been used; folding, sliding and rotating allowing for the residents to feel less crowded. Indirect lighting has been taken under consideration as well as natural ventilation. In cooperating both natural lighting and ventilation will create a sustainable aspect to the cube. Using the advanced technologies the living space will be designed for tomorrow not just for today. Spatial segmentation and movement has been implemented allowing for the users to alter the arrangement of the living space according to their needs at the time of use. The different opening of the cube has been studied to create a collaboration of different cubes together creating a community.

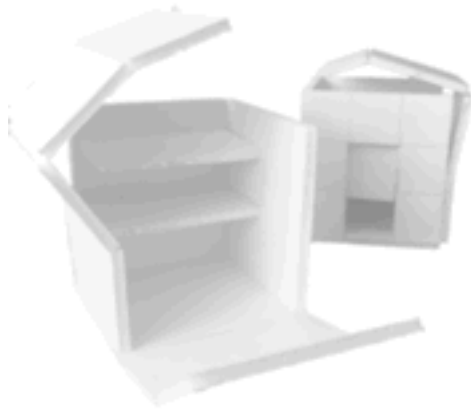


Figure 1: Foam model – two designed cubes



Figure 2: Foam model – third designed cube

3.2. Function

The four and a half metre cube that has been designed into a “living space” has an innovative approach. The basic needs of the singles or cohabiting couples consist of various daily activities that require a unique identity for each space. These activities vary from recreational area, a working space, kitchen and bathrooms as well as a space to sleep. Every space designed needs to have its unique identity for the user to understand what the space is for. By creating adjustable spaces that the user can control, it will help to eliminate conflicts and enhance the visual

enhancement and minimise crowdedness. The spatial separation applied is not just physically but emotionally for each activity and space.

The spaces are separated into three main levels; ground level, mezzanine level as well as the roof level. Each space is segmented into private, semi private and public spaces. The recreational space will be segmented into two different area's, one on the roof, where the users can enjoy the outdoors, experience the advanced technologies of the cube as well as optimising the use of the living space.

The second area for recreation is



Figure 3: Initial design sketch

at the ground level where the guests and the residents interact. This space will have a direct access to the outdoors allowing for an enhanced vision and integrating the outdoors indoor. Where the residents work, will be placed on the mezzanine level. With the roof folding technology that allows for indirect light and enhanced vision to the mezzanine and ground level. The kitchen and bathroom will be allocated on the ground level, as they are semi to private areas. The bedroom will also be placed on the mezzanine level as it is a private space. For the effective use of space, each space must be given its unique identity; this has been achieved, as the space is constantly being moved and adjusted by the user. Different levelling of the cube can help by separating each room function. The different levelling of the cube could also help for future extensions. If the family were to grow, additional rooms would be required. This can be done by adding more 4.5m cubes and assembling them together through the different levels and create communities.

3.3. Geography

Geographically, the living spaces being designed can be located anywhere around the world, however they target populated, dense cities that have the access to advanced technologies and materials. Populated cities around the world are all dense with the urban plan of the city been set and built, creating no room for expansion within the city, rather around the city outskirts. Expansion within the city can only be made if things were allocated on top of existing buildings rather than on the ground “because you are still in the city ... but you are flying above the city.” The four and a half metre “living space” being designed will be situated on top of existing buildings in groups creating different communities. The different openings of the cubes will create a new channel to the dense city that already exists. Some traditional buildings require an expansion for people currently living there, by placing the modern architectonic cubes it will solve this issue. Urban populated cities can be seen all around the world, varying from city to city, country to county across continents. Creating a standard cube that when combined will create communities can be placed virtually anywhere. Its adaptability to any location, whether in a singular cube or several (as another community), it can blend and integrate with both traditional and modern buildings. However, the city in which it will be built will have ease to accessibility to different resources allowing for a large range of materials to be used in addition to advanced technologies that are regularly available to meet the philosophies and technological aspect to the living space. The allocation of the four and a half metre living space will create a room for expansion within a populated city allowing for various communities to be created within it.

3.4. Personal / social

The importance of creating a sense of community for the residences living in the four and a half metre living spaces creates a positive effect on the people. Community spaces as mentioned are enhanced by creating open spaces that relate the indoor to the outdoors. Psychologists believe that stress reduction theory (SRT) creates an emphasis on the emotional and physical aspects, which are the natural environments that help reduce stress. For example; looking outside the window that has a natural view, has been found to reduce stress and increase positive emotions. By increasing the positive emotions around in the atmosphere, the chance of conflict between members of the household decreases (Weng, Chiang, 2014). The paper “Psychological restoration through indoor and outdoor leisure activities,” concludes that when a conversation takes place between neighbours it can significantly reduce anxiety and restore attention. Outdoor activities (walking / gardening) is the result of close contact with nature. Natural environment provides numerous benefits to the human (Weng, Chiang, 2014). The paper proposes three levels of engagement with the environment; where each level qualifies as interacting with nature, providing a positive influence enabling people to cope with stress and improve their attention. The three levels: namely viewing nature, being in the presence of nature and participation / interaction with nature (Weng, Chiang, 2014). The designed cube has managed to achieve this by combining them in different ways to create a sense of community. Furthermore, having the direct link with the outdoors as well as having green spaces to walk around has been created.



Figure 4: Diagrams of the two roof articulation designs, explaining the interplay of technology

3.5. Technology

Technology plays a major role in today's world. As it rapidly advances, it is used in design to meet the needs of the users of tomorrow and not just today. Technology is one of the key elements to this cube. The three main technical features; sliding, folding and rotating have been used to break the cube creating wide open spaces as well as having a direct link to the outdoors. By allowing for natural light and ventilation within the cube, a visual enhancement is created to reduce the feeling of crowdedness as well as an art for the users to experience the beauty of the space. The breaking up of the cubes creates roof articulations, direct access on the ground level to the outdoors as well as a visual artistic interplay to the urban skyline.



Figure 5: Sketches – movement of sliding doors

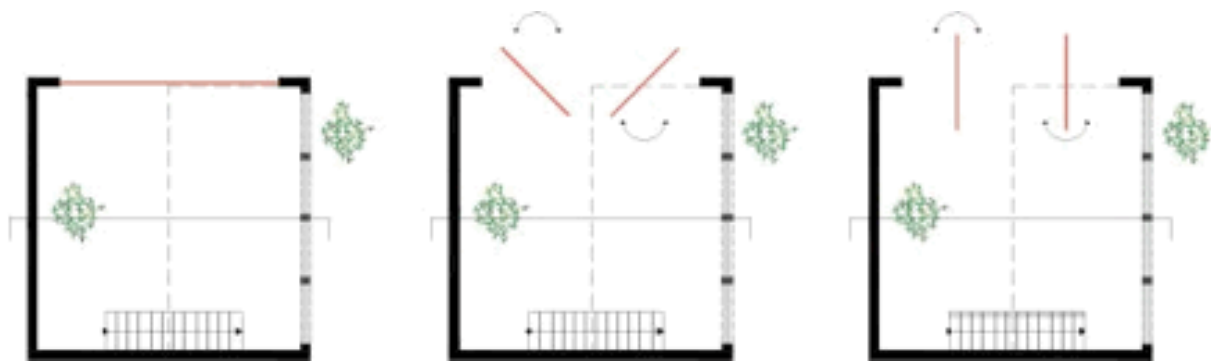


Figure 6: Floor plans showing movement of rotating doors



Figure 7: Sketches of the cube concept designs

The movement of folding has been used to create roof articulations. There are two different roof articulations designed to allow for natural lighting within the cube as well as a shading device to block direct sunlight to the residents will they appreciate nature. The residents can occupy the roof level for recreational purposes, creating a social network with those in the household and neighbours. Additionally the movement of folding has been used on one of the facades of the cube through a retractable wall system again allowing for a direct link.

Having these roof articulations generates a design that interplays with technology to create the 'moment of beauty' that both the residents and people within the urban city can appreciate. The cohabiting people in the urban centre can enjoy the art of the roof articulation as they take a journey around the city. Additionally the openings allow for the space to be appreciated in an artistic way by the cohabiting residents, as the art of the technology in the design through the roofs enhances the beauty of the space.

The second type of technological movement is sliding. The walls inside the cube are adjustable for the users to have control of the space. The sliding and retractable walls also create isolation to the different spaces giving each space its unique identity. Thirdly, rotation of exterior walls can rotate to create a direct access to the outdoors as well as the indoor. Using the three major movements; folding, sliding and rotating throughout the cube creates different space movements and adjustments, allows natural sun light and ventilation, utilises the small living space as a whole as well as meets the users requirements designs for tomorrows needs.

4. Discussion

From the literature reviewed urban centres are the denser area's of the city that are considered to be crowded, where residential spaces are usually smaller than the urban setting. The feeling of a space being crowded is a psychological concept that attained when the feeling of control and the lack of space available for activities. It is clear that singles and cohabiting couples regardless of their basic daily activities require having a sense of community to have a positive effect on the community and amongst themselves. Because of their priority to living in close proximity to their jobs, the majority is found to live in the urban centres, where it is dense and the feeling of crowding is easily achieved. To eliminate this negative aspect, large open spaces are needed and a direct link to nature is needed.

This four and a half metre cube has successfully managed to achieve this by using advanced technologies to create roof articulations. Using three main movements; sliding, folding and rotating an artistic interplay of design and technology for the residents and people of the urban city has been accomplished. Achieving the main philosophy behind the living cube; "flying above the city with nature, creating the "moment of beauty." Future development and research would be needed to develop this project further to be for a particular city. An understanding of the city picked as well as the different mechanisms needed to create the different articulations. Future research can be made to develop upon this project by exploring the existing technologies that can construct the technical features that are being explored within the project.

The following paper has brought a new design technology of breaking up homes to create direct links to nature as well as a new way to expand a dense urban city. The technology and art can be used by other designers to create small living home for residents to enhance the beauty of the space and allow for users to control space decreasing the potential of feeling crowdedness.

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It was a good way to end an academic conference and the idea of awards for the best paper was great.

Conference delegate

prizes for best papers



Nottingham Trent University and Cumulus would like to congratulate the following individuals and organisations for winning the best papers in their Academic and Professional Strand.

Negotiating Artefacts

Paper Title: Wonder Design and the Exploration of Senses and Imagination

Authors: Rian Rezende, Sabrina Araújo and Denise Portinari

Organisation: PUC-Rio - Pontifical Catholic University of Rio de Janeiro

Innovation:

Paper Title: Work on the Move

Authors: Richard Firth, Michael Taks, Peter van de Graaf, Trent Jennings, Ruth Cochrane

Organisation: Edinburgh Napier University (UK), Windesheim University of Applied Science, Zwolle (Netherlands)

Future Space:

Paper Title: A Never Ending Project into Future Design Spaces.

Authors: Dolly Daou, Gérard Vallin, Jane Smith, Gillies Poplin, Jane Smith, Jean Le Lay and Eduardo Lytton, Pelayo Bustillo Macias, Pierre-Yvon Carnoy

Organisation/s: Swinburne University of Technology (Australia), School of Visual Arts (USA), ESAG-Penninghen (France)

Future Craft:

Paper Title: The Potential of Rural Crafts in Promoting Community Empowerment

Authors: Baosheng Wang, Tie Ji, Yuanyuan Yang

Organisation: School of Design, Hunan University (China)

Sustainability:

Paper Title: An Exploration of the Social Functions of Public Art

Authors: Melanie Buffington and Supriya Manandhar

Organisation: Virginia Commonwealth University (USA)

Due to the positioning of the plenary it was not possible to offer a prize for the Student papers. However the Student sessions, if anything, had taken greater account of the specific themes. Separating the Student papers was “a bit of a false wall” and if there are student papers in future they could be included in the main Academic / Professional sessions.

Delegates attended the Conference Gala Dinner in the Newton Building. Cumulus thanked long serving members of their committee and delegates were entertained by music and singing.

evening



abstracts

The following abstracts were initially submitted for 'In this Place' and are presented as they were submitted (uncorrected). For the purpose of the conference proceedings they are set out in alphabetical order by title.

A curriculum and future learning space to support interdisciplinary collaboration between students of design and other disciplines

By **Jed Looker and Thomas Garvey**

This paper proposes a curriculum and future learning space for networking undergraduate design students with students from other disciplines for the purpose of developing the interdisciplinary collaboration skills required to ideate solutions to global challenges. During an Eeum Design Connects 2015 keynote presentation, a prominent government official suggested design thinking through interdisciplinary collaboration can overcome global challenges—that policy makers would benefit from the insight of designers in tackling complex problems. Her statement is in line with literature on the evolution of designer from practitioner to thinker. From a pedagogical perspective, Masters and PHD students may have the opportunity to develop these skills, but undergraduate design students remain largely focused on the applied execution of a project within a specific body of knowledge. This paper argues these students would benefit by interacting and networking with students from other disciplines—especially those less practical in nature. Referencing literature on design pedagogy and learning environments, we develop new curriculum suited to the merger of various disciplines, and make recommendations on a future learning space—a new hybrid—that would better prepare undergraduate design students with the skills necessary to ideate solutions to complex problems in interdisciplinary teams.

About

By **Tajinder J Singh**

A craft is a pastime or a profession that requires particular skills and knowledge of skilled work.

Future craft is a skill to conceptualize, digitize and 3d print artistic thing or object as product, food, toy, accessory, automobile and related idea you can think of. It involves all most every industry one can imagine either product, accessories, toys, clothing, architecture, food, health, robotics, automobile, space and upcoming needs of the future.

3D printing relies strongly on the techno-creative digital expertise skills with acute understanding in the process of design and its implementations. It's beyond the imaginations of a common person how the world will shape with anticipated developments. It all began with basic plastic materials: PLA & ABS and now the capabilities are being expanded with frequent developments into various powerful materials such as metals, ceramic, glass, food, synthetic and much more to come to our surprise. Future life is going to be driven by 3d printing industry from a small house to giant organization with daily life products to large infrastructural facilities. Printers will get into complex modification with innovative experiments with human endless imaginations.

Agri_culture, seeding an agricultural urban park

By **Carmella Jacoby Volk, Shelly Cohen and Rebecca Sterenberg**

Can agriculture be a catalyst for urban transformation and renewal? The rise in urbanization has introduced heightened ecological awareness along with recognition of the value of investment in public spaces and "green" infrastructures in the city. Despite these processes, agriculture and productive landscapes have not found their way into mainstream urban environments. What new roles can agriculture have in city leisure, wellness, education, and economics?

The case study is the product of academic entrepreneurship and a collaboration initiative

between the MA. program “Innovation Design and Entrepreneurship” at the Comas College, the directors of Mikveh Israel, planners, current on site communities. In this place, the agricultural school “Mikveh Yisrael” is an anomaly in the metropolitan area of Gush Dan, Israel. The site encompasses 3482 dunam of open fields located at the center of a densely urbanized area. The site is gated, legally protected and houses historical buildings and a heritage of agricultural experimentation that have, evaded development pressures.

The innovation process of spatial infrastructure enables new hybrids between agriculture and urban users, flexibility over time, and distributed management, while maintaining the sites heritage. It is an experimental agricultural testbed and a dedicated educational venue in seeding an agricultural urban park.

An empirical study of sustainable environmental design accessory brand in India

By Poonam Kumar and Gupta Prashant

Being second most populous country in the world, India continuously keeps on adding waste material within its geographical boundaries. India has about 16% of the world population and 2.5% of world's land area. Recent and sustained economic growth increasing living standards of the people, increased manufacturing and production activities has led to increase in the waste generation rated. India produces around 42 Million tons of solid waste annually. There is wide difference in the waste generation rates in rural and urban areas. Even within the urban areas, the composition includes more paper and inert material and less of organic and compostable material as the city population and size increases. The up-cycling of waste materials is one such way to reduce the human footprint on the environment and conservation of resources. The research paper intends to do an in-depth study on up cycling of brand by analyzing the conceptual Framework of factors affecting green consumption behavior through experimental research by factor analysis that will apply the concept of up-cycling to create fashionable home décor products. The research paper intends to design a new brand that will apply the concept of up-cycling to create fashionable environmental product.

An exploratory study of best practices in design and social innovation in Latin American countries

By Renata Porto

Our ongoing doctoral research is focused in research best practices of design and social innovation in Latin American countries. The study is positioned according to the current philosophies of scientific research in order

to support our values that transcend the knowledge established in the design field. As philosophical stances is adopted the approaches nominalism, anti-positivism, voluntarism and ideographic. From the epistemological perspective in design knowledge, the research it is embedded in theories of Cross (2007), Love (2005), Liem and Sanders (2011), Frayling (1993) and Archer (1995). A survey questionnaire is designed as a tool to select the design initiatives and successful social innovation that will compose the research case studies framework. Due to the multiplicity of languages and to facilitate the data analysis process is adopted closed questions structure with multiple-choice answers. The sampling technique used is random since this study has a geographical dispersion of the data. The primary sampling unit is essentially design researchers. Next task provides interview survey with 4-6 projects leaders and starts following up the case studies.

A place to be a place to see

By Caroline Gagnon, Valerie Cote and Danielle Dagenais

Undertaken by landscape studies, the research pursued a holistic comprehension of the citizens' aesthetic appreciation of their perceived and lived experience towards extensive green roofs in order to give recommendations to designers for their conception and in doing so, encourage their large scale implementation. In this light, the paper proposes that an intervention on roofs should go beyond its strict greening and that their design should encourage its attendance when possible or at least draw attention to its observation. Otherwise, the needed costs and efforts to implement a green roof could be considered less relevant despite its environmental benefits. In fact, the multipurpose value of the green roof was the most recurrent data issued from the research. Hence, a green roof was perceived as, not only ecologically beneficial but also as a space to experience. A strong desire to be there and to visit the green roof has emerged from the inquiry. Ultimately, an extensive green roof should at least be a greener version of a traditional roof with a visual access on it and ideally a physical one too: a place to be, or at least, a space to see.

Applying design thinking from an abundance mindset for true innovation in education

By Shweta Minocha

The researcher believes that Innovation happens more frequently and with better ease in an abundance mindset. Studies in perception suggest that about 70% of what we experience takes place in our minds, irrespective of our physical reality. If we have an abundance outlook, we stay largely positive and happy, which helps us think creatively, make better decisions and not get easily swayed by our limbic brain impulses.

What implications do these findings have for education as a system and a model? 'Education started because of the Industrial revolution and kids were steered away from things they liked or not, to things that would fetch them jobs.(Robinson, 2006). Today, as our planets resources are running out, as humans we are facing greater challenges in living together in peace and harmony, and globally about 350 million people suffer from depression (WHO, 2015), why are countries like India still following the education structure developed during the Industrial Revolution?

This paper documents the researchers design process to answer the above question. It builds upon scientific research that gives credence to the belief of abundance mindset and applies the design thinking approach to redesign the educational model followed in Indian schools and colleges.

Applying interactive images in heightening learning abilities among deaf students

By Mustaffa H. Azahari, Aidah Alias and Adzrool Idzwan Ismail

Education is an important element in human civilization. Everyone needs to be treated equally in obtaining education opportunities irrespective of their backgrounds including disabled peoples. They are required to be trained and taught like other normal citizens. This paper therefore, emphasizes on the augmenting learning ability among disabled of deaf students by focusing of using visual images in teaching and learning in a place known as school. Problem arises when deaf students are taught by applying the traditional method of teaching and learning activities which is normally ended up students lost their concentrations. As a result, this situation can cause students to fail in obtaining good grade. The objectives of this paper therefore, are to identify the current application of practice in teaching and learning among deaf students, and to analyse the significance impact of using visual images as an alternative method. The methods of interviews and observations are used in obtaining relevant information. The findings showed that the deaf students are interested in their learning activities by using pictures together gestures of body movement. As a result, this study can be concluded that interactive media is fundamental as an alternative method in heightening learning ability for deaf students.

Approaches that lead to innovation – collaborative driven innovation

By Benny Tan

This abstract was selected to become a full paper for the Academic and Professional Strand for the Conference.

Two major findings have dominated management literature in the past decades in this area of innovation.

The first is that radical innovation is one of the major sources of long-term competitive advantage. Innovation that is technology led has given rise to many innovative systems and products. Strategies in design innovation here have focused mainly on the disruptive effect of novel technologies on industries and applications of these solutions in communities.

The second finding is that people do not just buy innovative products but are into meanings and experiences. People use things for profound emotional, psychological, and sociocultural reasons as well as utilitarian ones. This has given rise to supposedly new areas of design practice such as service and experience design.

It is in this area of innovation that this paper will deal with how designers could understand, collaborate and then be able to manipulate specific experiences relative to a dynamic relationship framework with people, their environment, cultural, sociological and ideological dispositions to derive innovative solutions. This strategy provides a framework to test and direct the emotional and symbolic content of products (i.e., their meanings and languages). This design emotive-driven innovation has gained more momentum of late especially with the pervasive adoption of design thinking methods in domains outside of design.

The literature review shows that there is little explicit knowledge to understand people's experiences and emotional responses for designers to make predictions about designing innovative products, although there are some useful frameworks available to help think about these issues.

This study was conducted to investigate how the knowledge of the experiential properties of users is effective to aid innovation in the area of product design.

There are two parts with the first being the literature review on experiential design approaches and sensorial elements in product design, and the second being the application of findings to instigate innovative solutions in the design of a product.

This study looks at user experiences with products in a holistic, experiential base approach, linking these subjective experiential characteristics (Tiger, 1992) to the formal objective qualities of a designed object (Green & Jordan 1999), to better understand the intangible perceived values that people afford to products.

The outcomes of the study indicated that subjective experiential descriptors can be related to specific formal qualities of a product, creating specific product experiences.

This will aid the innovation process and assist product designers to create lasting, memorable holistic product experiences.

Artefacts and bodies; considering embodied exchange in collaborative arts practice

By **Natalie Garrett Brown and Zoe Robertson**

Authored from the position of practitioner-researcher, this joint paper focuses on a collaborative performance project *flockOmania* (2015) and *flockOmania returns* (2016) to consider how the dancing body can negotiate, inform and co-create artefacts. Emerging from a collaboration between jewellery artist Robertson and dance artists Garrett Brown and Voris, *flockOmania* features wearable objects which seek 'to move beyond the static display of objects of veneration normally associated with jewelry display' (Mottram).

This paper begins by outlining how the design of handcrafted wearable objects emerged through an exchange between the materiality of the body and that of the prototype artefacts. With reference to images and film from the project the paper will consider the ways in which the wearable objects are assembled, made and remade as sculptural forms for the duration of the exhibition through both the dancers' and visitors embodied engagement with artefact.

Reflecting on the culminating performative event for the exhibition which brought artefacts into relationship with multiple art forms (movement, sound, film, light, photography) the paper closes by arguing that the exhibition created an immersive environment that facilitated an embodied exchange between body and artifact, positioning visitors as co-creators of the work.

A study of the medium and role of motion graphics and changing cultural perspectives with relation to site specificity

By **Brynie Magid**

Motion graphics are not generally a medium that is considered when thinking of physical places. It is a medium that tends to only exist and be thought of in relation to digital spaces or broadcast media. Motion Graphics are a powerful medium for communication-it has the potential to create a lasting impact on the audience as it is a medium that can easily simulate emotion in the viewer, if done well. It also provides "the opportunity to share more with your audience in a shorter amount of time." (Emma Butler 2015). By integrating 'place' with motion graphics there is an opportunity to create new spaces for established media and new methods of communication. It can create a more engaging and powerful experience for the viewer due to the inferred meaning from the importance of the location.

In this paper I explore whether the medium of motion graphics can be pushed further and whether site specificity can infer a deeper meaning into the final message and in turn, leave a positive and lasting social impact.

Biomapping

By **Ola Ståhl and Sara Hyltén-Cavallius**

In 'The Three Ecologies' psychotherapist and activist Félix Guattari maps out a set of interconnected ecologies that, taken together, constitute the impasse of our current conjuncture. These ecologies indicate a move from ecology considered synonymous with the environment, to a more complex notion of ecology that involves social ecologies (including economic, cultural and political ones), ethical ecologies (the production of the subject, subjectification), and environmental ecologies. 'Biomapping' is a workshop model designed to allow groups of participants to explore the complexity of Guattari's notion of ecology and the questions around sustainability it raises through a series of practical exercises focusing on mapping out sustainability and unsustainability across a local terrain by creating fictitious biographies linked to specific artifacts, architectures and designed environments. The workshop concludes by raising questions to do with how we can conceive of change, and in particular how we can conceive of design as an agent for change, across such complex ecologies as those described by Guattari.

Our paper describes and evaluates this workshop model opening up to questions around design, change and how design research and design pedagogies can facilitate change through the exploration of complex theoretical concepts in practical, artistic and design oriented processes.

Blurring spaces – new challenge for designers

By **Magdalena Kochanowska and Roberta Barban-Franceschi**

For decades many theories and concepts that describe types of spaces: public, commercial, public, etc. have been developed. Those typologies allow to establish some guidelines for designers working in well defined context. However since many years we are experiencing a significant change that can be described as a situation of "blurring spaces". We can relate this effect to social and technological changes that have come with the digital revolution. According to Brigitte Jordan (2009) people are living in hybrid situations: the physical and the digital, the real and the virtual, interact erasing the types of spaces which have had social, cultural, linguistic, political and economic factors well defined. She argues that technology leads to major changes in the cultural landscape, blurs borders, merges the real and virtual in hybrid environments, leading to the reformulation of space. We experience blurring boundaries between „private" and „public" (using social media), the union of private and commercial space (buying on Amazon lying on the sofa), we work in coffee shops, homes or „creative offices". We see the „future space" for creative production with no pre-defined typology as a new interesting challenge for designers, new paradigm for the context of design process.

Branded idea curation: Interweaving fashion retail place and creative people

By Yuri Heikal Siregar

A place where people normally come to consume now becomes a place where people can bestow their ideas. This statement is represented by the image options 1 and 2 in the innovation sub-theme which are the same colour with different directional arrows.

Until recently, people would expect to be able to contribute their ideas and creativity only in certain places. They can now express themselves through branded places like fashion retail stores, among others. That is partly because of the technological advancements that have transformed both the people and fashion retail stores into a knowledgeable digital users.

With digital media, people would be very much more enabled to present their ideas, and not restricted to only consume or contribute (share) information. Correspondingly, fashion retailers these days increasingly use digital media as a place to collaborate with the people in general, and consumers in particular.

This collaboration would enhance the exposure of an idea, while sharing advantages equally. The implications would provide insights for fashion retailers on how to implement branded places for collaborative creative ideas, and also as a practical guide to showcase ideas on branded places for creative people.

Can crafts die out? Sustainable transformation of crafts in the digital environment.

By Arundhati Mitra

The paper will try to understand the different perspectives of craft as known in the traditional context, and then try to map its future in the digital environ. In doing so, we will take current examples of individuals or organizations that are working towards the transformation of craft and understand the challenges in making this transition sustainable.

Crafts are a direct reflection of the society, culture, personalization and the financial wellbeing of a community. It is also an important way of preserving the traditions that gave birth to it originally and forms a link between times. Thus, crafts can be defined in terms of form, function, time and place, which in turn is a response to the socio economic fabric of a community.

In today's fast changing world is witness to a shift in the material culture, which is progressively becoming more global, the future of crafts as we know them, often seems bleak. The digital is often seen as the nemesis of crafts. But these digital tools also form an important part in the transformation of the traditional craft forms, and help it reach out in a truly global manner.

Challenging perception through deconstructed letterforms in space

By Ladan Bahmani

English letterforms are common structures that most people in the United States are familiar with. My research reconstructs these structures into complex systems to challenge what is familiar about them. A modified form is made by removing a section of the letterforms and allowing for the tops and bottoms to remain.

Applying this simple yet crucial change to the letterforms results in the creation of a code-like typeface, which upon further observation, is decipherable by the viewers. Through the use of Gestalt theory, our brain automatically connects the different visual notions and fills in the blanks to solve the puzzle.

Distinction and connection, the two dimensions that describe a complex system based on Heylighen's paper "What is Complexity", are applied in the creation of this typeface. In this complex system there are enough visual cues for the viewer to distinct the letterforms and find their connection. The next phase of the research is to build forms from various materials and strategically place the forms in different environments, altering the context through which they are viewed. This investigation will reveal how different attributes of each environment influences the viewers' perception of how the letterforms are read.

Citizen led approaches to a low carbon city: Nottingham, a case study

By Christine Cole and Naomi Braithwaite

Social innovation in urban environments has seen an emergence of repair café movements, hackspaces and craft based groups fostering sustainable practice, skills sharing and community spirit. These citizen led initiatives demonstrate how social and sustainable practices enable a city's move towards circularity.

With a focus on two particular examples, this paper examines Nottingham as a low carbon city where community led projects and local government initiatives encourage citizens to find creative ways to reduce waste. Firstly, a community based group breathing new life into discarded and unwanted cycles, repairing and donating to local residents. How this group serves the community by teaching maintenance and repair skills to enable more local people to take advantage of this sustainable mode of transport without great costs will be addressed. Secondly Nottingham City Council's waste reduction initiatives exemplify how consumers engage in sustainable and creative practices, representing a positive approach to behaviour change.

Nottingham is leading the way in climate change and with its heritage as a creative city, reflected in the recent development of The Creative Quarter, a place

for independents, creative thinkers and innovators. These two examples of sustainable practice exemplify how creativity initiates sustainable practice while encouraging community spirit.

Co-creating arcticness of clothing

By Marjatta Heikkilä-Rastas and Sanna Konola

We suggest two new creative spaces and essential aspects for clothing design – arctic as a concept and philosophy and co-creation as a method. We present two paths examining these phenomena, yet having the same target: to understand how the arcticness of clothing can be co-created collaboratively. The first path, “Towards Arctic Clothing Representations” is constructing together an exhibition “Passion of Arctic” and co-creating the concept of arcticness through mental impressions. Research is done through a questionnaire for the audience. Does the exhibited clothing represent arcticness and what kind of meanings are co-created for this clothing in the Arctic Context?

The second path, “Co-creation as a future space for clothing design” is connected to co-design and co-creation as emerging design practices in a field, where designers have for such a long time been the sole auteurs in the process. Some participatory methods are used and studied in the context of user-centered clothing design. At the University of Lapland we have experimented and developed co-creation methods for interdisciplinary and multicultural groups. Results from three workshops conducted in Sinco-lab, but deploying several participatory methods, suggest co-creation as a promising future space for clothing design, where users could also be increasingly invited to.

Collaborative product development and research, within academia, end-user and low-tech SME's

By Leonardo Springer

Currently, the surfing industry is undergoing a paradigm shift, from a low-tech approach to high-tech R&D, CAD design and development and CNC production with hand finishing is becoming less of a specialist case and coming mainstream.

Research conducted with lifeguards from 2006 onwards, showed that current rescue boards used in Portugal, have limited flotation and cannot sustain a victims breathing airway out of the water, thus rendering these longboards obsolete as rescue equipment, considering the latest medical directives that one should remove the victim out of the water as fast as possible and start ventilation.

Mainstream product development derives from synergies and cooperation involving different parts, usually within a product niche in a small medium enterprises (SME) with specific know-how or in the process of acquiring it.

This case study provides an analysis on an innovation process in a collaborative design research and

development of rescue equipment with a cross-functional integration, concerning lifeguard requirements, low cost solutions, innovative raw materials, industry standards, low-tech – high tech surfing industry potentials, generating jobs within the surfing industry, with a sustainable supply and demand chain as well as a maintenance and refurbishment management program between 3 SME.

Collaborative redesign of used clothes as a practice of sustainable in fashion teaching

By Desamparados Pardo Cuenca and Patrik Baldan

The concept of planned obsolescence in fashion products presented as a constant, which promoted the fast fashion system enhances the aesthetic change through psychosocial needs and preferences of consumers.

However the resurgence of a new thought of slow and sustainable fashion has given rise to new alternatives and transformation design tactics that defy classical thought of fast fashion by introducing questions about the durability and longevity of the garment. These questions addressed by the practice of sustainable strategies break with the laws of obsolescence extolling the values of the garments through processes of involvement with users, who work the successful use and emotional relationships with the history of the garment.

From this perspective our project, focusing on the investigation of the concept of longevity of the garments and the exaltation of its values, is intended to reflect mainly users and designers to raise awareness on these issues on a modus operandi of work and thinking more fashionable sustainable and humane.

The methodological approach was tackled from the practice of sustainable co-design, where workshops based on the transformation and redesign of used garments implemented. Designers, social groups, social educators and artisans were involved.

The results were a number of reconditioned garments.

Communication, design, marketing and sustainability

By Alan Young

Design is political; and it has never been more politically charged than in the realm of sustainability.

Design and production processes are shifting to deal with global realities which have cast many traditional approaches as limited at best, and at worst, destructive.

Sustainability is low on the scale of consumer appeal—in some cases having the opposite effect. The very best of intentions can amount to nothing if the product fails to inspire consumers to buy it, and most products, sustainable or not, fail in the market place. Many designers and writers on design reveal

an underlying assumption that if a product can save the world, consumers will buy it. This is a dangerous fallacy—irrefutably built on admirable ideals—yet a fallacy just the same. Consumers have long been recognised to be frequently illogical and even self-adverse.

This paper will argue that a knowledge of marketing, advertising, and semiotics—that is, of products which ‘speak to’ consumers in a language they respond to—must be built in to the design process—especially when designing for sustainability. The paper demonstrates that design must privilege consumer traits and preferences as crucial in design for sustainability.

Concrete cutting

By Oliver Niewiadomski

Using modern geometric techniques to generate urban space by modify bunkers.

Currently we expert two important changings according to the relicts of the war in our cities. One one hand, the generation of people, who have own memorys on bunkers by staying inside as a child or young during bombing nights is leaving. On the other hand the technologies of shaping concrete by cutting it is highly developed and becoming cheaper.

In the last 10-15 years people are purchasing bunkers at auctions and change their impression to transfer them to a new way of using. The objects are often cheap and their position in the centers.

The author shows how the geometry of concrete cutting works, shows numerous samples of changed buildings and several student-visions from a workshop.

Consumption and contemporary Identity – exploration through a material

By Anna-Karin Arvidsson

How does knowledge or ignorance of artefacts materiality, origin and construction influence an individual’s identity, and what is the significance of materials in the construction in our time?

Artists and craftsmen often have a strong connection to materials. In my case the material is clay. The components, the processes, the origin, the historical aspects, connotations, possibilities and disadvantages of clay are intrinsic and obvious to me. I work actively with the material but I am also a very aware receiver when I meet the material in my everyday life. Although clay could be perceived as an “open” and simple material, there are people who do not know that porcelain is a ceramic material and cannot distinguish between a plastic bowl and one made of clay. The difference arouses my interest:

- How can I as an artist explore and give shape to how the knowledge/ignorance about materials influences people's contemporary identity?

- How can the artistic interpret in turn generate new perspectives and questions?

In my paper I will present my pilot study of workshop and interview based explorations together with young teenagers and their parents in Växjö, Sweden, and the artistic interpretations leading on from this.

Contemporary crafts and community empowerment

By Baosheng Wang

This paper is based on the New Channel Project for Huayao Ethnic Minority Region carried out by School of Design, Hunan University, China, in cooperation with Universities from Britain, Japan, Korea, Italy and Hong Kong. It aims to explore how contemporary crafts can assist in promoting community empowerment.

The following conclusions can be drawn:

- 1) In order to grasp the cultural essence of a rural community in China within a relatively short time (one month), typical persons should be interviewed, such as the former and incumbent governmental leaders of various levels, various craftspeople, relevant researchers on local culture, primary school teachers, businessmen, and so forth.
- 2) How the project team as outsiders (also as the Visionary, Advocate, and the Creative) and local craftspeople (the Specialist), both of which are crucial members of modern crafts communities, cooperate to achieve desirable outcomes with full appreciation of the contribution of local craftspeople.
- 3) In the process of industry revitalization, craftspeople of different professions can cooperate with each other to achieve greater success. Such as, wooden furnishings craftsmen and cross-stitching craftswomen, and local plant paper making craftsmen and New Year Painting craftsmen, who can cooperate with each other to create brand new products.

Creative disjunctions: John Ruskin on dress and architecture

By Anuradha Chaterjee

The paper considers the theme of the Negotiating Artefacts, and it presents a reflection on the idea of “material or conceptual borders of creative production,” through an original study of writings by Victorian thinker, critic, and historian, John Ruskin. The paper demonstrates that Ruskin’s writings articulated a shift in visuality, influenced the interpretation of architecture of the past, and suggested a new theory of architecture for nineteenth century England, which claimed architecture’s correspondence to textiles and dressed female bodies. Ruskin not only presents a new theory of architecture but he also advocates a theory of dress and fashion that is subtly different from Raphaelite dress reform arguments.

His proposal for the “national costume” [created through the layering of high quality and luxurious materials, of vivid colours and inherent richness] prefigures the anti-style style of modernism. Furthermore, through the ‘textiling’ of all that is tectonic in architecture, Ruskin unhooks new architecture from past forms, suggesting an astylistic approach marked by planar undisrupted walls, veneered surfaces, constructional polychromy, and low relief ornament on restricted parts of the exterior surfaces. The double theory of dress, and architecture evidences the creative appropriation of visuality and meaning, for the “creation of new opportunities.”

Contemporary makers and digital technology: The case of UK-based upcyclers’ current use of web-based resources and its implications for future crafts

By **Kyungeun Sung, Tim Cooper and Sarah Kettley**

It is widely observed that contemporary Makers are increasingly utilising digital technology, especially internet, for various reasons including sharing ideas, obtaining information, getting inspired, marketing and selling their products, etc. Individual upcyclers, those who create or modify any product from used materials, products or components to generate a product of higher quality or value than the compositional elements, are part of these digital-technology savvy Makers. This paper analysed a variety of web-based resources and their perceived usefulness based on the interview and questionnaire data obtained from 23 UK-based upcyclers. The results expand the current understanding in the role of web-based resources for Makers. The paper concludes by discussing the potential impact of such web-based resources on future crafts as well as traditional crafters in the UK and beyond.

Creating a home away from home

By **Alicen Coddington**

In unfamiliar settings people will often seek to create the idea of home to assist them in finding a place within their surroundings. Artefacts contribute to the forming of place and creating a home-away-from-home. One reason for this behaviour is that artefacts within interior spaces provide visual prompts that communicate the usage, occupation and culture of the space. Interior spaces can thus perpetuate the values of the culture that inhabit them forming a simultaneous connection between space, people and artefacts. This paper extends Merleau-Ponty (2004) concept of space in relation to the role of artefacts across cultural and geographical boundaries within educational spaces. The experience of eight students from Swinburne Design Factory who studied within the Design Factory Global Network (DFGN) and inhabited three culturally and geographically diverse Design Factories in, Melbourne, Australia, Shanghai, China and Helsinki, Finland provide the case. The paper

presents triangulated data from photography, field notes and a qualitative survey to explore the ways in which the artefacts of the Design Factories contributed to the students creating a home-away-from-home in each space. The artefacts communicate the culture of the DFGN, a culture of co-creative, collaborative industry based education.

Cross-cultural lessons for developing global citizens

By **François Carbon**

Global citizens are those who think broadly, who recognize and respect cultural diversity and heritage, and whose engagement in the arts serves as a conduit to personal authenticity. The Transatlantic Dialogue conference series on students and academic stakeholders and artists, held in Luxembourg since 2008, explore the significance of culture/liberal education for fostering global citizenship from both US and European perspectives. In this session we will review the lessons that emerged from this cross-cultural dialogue on developing students and the family of man as citizens of the world and draw the implications for cultural affairs practice.

Learning Outcomes

The desired outcomes are that as a result of engaging in this interest session participants will be able to:

- (1) articulate why culture matters in their own societal and institutional context
- (2) consider a philosophy of practice that advances developing students’ capacity for cultural competence and global citizenship
- (3) advocate for the value of culture as a critical component of a university education - in the co-curriculum as well as in the formal curriculum.

Cultural identity vs standardized of shop signs in historical markets of New Delhi

By **Shilpi Burman**

The character and form of Shop signs strongly reflects the historical, cultural and political spirit of the time and space in which they were created. Contextualized in the local environment, and their function of distinguishing a business/service, Shop signs adopt a personality that becomes the identity and heritage of the place and its people.

In the wake of the Commonwealth Games in New Delhi (2010), several projects for redevelopment and ‘beautification’ of markets older than 50 years were undertaken by the city’s Municipal Corporation. The nature of work apart from the outer façade restoration of the shops and civil work, included ‘disciplining’ of Shop signs to arrive at an orderly and homogeneous look. This paper critically reflects on

the exercise of standardizing the Shop signs in terms of size, color and typography. It examines the role of Shop signs in defining the personality of the space and the perceived changes through conversations with shop owners, city residents, and occasional visitors who come to the market for specialty wares. The paper further identifies the need for collaborative approaches in urban design to address concerns of individuality, belonging and shared narratives, in creative production and the building of a city's visual culture.

Cuteness: More than big eyes

By Richard Fry

The concept of “cuteness” has often been linked to craft, and is frequently dismissed as kitsch. However, “Beautiful” is no longer sufficient to describe the world of aesthetic possibilities that plays out in today's consumer/craft culture. There is a growing body of work on the topic of cuteness, with a recognition of its power to influence behavior but, as of yet, no consensus as to its definition, breadth, and scope. Many look to the work of Konrad Lorenz (1943) which focused on the expression of the cuteness in both human and animal children. Another large body of work focuses on the evolution and expression of the idea of cuteness in Japanese culture, and its global impact as a cultural export. Both of these bodies of work are important in the understanding of cute, but misleading in their impact. Rather than looking at either the concept of “kinder schema” or the idea of Japanese “Kawaii” culture as the origin of cuteness, this presentation will identify more fundamental characteristics of cuteness that can be isolated and expressed outside of the world of Sanrio's flagship Hello Kitty brand in a more mature way.

Decentralized innovation: An exchange of open value networks & art research

By Filip Daniëls and Diego Gonzalez-Rodriguez

According to a social perspective of the evolution of cognition, in which the development of the individual is based on agent-to-agent or peer-to-peer (P2P) interactions, the “capacity to connect with the other” is an unavoidable requirement for both innovation and creativity, respectively the internal (icon A) and external (icon B) faces of any game-changing development. We should consider both sides of the creation process in order to understand the emergence of “the new” and the acceptance of it by the stakeholder as an innovation.

It is important to remark the relation between the principles which are behind the notion of empathy as the “capacity to connect” with the notions of openness, diversity and decentralization of knowledge communities and other drivers of innovation.

This is not only a key point for the development of commons-based peer production but also for

creativity and innovation in other environments such as educational and research institutions.

Bridging fields of interest such as the P2P paradigm, cybernetics, innovation management and the arts, this research supports further development of the Bitmind.co project and future research proposals syncretising the arts, business administration and innovation management with the LUCA School of Arts.

Design and everyday life aesthetics

By Caroline Gagnon

“Artistic” and “aesthetic” are often used interchangeably in aesthetic theories. This confusion poses different challenges for design practice. In questioning the role of design in large public projects, these concerns were raised with more accuracy. This article proposes to articulate an everyday life aesthetic from the study of an extreme case of aesthetic appreciation: the high-voltage power lines. The focus was on the social issues surrounding high-voltage lines, particularly, the depreciation of pylons that lacked appeal for the population. This complex problem confronts traditional aesthetics in favor of an aesthetic of everyday life. More broadly, this perspective reveals some key aspects to understand the aesthetic experience of the environments surrounding us as well as its adaptation to the more general issues in design practices. If aesthetic experience is concerned with perception, attention and sensation, it is modulated through the body and mind, space and time in a dynamic that challenges human life in all its complexity. Therefore, this perspective puts aside the concept of aesthetic disinterestedness and takes advantage of the Berleant concept of engagement. Thus, the aesthetic experience is a multi-sensorial experience and is always defined contextually within a place, in relation with the physical conditions of the surroundings.

Design approaches that lead to innovation

By Benny Tan

We do not design things in a vacuum, but rather, it is done in a dynamic relationship with people, their environment, cultural, sociological and ideological dispositions (Fulton-Suri, 2002).

The literature review shows that there is little explicit knowledge to understand people's experiences and emotional responses for designers to make predictions about designing products, although there are some useful frameworks available to help think about these issues.

This study was conducted to investigate how the knowledge of the experiential properties of users are effective in the area of product design.

There are two parts with the first being the literature review on experiential design approaches and sensorial elements in product design, and the second being the

application of findings to the design of a product.

This study looks at user experiences with products in a holistic, experiential base approach, linking these subjective experiential characteristics to the formal objective qualities of a designed object, to better understand the intangible perceived values that people afford to products.

The outcomes of the study indicated that subjective experiential descriptors can be related to specific formal qualities of a product, creating specific product experiences.

This will assist product designers to create lasting, memorable holistic product experiences.

Design for local development: An approach based on materials and manufacturing resource

By Aline Souza, Rita Almendra and Lia Krucken

Paper presents a reflection about a particular approach of product design: territories valorization by founded selection of materials and manufacturing resource. In this research, identity capital of local materials and manufacturing techniques are considered a relevant factor for local products projects. Inadequate management or lacks of organization on managing local constructive resource generate regional unbalances, when it comes to geopolitics, environment and social aspects. It replicates directly on social inequalities or deficiencies in economic development. Aim of investigation is to describe design experiences that contrast materials and manufacturing resource used to reinforce local identity. Celashi (2011) points some materials have own identity stronger than the artifact. Sales et al (2011) say materials create exclusive and lovely images for artifacts. For Karana (2009) materials are embedded of meanings. It was realized case studies analyses in real contexts where materials and manufacturing resource were particularly selected to explicit local identity. Study results point possibilities of exploration of knowledge bring forth appropriation and re-signification of local constructive resource applied in contemporaneous products.

Design practices vs sustainable living

By Pavni Gupta and Seema Mahajan

This paper is based on the cohesiveness of “sustainable practices and design development” to provide a sustainable livelihood to the people at grass root level.

The project started in year 2008 with “India Vision Foundation (IVF)” who is working for providing respectable life to the inmates of Asia’s Largest Jail- “Tihar Jail”. To start the project a team of 25 women inmates was selected based on their interest and their imprisonment term. The project was divided into parts

to know about the people, their skill levels, their life and their ability to learn. A team of students and faculty was created and a time table was set to provide basic skills to the identified women inmates of Tihar.

Next step was the realization of marketable products and possible markets. The team extended to gather and analyse data to find out the possibilities. The project with the success extended to other jails like Bhondsi in Gurgaon with a Jute bag making project with the women inmates of that jail. The project is now rolling out for the livelihood of Inmates who are out of jail and what to live and give decent life to their children.

Design students, workshops, and sause-sumption

By Bryan Howell and Millie Parkinson

The current generation of design students hold values and goals that are different from their predecessors. This paper will explore how these students proactively share their design talents with their non-design peers by holding artifact-making workshops to raise funds for national and international causes they are passionate about, for example, the Malala fund.

Our project this year is to extrinsically understand millennial culture and use these insights to inform their design project. This paper will follow their process of understanding explicitly why and how their values are different from their predecessors.

To date, students have researched and defined some key millennial values that they will draw from in their upcoming project. One student in particular has selected the notion of Cause-Sumption, using purchasing power to invest in personally meaningful causes and Workshops, where participants would pay a fee to participate in a design driven workshop building artifacts, to raise money for her favorite cause, the Malala Fund.

In the workshop, they will discuss issues around the Malala fund and build artifacts, This experience will generate intercultural dialogues and expand knowledge of both design and Education.

Designer as connectivist: Shifting focus from products to experiences

By Ramneek Majithia and Shilpi Burman

In today’s world technology is swiftly changing our environment which in turn is impacting our associations and attitudes. It’s re-defining the ways we communicate; the canvas is wider for us now and therefore we speak of addressing ‘communities’ rather than ‘audience’. Starting from an understanding of the people and their concerns, designers are now concentrating on improving human experience by shifting focus from creating simple products to more meaningful systems and experiences.

This is leading to blurring/ fluid inter-disciplinary boundaries that are contextualizing our roles in

collaborative environments for creative production. This paper explores three case studies of projects undertaken by semester five students of Communication Design students at Pearl Academy. These include a call for action against the rising cases of sexual abuse in India, an information system for public toilets and a community initiative for visually impaired. They outline the process of identifying contemporary concerns, drawing insights from the field and building of strategies and collaborative solutions that inspire 'positive action'.

This paper further discusses the need to rebuild the education model towards inter-disciplinary approach and expand the width and depth of understanding for a student for effective lifelong learning/transformations.

Designing an abiding relationship with nature

By **Louis St Pierre**

This paper proposes ways for designers to begin to reconcile our responsibility for a comprehensive philosophical approach to our work with a deep and abiding relationship with nature. The need for a clearer understanding of humanity's relationship with the unboundaried ecology of animals, plants, minerals and elementals (earth, water, air, and fire) is undisputed. The drive for designers to envision work that articulates our connection to the natural world has been demonstrated by design's uncritical acceptance of theories such as biomimicry, biocentric design, and biophilic design. This lack of criticality has permitted the proliferation of seductive proposals that may or may not truly align with the natural world. These range from supposedly carbon-neutral urban developments, to false assertions about biodegradable materials. How do we know when something is truly in alignment with the natural world? How do designers identify rhetoric and romance when it comes to these claims?

Building on the work of Naess, Bai, Capra, McKibben, and Macy, this paper proposes several methods for use in the design process to increase designers' ecological literacy, such as the strategic pause, broadening our understanding of stakeholders, and rituals for fostering intimate connections with the natural world.

Designing methodologies for social sustainability in Latin American communities

By **Jose Jimenez, Luis Chavarro and Maria Sandoval**

This paper introduces a method to develop sustainable social innovation projects with Latin American Communities. We consider social challenges as opportunities for shaping society and its practices. Therefore, the re-design of those practices and the understanding of the context in which they occur should be the starting point for achieving a more social sustainable world. Current design approaches, centered

on human behavior are the key for understanding diverse scenarios and the different interactions that take place within various stakeholders in a specific context. This powerful understanding is vital for designing sustainable social projects from the people by the people and to the people. To do so, we propose a method based in a participatory design approach and Beckman and Barry's innovation process of observation, frameworks, imperatives and solutions. We designed a variety of tools to make communities pass through this process. We exemplify our approach with "Tiempo de Juego" (NGO), who keeps kids from the most vulnerable places in Colombia, away from violence and crime related problems. We will present our model applied with this NGO's kids. The outcomes and reflections about the use of this method for achieving sustainable societies by community participation are also presented.

Developing a collective craft of citymaking through open data and performative demonstration

By **Michael Manalo**

As an Information Architect working with city governments in Los Angeles, I have seen an emergence of a collective craft of citymaking that broadens the definition of stakeholders and decision makers not previously associated with urban development. This paper identifies the technical challenges of practicing civic innovation and open data communicating complex socio-economic issues of cities.

The case studies examined in this paper range from of transdisciplinary interventions, civic hackathons and bottom-up projects. These works understand digital making through autonomous processes from webapps and incorporate open data and webGIS as material for decision making. The conclusion examines how this body of work suggest a new digital literacy of prototyping urban form that can be tactical at a community level.

Digitally making as an opportunity for skilling and empowerment by Giuseppe Salvia, Carmen Bruno and Marita Canina

Do you see what I see: Aesthetic artefacts in co-design

By **Lynn-Sayers McHattie, Katherine Champion, Cara Broadley and Michael Pierre Johnson**

Participatory design and design thinking have spawned a wealth of creative approaches, negotiating spaces for designers and their collaborators to conceptualise hybrid understandings and a providing a platform for reaching compromise and consensus (Sanders and Stappers, 2014; Bjögvinsson et al., 2012). Tools and techniques including personas, scenarios, prototypes, and modeling may be generic and transferable to subsequent design contexts, or designed bespoke for an individual project (Eriksen, 2009; Lucero et al., 2012: 6). Despite the recognition of

design as a visual discipline, there is limited research to articulate the role that aesthetic style and material attributes of artefacts can play in collaborative processes.

This paper examines the performative effects of aesthetic artefacts within design-led approaches, drawing on evidence gathered from the knowledge exchange hub, Design in Action (KEHDiA). Visual and participatory methods were deployed across multiple Chiasmus, sandpit-style events, which brought designers, entrepreneurs and academics together around key societal issues as opportunities for economic growth in Scotland. Identifying the methods' abilities to draw out knowledge from participants, operate as experiential resources, and stimulate ideation, the paper contributes reflections on the visual and material qualities of designed artefacts that can support collaboration and innovation across disciplinary boundaries

Emotional design based on situation -- a case study of the design of BabyTalk Speech interactive toy doll

By Jing Hu, Xiaotong Li, Liang Li, Weichao Liu and Chi Zhang

In the experience economy era, people are not satisfied with the appearance and function of the product alone? emotional appeals are becoming crucial concerned. With the development of technology, intelligent toys with interactive functions are gaining more favor from children and parents. In the country with numerous only-childrens, as the crucial companion product during the pullulation of children, intelligent toys prove to be the carrier of emotion. But owing to the overdependency of these products, certain children have shown the lack of social ability which would be obstacles in their development of physical and mental health.

It is increasingly important that intelligent toys meet the need of sociality of children, which means they become the social medium more than carrier of emotion amongst children. This research introduced a speech interactive toy doll named BabyTalk, targeting children aged 3-6. It has functions including mutual speech transmission, media playing and artificial intelligence, which is positive for children in nurturing confidence, establishing role recognition and cultivating social emotion. This research inquired into the design of interaction under different situations of the product based on the theoretical basis of emotional design, which aims at providing certain valuable cases for emotional design theory.

Everyday tools for sustainable awareness

By Florian Sametinger and Gesche Joost

This paper critically examines the role participatory design can play in the empowerment of citizens to create sustainable solutions for their everyday lives. Within sustainable design and design research, there have

been numerous investigations that concern themselves with how to include stakeholders into the process of designing and co-creating future scenarios for urban neighborhoods. To push things further, the practice-led research project "Sustainable Awareness Tools" seeks to provide a way for citizens to engage not only in the design process, but also in the research process, taking on the role as citizen scientists. It hypothesizes that - as noted in sustainability research - participation of citizens within the research process can be fruitful regarding sustainability's "wicked problems" while greatly depending on the individual's everyday life and its boundaries and ambiguity.

Practice theory is argued for as a suitable base for understanding the everyday lives of citizens, to inform traditional participatory and sustainable design methods and thus make them more effective and usable in local contexts.

The paper pinpoints such methods which have been conducted throughout the longterm case study and evaluates them for further research.

Fashioning a heartbeat

By Lisa Shawgi

This paper discusses a project that supports the core of our existence, our heart, through specially constructed textiles. Its intention is to craft future fashion in the form of knitted compression garments, incorporating smart yarns to benefit wellbeing for auto immune and circulatory sufferers. The aim is to carry out trials based on the body's response to thermal yarns that maintain arterial circulation throughout daily activities allowing extremities to have regular blood flow. It will explore the possibilities of incorporating knitted compression panels within the garment to aid vein and Odema circulation problems and to support amputees.

As a Raynaud's and Lupus sufferer, I am intrigued as to how the body's health can be rejuvenated through encouraging its circulation through heat and compression. However, through the eyes of a designer, I am excited by the notion of crafting contemporary knitted garments incorporating smart yarns to create intelligent constructions designed to support the wearer's rejuvenation through a stimulating physical and sensory experience.

Free culture and open source network in Turkey

By Melike Mühür

Free culture and open source movements are spread in various fields by offering a network organization based on horizontal and intricate relationships which are compatible with current era. These movements had also an influence on design discipline as a new approach which redefines production chain by blurring roles of actors in processes and describing new product as open-ended. This study aims to search

reflection of these movements in Turkey. Related to the subject, there are mainly free software societies and some people specialized in open source licenses in Turkey. Moreover, it is possible to mention about an “opensource” electronic product, “free art” practices, and some people who is interested in opendesign and opendesign researches. Among those people who make production in different fields there is a relationship and an organic bond in an invisible network. It is significant to put forth these relationships and network in order to understand how system is working and how cooperation occurs. Furthermore, study aims to make visible the people who have this approach and the works done in Turkey. This visibility will contribute the “freeculture” and “opensource” discussions by showing not only similarities but also differences in approaches of people in different works.

From paper skirts to the role of skirts

By **Nieves Torralba Collados, Jose Martinez Escutia and Leticia Flores Farfan**

Starting out from a group of paper skirts made as an exercise by first-year fashion design students taking the Volume and Space class (2011-13), it was decided to undertake theoretical research into the function of the skirt, inviting leading specialists to address this article of clothing from their respective disciplines: film, philosophy, art, technology, fashion, history, literature and design. The eight essays were written by researchers from Mexico (Universidad Nacional Autónoma de México (UNAM), Universidad Iberoamericana) and Spain (Escola d'Art i Superior de Disseny de València). The project was presented to UNAM Press in 2013 and was published in 2015 as part of its Heterodoxos collection. The publication includes selected, updated references in each field and 93 colour reproductions (archaeological pieces, Musée du Louvre, Musée de l'Homme, Paris); historic fashion designs (Chicago History Museum, Maison Dior, Martin Margiela); film stills (Roberto Fiesco Archive); technological skirts (Hussein Chalayan, Jum Nakao); 3D printed skirts (Iris van Herpen); woven skirts (Sandra Backlund, Kenzo, Missoni) and the paper skirts co-designed by the students, which give rise to the book *El papel de la falda* (Nieves Torralba Ed.)

From the ground up: A parallel case study of community placemaking through open source design practices in two urban gardening projects

By **Maria Frangos, Thomas Garvey and Irena Knezevic**

In recent years, a proliferation of citizen-led practices has challenged expert-led approaches in community placemaking. One such practice is open source urbanism – a bottom-up approach to urbanism, where

infrastructural projects are introduced into the built environment (Corsín Jiménez, 2014). Characterised by peer-to-peer collaboration, collective intelligence and DIY design, it encourages alternative forms of urban governance and land use, as part of an on-going effort to renegotiate urban space (Ferguson, 2014; Stavrides, 2014).

Scholars in the social sciences have considered community-led placemaking practices in the context of how place is socially constructed. Alternately, design literature has considered the material expression of these practices as interventions. Through participatory mapping, group interviews and document analysis, our study combines two research traditions for an interdisciplinary analysis of how two urban gardening projects renegotiate urban space through open source design practices; and probes if their practices offer new opportunities for community placemaking. Our study emphasises the important role ordinary citizens play in creating, designing and maintaining urban places. It will be of interest to urban designers, planners and design academics, as it contemplates the implications of shifting from a participatory model of designing with communities, to supporting design initiatives conceived and led by communities.

From the outside in – a case study revealing the emerging story of how NCAD is learning to survive through innovative real-world partnerships

By **Derek McGarry**

The National College of Art and Design is a 269 year old autonomous third level state institution located in Dublin. Set within the context of the catastrophic Irish economic collapse, perpetual staff and budget cuts, as well as prescribed increased student numbers, the NCAD is now forced to seek new revenue streams to supplement higher education authority funding in order to survive. This paper is a case study that illustrates how ‘Inside this place’ NCAD’s nine real world innovation and engagement models are slowly changing the organisational culture within the academy and rapidly enhancing our international reputation outside. For the first time in 2015, NCAD is listed in the top one hundred knowledge providers for art and design education. Of course, none of this has been straightforward. Design education should be at the forefront of innovation. The reality is that we operate in a rather dysfunctional manner. What lessons can be drawn from our successes and failures? What are the benefits of being a specialist art and design college in an era where technological innovation seems the only currency?

Future Craft

By **Rajesh Dangoria**

Craft is a comprehensive term to describe. Each individual has their own expression

related to their practices and creative interests. Craft can be described from machine & technology to indigenous crafts and cultural practices. Here in my experiential paper I would like to focus and share my words on future crafts with my limited knowledge of Indian handicraft sector. Here in my paper I would like to emphasis on current scenario of the craft sector with context of Rajasthan a state of India this knowledge can apply on the other similar region and environment if essential. Here I would like to focus on how craft persons work with traditional to mechanize and semi mechanized work environment and equipment's. How things have changed and keep changing day by day from the resources to the requirements. What are the issues crafts persons are facing and how these issues would reflect in the future? What are the new definitions can come for the crafts in future and the environment for the future crafts in India Globe.

Glass is so hot right now....

By Sarah Mizer

Recent changes fueling the use, or more importantly, the criticism of craft materials in contemporary art has opened new opportunities for makers. With keen focus remaining on process as primary importance, the glass community remains sidelined at the convergence of contemporary craft and contemporary art.

This discussion will begin with a focus on the cultural temperature that is creating the environment for the resurgence in craft materials: it's discourse, it's market and it's relevance. Following this, we will look at examples of glass in Contemporary Art and the critical discussion surrounding the work. This leads us to question how we can better direct our emerging makers to be considerate of the contexts in which their work is shown.

Going places: Urban design activism and the related roles for designers within a South African context

by Fatima Cassim

D+E: Design activism sees the city as a tabula rasa for social innovation; it considers the specificity of local issues, takes its cues from the centre and aims to create positive, social change through a range of design interventions in this place. In light of this position, this paper explores the opportunities that urban design activism affords designers. Theoretical variance is evident in the literature on contemporary design activism (Fuad-Luke; Markussen; Thorpe). However, there is a consistent understanding that design activism can be regarded as practical mode for civic engagement and social innovation, using design thinking and imagination to move from an existing situation towards a better situation. Although design activism extends beyond designers to include citizens at large, designers often serve as the catalysts for change. To this end, the paper

provides an overview of the nature of design activism before identifying three different roles for design activists, namely educators, translators and facilitators. These three roles are considered from a South African context and with a view towards social justice. More specifically, the research is situated within the context of a research project that aims to generate a substantive theory of design citizenship using a design activism lens.

Golden Arc

By Jo Fairfax

I'm a visual artist interested in innovation and winner of many awards. My work has been seen nationally and internationally. This project includes a sustainable approach creating an educational legacy.

I designed the lighting under Holmes Bridge, Derby integrating an artistic, sustainable approach. Gold cladding is illuminated by LEDs creating a golden glow reflected in the river. A small sculptural turbine was to use the river's flow. The turbine was to be connected to the National Grid and create a fund. This money used to pay for the lighting and create an annual fund for local schools to work with pupils interested in art, architecture and sustainability.

The small sculptural turbine didn't work efficiently in the original location. Permission to locate it close to the nearby fast flowing fish pass wasn't granted. The poetic heart of the project didn't materialise and highlighted the challenges of artistic design in public spaces.

The key for this project is transferrable, a site specific response that is sustainable, educational and benefits generations creating a poetic and practical legacy.

I'd like to present the project with images and speak about the relevance of a connected and sustainable approach to projects in any region.

Graffiti as an active space making tool within Johannesburg, South Africa

By Elzabé Meiring

In this paper the author reflects on various types of graffiti and wall art within the central areas of Johannesburg, South Africa. The paper includes a current visual study of this informal art type within the defined context and analyses how graffiti and wall art can play a positive or negative role in place making in our current and future spaces within the city. During this analysis the author reflects on a few secondary questions to support the main question; how does graffiti impact various spaces in central Johannesburg on a cultural, economic and creative level?, what influence does graffiti and wall art have on intercultural dialogue within the context?, and how does this art type influence the identity and sense of place within various scales of the urban fabric?

Graphic design online studio learning spaces

By Lisa Hammershaimb

With its powerful tie to physical space and accompanying community, studio pedagogy is often seen as being impossible to enact in an online space. In this argument, proximity is a key element of design education as students learn not only the craft of graphic design but also the tacit, embodied skills that make a graphic designer.

Though I believe in the power of studio as situated physical teaching and learning space, I do not think that geographic proximity in a studio setting matters as much in creating community and design teaching and learning as up to this point has been emphasized. This presentation will provide an argument that graphic design online studio education, when viewed through the lens of connectivism, does not abolish studio pedagogy rather it can be a natural evolution of design learning place. I will argue that just as guilds, ateliers, and apprenticeships were formed to best serve the design and manufacturing structures of the day, so online graphic design studios slowly emerging in education practice today stand ready to provide students the network literacies, communication, and collaborative skills and experiences they need to thrive in today's diverse knowledge economy.

Graphic identity: Sign painting, visual culture, and urban redevelopment in Los Angeles

by Arden Stern, Erika Barbosa and Andy Echenique

Graphic Identity is a dynamic digital archiving project that visualizes the history of sign painting in Highland Park, a Los Angeles neighborhood experiencing rapid demographic and cultural shifts. In the context of global debates surrounding urban redevelopment initiatives, this project incorporates methods from visual ethnography and the digital humanities to demonstrate how painted urban graphics, typically marginalized in Design History and Urban Studies, can help us understand conflicting visions for urban space across social classes. An inherently ephemeral craft, often poorly documented, sign painting encompasses a diverse set of material practices uniquely positioned to express the complex social, economic, and cultural forces that shape neighborhood identity. Many recent works on the topic (Mena, Reyes et al 2002; Floor 2010; Levine and Macon 2012) view sign painting as expressive of a bygone era rather than contemporary sociopolitical dynamics; user-generated historical media archives like Historypin may incidentally include painted graphics, but often do not provide sufficient data for in-depth analysis. Graphic Identity brings interviews and observation of sign painters and residents into conversation with online photographic datasets (Flickr, Google Street View, Instagram), archival images, and geospatial data, interrogating assumptions about urban redevelopment in Los Angeles by historicizing local visual culture.

Graphics; commitment, ethics and humanisms. The French inheritance.

By Sophie Bourly

My lecture proposes a historical overview of the evolutions and influences of French graphic design when faced with the evolution of artefacts, with the golden age of the poster, including the questionings of the avant-gardes, up to the contemporary commitments with a view to spot the identity issues specific to our country. Founded at the end of the 19th century, L'ÉCOLE ESTIENNE is a suitable place for a questioning of techniques.

From the teaching of lead typography and lithography, to the advent of the Macintosh landing on the desks of the graphic designers like a UFO, our school has lived through all these revolutions without ever breaking with anyone. Our technical pedagogy is based on a wide exploration of artefacts, from the most traditional to the most innovative.

Indeed, French contemporary graphic design - which is said to be committed - is deliberately experimental, its relation to techniques and owes much to its origins.

This presentation aims to raise awareness to the role of the graphic designer in today's society. It is also a plea for the appreciation of its social and artistic initiative. It will be punctuated with visual examples taken from the partnerships I had with graphic designers and educational examples.

Handmade design in contemporary China: A fad or a clue of revival

By Yanzu Li and Li Zhang

A huge diversity of concurrent design events named by handmade happened in China and oversea unveils the reality that the concept of handmade has obviously become salient to the contemporary Chinese design. This investigation endeavors to clarify the two dimensions of the four questions on handmade and design respectively, including how to transfer the tradition to innovation, how to deconstruct and reconstruct the traditional material and craft, how does the handmade become design, and how to determine the national identity by handmade design in the era of globalization. In this article, the emphasis placed on the fact that handmade design mainly contains triple implications,

- 1) handmade design as the personal religious belief;
- 2) handmade as an imagined community of the sustainable lifestyle in consumer's society;
- 3) handmade as an identity tag to the contemporary Chinese design.

Attention was paid to the case studies to argue fully the above questions, and probed it as another issue, is the handmade design a fad or a clue of revival for the Chinese design?

Holistic experience in eTextiles workshops with mental health service users

By Sarah Kettley

eTextiles have been shown to integrate different models of thinking – computational and creative, and to support the integration of creativity into ‘STEM’ subjects, transforming the acronym to ‘STEAM’. Previous research has focused on the cognitive aspects of these workshops, which have engaged with diverse communities, including people living with dementia, children, and people with physical disabilities such as sight impairment. This paper seeks to extend this work by asking how holistic experience is supported by eTextiles workshops. In addition, it reports on eTextile workshops run with mental health service users, who are an under-researched group in participatory creative practices. The qualitative data gathered during two six-week series of workshops is analysed using Grounded Theory to create an interwoven narrative of holistic participant experiences. The themes that emerge from the research include the experiential nature of the making space as temporary place; individual embodied relationships with tangible materials and tools; and creative engagement with new immaterial materials, such as electronic circuitry and services. The paper finishes with reflections on doing design research with this community, and the questions such work raises for standard research methods and analysis techniques when we seek to be truly inclusive.

How can the relationship between EVA recycled material and kinetics lead to playful adaptive living?

By Sakshi Paul

Movers and flexers ? The adaptive structures
“Needs and situations always change”

When we buy goods of desire, in most cases it is fulfilling a short term need. As time passes and situations change, the goods become monotonous. We seek change? a newer product, which recreates the excitement and joy of a new and original product. Products need to be adaptable, to allow for future change. My research essentially focuses on changing needs of a consumer with limited space. My research ‘Movers and Flexers’ centers around the idea of change and fun in the living space, remembering the sustainable issues of products we consume. An investigation on the sustainable use of materials, led to a flip-flop factory in New Delhi, India which gave an insight into the EVA material waste after the flip-flop production. EVA foam used in flip-flops can be reused; recycled and new EVA sheets are developed in flip-flop factory.

Research Objectives:

- To investigate sustainable materials.
- To research and explore adaptive structures.

- To experiment and design adaptable product using sustainable material.
- To establish how playful adaptive living is the solution to the changing needs of the consumer with limited space.

How design can improve a tradition craft

By Isabel Bieger and Cristina Figueiredo

Bobbin lace is traditionally made along centuries in Peniche city. However, it has not the same pursuit like in the last century. People don’t want to use the objects made of it like they usually used in the past. So, objects that interested us in the past, nowadays are uninterested. At the moment, the lace makers did not change the way of doing it, and are making the same objects that were made in the past. Design came to change the ideas, challenging the lace makers and people that live around the bobbin lace for to see another way for the object, with a contemporary look. Challenging to change the materials that are normally used, like cotton and linen to iron and another fibres. Challenging to create another objects, more usually and helpful for people.

The design intervention is really necessary to help the bobbin lace to survive, take out the falling down, and give another perspective, and so, improving the object. Doing it, design doesn’t help only the object, but help and improve the life of the people that live around it and believe that is the identity of the local city.

Imaginary thinking and creative habits

By Josiena Gotzsch

Imaginary thinking and creative approaches are clearly important in business. No breakthroughs, no real innovation, no better for the planet solutions without imagination, vision and creative courage. However those at managerial level might not feel creative enough and probably lack experience with design processes. There is a gap between what is needed for companies to be truly innovative and creative behavior and skills taught in our educational system.

Business schools can teach the design or the design thinking process, but how to develop an inventive, inspiring attitude at a lasting level. How to teach towards a spontaneous, creative mindset? How to teach this in such a way that imaginary thinking takes place naturally, becomes repeatable over and over again and turns into a creative habit even for those who do not feel creative in the first place?

Somewhere this is a design challenge in itself. Process skills and tools are involved, building confidence by learning a process and seeing good results. Knowledge about psychological aspects, such as the creative mindset, and pedagogical approaches are among the other building bricks. We need to explore this breach and strengthen the creative comfort zone of individuals and companies.

Inclusive knits

By Sophie Neff

Clothes are worn as second skins, interacting with the bodies of individuals. Fashion is a form of non-verbal communication through which we express our identity and can be described as a fundamental element of society that is important for social inclusion.

However, fashion excludes a large number of people who do not fit within its idealised perception of the human body. To reflect diversity in our society, fashion should deal with every kind of individual, irrespective of their physical ability.

'Inclusive Knits' picks up this topic, by developing a different viewpoint and by providing alternative solutions. The project deals with the particular requirements of wheelchair users towards the design of their clothes. This includes analysis of their various needs in the context of the existing market, their desires as consumers and the influences of craft, technology and design.

By researching different knitwear structures and arrangements in the garment, 'Inclusive Knits' addresses a niche market, where disability is regarded as an aesthetic and artistic possibility to inspire new patterns, shapes and silhouettes. The key challenge will be to dismiss the image of assistive equipment and the stigma of medicalization to create a contemporary, functional and streamlined collection.

Idiosyncratic ambiance

By Jisu Choi

Guy Debord identifies 'soft ambiance' and 'hard ambiance' to be the 'two factors of ambiance that determined the values of the urban landscape'.

We perceive the elements that contribute to our sensible understanding of a space such as light, color and sound separately from physical constructs. While the role of technology has evolved around sensing areas of 'hard ambiance,' within the realm of 'soft ambiance' lies the intimacy we encounter with our living spaces and the objects we occupy those spaces with. Adaptation with our future living spaces could utilize the emphasized experiences of soft ambiance, where inhabitants would be guided through a process of experiencing previous living spaces through a series of physical acts performed using artifacts. The deployment of the recorded system upon a new environment, will enable one to consciously learn how to engage within it.

Idiosyncratic ambiance seeks to renegotiate our roles with developing technologies for a better understanding of ourselves and the spaces we occupy. By questioning the relationship of our surroundings and technology, we begin to acknowledge the tools and methods we use to align ourselves within dynamic environments.

If designers can change the world, which ones are?

By Lynn Elvins

If 'this place' is the planet we live on, is the design industry contributing effectively to its welfare?

As the United Nations creates new goals within a revised sustainable development agenda it states that "2015 presents an historic and unprecedented opportunity to bring the countries and citizens of the world together to decide and embark on new paths to improve the lives of people everywhere". Are designers supporting climate action, helping to end hunger or tackling gender equality? This paper reviews three industry-recognized design award schemes (DBA Design Effectiveness Awards, Red Dot, D&AD) to assess whether the categories and winners reflect evidence of global engagement or a lack of it. It then compares these industry examples to design activities within newer communities of innovators, activists and entrepreneurs to consider whether the 'established' design industry is no longer the home of fit-for-purpose design solutions. If not, what are the contributing factors in the professional design industry that make this the case?

Innovative assessment and design tools for disposable and long abstract durability products by innovation education in Japan

By Miho Namba and Shinichiro Kawakami

In last several decades, many universities in Japan newly set up educational courses that is focus on teaching how to make innovative solution to create better society. At first those courses set their mission to nurturing leader of society or persons who are active in the international community. But most of the universities couldn't identify what they should teach and how they teach. Recently they seemed to find their ways and means. Some forward-looking universities start to incorporate "design thinking" and active learning to nurturing social innovator. But could we teach how to make innovation in the first place? If we can, how can we teach them. For the conference, I would like to introduce recent approaches as innovation education enforced by forward-looking universities in Japan. I will report the some course profiles, such as programs, frameworks, activities, methods, outcomes and discuss about agendas of the innovation education in Japan.

Innovation through experience design in the Mexican tradicional circus. By Sol Santibanez Méndez In the year 2014 the Mexican government promulgated a law that banned the use of animals in traditional circus shows in seven states of Mexico. In 2015 the law became federal and circuses all over Mexico started to close because of economic issues and lack of innovative solutions to this problem. The cultural manifestation of the circus in Mexico is a tradition that started with the Pre- Columbian societies and followed to become

a phenomenon in the 19th Century. The most popular attraction in these circuses were the big, exotic and wild animals but now more than 75 circuses that used to have them are closed. Innovation through UX proposals might help the traditional circuses to find new ways of bringing out emotions in the public. The whole experience of attending to the circus can be designed with a particular focus in aesthetic values that the audience will live passionately. A great community of circus artists, teachers, creatives and fans are joining forces to help the Mexican circus and social innovation can be a key concept for them to start along with interdisciplinary work in which design assists them with technological means, design methodology and creativity as a tool for innovation.

Innovative assessment and design tools for disposable and long abstract durability products

By Eleonora Fiore and Silvia Barbero

In the current market situation characterised by planned obsolescence it warns the need to design in a more efficient way, in order to optimize the recycle and disassembly operations and lower their impact on the environment for all kind of products (from the easiest to the most complex ones). This paper focuses on short-lived and long durability products by analyzing them respectively according to the methodologies developed by the Observatory of EcoPack (OEP) and the Design by Components (DC) that share the same general framework and scenario. These two methodologies are able to provide useful tools for designing and innovating, through a scientific qualitative-quantitative analysis on products that are currently on the market. These design tools break away from a consolidated traditional product re-design by offering a change of mentality in the design of objects totally detached from their commonly known shapes. The new form thus arises directly from the functions to be performed and the needs underpinning by users. Guidelines are defined not only to improve and fit a certain market sector, but mainly with the aim to design new products in a conscious and scientific approach and economically, socially and environmentally sustainable way.

Is there a place between art and design?

By Helena Sederholm

In a conference in October I heard among other 'post'-terms a statement that "we live in a post-art society". It is true that the complexity of contemporary works is such that it may be difficult to separate "artistic" materials, qualities and techniques from "design thinking" and craft when realising ideas and producing works.

Often it is thought that artist's task is to indicate problems for designers to solve. There is also critical

design which is encouraging discussion about complex phenomena, proposing solutions without practical use, and thus featuring the future.

John Roberts has written about de-skilling and re-skilling in art. How about design? Are 'craft', 'materials knowledge' and 'human-centeredness' paradigms of design impossible to give up? We have a tradition of ready-made and immateriality, and on the other hand, in both art and design there are bio-materials handling of which opens up a new place for non-human actors as co-creators.

As an art educator I am interested in art & design education. Should we move from craft and skill-based focuses to more cognitive and multidisciplinary basis to understand changes in making? I'll address this issue trying to find a space between art and design by differentiating research-based and problem-based learning.

Interactive wall

By Jo Fairfax

I'm a visual artist interested in innovation and winner of many awards. My work has been seen locally, nationally and internationally and this project includes innovative use of craft that will be influential in different world markets, and particularly with a view to process and materials.

An interactive wall of circular patterned tiles responds to people's movement. A 'programmed' zone in front of the wall allows for physical and visual dialogue between with the tiles.

The ceramic pieces combine programming, circuitry, laser work, powder coating, digital design and digital printing. Initial 3d sketches are made from wood, glue gun, drawings, arduino, a salad of wires and optimism.

The abstract pattern implies a sense of meaning when the pattern is formed, when it is in transit the investment in the idea of the pattern as signifiers (language) is undermined for a short period until the pattern reinstates itself.

I have developed a new font which forms part of the pattern and letters break up and recombine in response to people's movement. I would like to present the project with images and speak to the traditional, modern, local and international resonances and demonstrate how it invites new perspectives on assembly and process.

Interior design's role in advancing the sustainability paradigm towards an emerging regenerative whole/ living systems paradigm

By Giovanna Di Monte

Globally, the design of environmentally responsible buildings are evolving towards newer levels of

regenerative design as investigated by C. Du Plessis and R.J. Cole. This paper investigates the role of interior design in advancing the sustainability paradigm towards a regenerative, whole/living systems paradigm. Currently there exists much confusion regarding the terms 'green', 'sustainable', and 'regenerative' design. Another gap present in sustainable design is the use of quick-fix specifications that have led to 'green-washing'. The success of interior design depends on the clarity of these gaps, and a deeper level of understanding of sustainability as the overarching aspiration. While an important focus of the interior design discipline is on occupant-centeredness, the further success of interior design thus also depends on the extent to which it performs in promoting wellness and shaping improved, active, and adaptive human conditions without simple quick-fix green-washing. The aim is to position interior design's contributions of occupant-centeredness within the emerging regenerative paradigm by investigating the paradigm's changing characteristics through the exploration of extant theory and literature.

It's not binary, it's holistic

By Ron O'Donnell

My overarching aim is to design a process by which students can make informed choices when presenting a substantial practical and creative project. Each year students are given a topic and have to produce a series of images, as the lecturer I also take part in this process and, importantly, submit myself to the same critical analysis and feedback that the students go through. This innovative format allows the students to not just see the assignment as a classroom module but as a professional project. Initially this format deals with the essential challenge of keeping students' attention by evidencing the enthusiasm of the lecturer and, showing by example, participation. Importantly it also professionalises and democratises the process, allowing the lecturer to be held up to the same critical rigour that the students are. It seems logical to utilise the creative career experience of the lecturer to teach students in this way.

This also works to improve the rapport and mutual respect between lecturer and student. I am looking to make students aware (potential professionals) that the critical and self-reflective skills they are learning are intrinsic to their future creative practise out with the classroom.

James Joyce's Dublin – what does it mean to be a citizen?

By Barry Sheehan

James Joyce wrote almost exclusively about Dublin, almost always from a distant location.

He created a fictitious Dublin, one built for his own amusement, experiments, investigations and to an extent, his personal score settling. In his Dublin, he

manipulated characters, locations and time to suit his dramatic purposes. He created one of the most famous character's in literature, a city rather than a person.

How real is Joyce's city? This paper will examine his work and compare his version of Dublin with the reality of the contemporary city. This follows on from investigations by reading and running noted on the blog www.jj21k.com. Is Joyce's version of Dublin any less real than mine, or yours? Did he edit the city in the same way that we do? Does it matter that he wrote most of his famous works whilst living overseas?

Joyce played with the notion of exile. His work is studied by people who have never been to Dublin and have no intention of coming. What does this tell us about sense of place? Is there a border to a city, or country? Can you immerse yourself in it without being there? What does it mean to be a citizen?

Let's do it together: A product development project with children based on co-design approach

By Bang Jeon Lee

Child-centred design has been extensively studied and developed artefacts for children in recent years.

However, there are only a few studies in which children have participated in design for actual products. To fill this gap, this paper presents a product development case, which involves children's participation based on co-design approach. This method is described in the context of an indoor furniture development to encourage children's physical activities. The objectives of this paper are

- 1) to examine the collaborative approach brings benefits in child development; and
- 2) to demonstrate and evaluate the involvement of children in design phases with the applied design techniques.

Furthermore, this paper includes benefits and challenges of children involvement in the design process and it could be a guideline for further studies for designer and design researchers in real design cases.

Living SMART, residential GREEN building retrofits, India

By Manisha Gdas and Debashish Das

We as architects and GREEN design professionals spend an age trying to do a cost benefit analysis in order to convince a client for sustainable or GREEN design decisions. It's also a well-established fact by now that project cost doesn't escalate more than say a 5-10% above the convention.

This paper looks at GREEN building Retrofits for Homes, analyzing the concept of a 'sustainable' living and GREEN homes. For some of the higher income group and the workplace, the shift in thinking and working is evident.

There are high performance work places, Industries, working at both a GREEN building rating and also a bi-annual audit for both energy and whole building design criteria. Some are even doing lifecycle cost analysis.

It's time for India to take the idea home, reviving and reinstating some of the older lifestyle concepts, already engrained in our cultural systems, and synthesizing our whole building design systems, this paper looks to research the concepts of living in India which support GREEN homes, and explore design guidelines in keeping with the lifestyle.

MA open studio: Towards a third space of creative production

By Katherine Townsend and Sean Prince

As part of the AHRC's Connected Communities programme, they called for a 'third space for the creative arts and industries' to facilitate new platforms and networks. The concept of a 'third space' led the authors to reflect on their experiences as students and lecturers in the 'first space', and fashion and textile designers in the 'second space' of industry. Having experiential knowledge of both environments, here they consider what constitutes a current and future 'third space' for creative production.

The space the MA Fashion, Textile and Knitwear students practice in at NTU works as an open studio, lab and network which accommodates designers to creatively experiment with hand and digital crafting formats, through the development of individual research methodologies. The physical space, modelled on an art and design studio accommodates an international cohort from diverse cultural, educational and commercial backgrounds. Critical thinking and advanced making skills are engendered by an evolving curriculum that responds to each group's aspirations, supported by specialist staff, resources, independent practitioners, researchers, and significantly through interaction and collaboration between the students themselves.

As such, the open studio is a platform between education and entrepreneurship, where interdisciplinary and intercultural exchanges inform global perspectives and creative direction.

Material matters: how do, we do – hybrid social/make sites in knowledge creation and applied partnerships

By Keith Doyle, Philip Robbins and Helene Day Fraser

Emily Carr University of Art + Design is 90 years old. Though the institution has changed names a few times, in nearly one hundred years, our research program is known and recognized world wide for a robust culture that is rich and holistic in nature. It is a deep culture that generates solutions by understanding first, the

ethnographic context of a problem, be it endemic to material things, a communication design or abstract service.

Our research is driven by the inclusive actions of our peers; working directly with partners, inventing co-creative participant based activities for research alongside an in-studio reflective design practice. We often situate our work strategically between social sites and sites of making – endemic forums for knowledge transfer. Social/make sites are forums of knowledge production, exchange and collaboration often involving the mediation of legacy material practice and new fluid forms of direct digital workflow. Reflection, in this case, is an embodied practice of the conditional social/make site, twinning autonomous critical thinking with the creative knowledge production of doing it with others, affording a further situational awareness of a problem space encompassing the material things and the physicality around us, but the social spaces we navigate through action.

Material stories

By Tina Downes

In July 2015, textile design academics at NTU, invited students and researchers, set aside a week to explore aspects of material and technological innovation that are transforming the future of textile design. We were interested in the tactile, visual and experiential qualities of materials that sense, change expression, respond and interact.

Making time for a practice-based 'Materials Lab' was challenging within the context of higher education where academics are increasingly over-burdened by administrative tasks. Through our actions we aimed to justify the space and time required to make; to become familiar with new materials, technologies and issues that inform the future of our subject; to acknowledge that for a textile designer, innovation occurs, knowledge is embodied, through a combination of hands-on practice and thinking through material engagement.

This paper provides a case study for the starting point for a newly defined practice-based research direction 'Material Stories' that offers scope for multi/cross-disciplinary collaboration across traditional knowledge boundaries. Material Stories can unite the interests of designers, artists, anthropologists, scientists, psychologists, computer programmers, encompassing scenarios that communicate past and future, fact or fiction, sustainable, hand-crafted and technologically advanced.

Mehndi – evolutionizing fashion for sustainability

By Suranjan Lahiri

For a long time we have been using clothes and other forms of physical decoration as a communicating tool to indicate our ethnic and geographic background. Another

reason for dressing up in a particular form is to uphold our tradition and heritage, and sometime even for religious or spiritual reasons. However in some cases, the traditional custom slowly recomposes itself into a fashion product and gets widely popularized due to its innovation. Mehndi, a painless art of decorating the hand with henna(a natural dye) for religious ceremonies and festivals in India is one such example similar to tattoo art practiced in the west. But young girls are increasingly taking it now as a fashion statement just as their mothers and grandmothers took it during their times, but for a different reason.

This research is an effort to find out how mehndi remained equally elusive and appealing to women of different generations in India, just as tattoo art survived in the west. It is an attempt to draw a commonality between evolution of eastern mehndi and western tattoo irrespective of its place of origin, attitude of people and forthrightness of society, to sustain obsolescence with time.

Metadesigning learning for change

By Mathilda Tham

The sustainability imperative explodes the academic institution - in terms of quality criteria, organisation, ontology, epistemologies, pedagogy, hierarchies, and as well as all other societal sectors. Yet, sustainability may and must also mobilise engagement and expertise from a diversity of knowledge holders, in new and more flexible patterns, and in more inclusive forms. This paper explores the potential of three creative-critical pathways of learning for change in the remit of the extreme complexity and uncertainty that sustainability entails.

- Cradle-to-cradle education – how can design support intergenerational and interspecies knowledge ecologies?
- Flying in the dark (Jones and Lundebye 2014) – how can design create safe conditions for outer-paradigmatic visits?
- Agency – how can design support leaps across the threshold between identification as culprit and solutions holder?

The paper draws on insights from the ongoing metadesign research at Goldsmiths, University of London, and the course Metadesigning Futures of Design Practice, with students on the master programmes in design at Goldsmiths, University of London. It further draws on the ongoing research and education practice in Learning for Change that is taking place at the Department of Design, Linnaeus University, Sweden, as well as resilience and transformative learning theories.

Mimicking sustainability: In context of traditional designs

By Avik Roy and Bhagyashri Sharma

Mimicry is a short term survival mechanism where one replicates a well-established system to achieve

immediate benefits. Sustainability, on the other hand, is the ability to maintain and ensure productivity as a long term environmental friendly solution. Both are behaviorally opposite. Bringing them together will be superficial, thus, harming the overall balance of the environment. In context to designs which are mass manufactured presently, we are replicating the traditional designs with modern day materials and techniques without actual comprehension of their purpose and sustainability of the established structure. It can be said that the traditional practices, which have developed over centuries using the local culture, materials and techniques, can only replace the new systems if its resources are made as readily available as the mass manufactured products.

How proposed ideas benefits society

The platform will result in the promotion of established traditional designs using scientific knowledge for improving safety, quality control and creating an increased faith in them. It also will aim to develop design identity, making it more efficient and economical, thus improving the compatibility with the local economy and socio-cultural environment.

MOb on monument

By Camden Whitehead and Kristin Caskey

This proposal utilizes a case study presented by two faculty and two students. While in Nottingham this team will co-create a monumental action with a civic and/or student group or Cumulus participants.

mOb On mOnument is an opportunity for design to promote civic dialogue about the role of the artifact Richmond VA. Monument Avenue is one of America's grand Avenues, it extends 5.4 miles through the city, punctuated by a series of six monuments, in roundabouts aligned with the tree-lined median. Four of the monuments commemorate Confederate luminaries from America's Civil War. An invisible, "transnational" line still divides Richmond; black from white, rich from poor. Monument Avenue is the "elephant in the room" for Richmond.

Recent racial incidents have prompted a reconsideration of the presence of Confederate symbols across the U.S. As a vehicle for promoting dialogue, the mOb studio will offer proposals to remediate Monument Avenue, at three scales: the monumental prosthetic, the monumental site and the 5.4 mile monumental line. This project will include community participation and the energy of 30 students enrolled in the community-engaged, mOb studio. mOb brings together faculty, students, mentors and clients, with little access to design services, to heal the city through design.

Mythological motifs as a part of the story construct in cinema

By Jyotsna Raghunathan

Human civilization has evolved and sustained itself on stories that have been told, time and again across centuries. Social hierarchies were sustained by the structure that was dictated by religion and its attendant mythologies. Mythology evolved with time to form a key storytelling element of Literature, Theatre and Art. As Film and later, television became the focus of a rapidly advancing entertainment industry, the heart of a film remained its storyline and careful scrutiny reveals that most storylines draw from global mythologies.

This paper seeks to explore the cinematic devices and plot paradigms that transform mythological icons across cultures into contemporary characters that function in the present world to create films that capture audience interest, worldwide. Fascinating parallel stories emerge when one looks at certain figures of Hindu Mythology, as well as mythologies from other cultures. Looking at films from India, as well as the West, this paper tries to answer the age-old question of whether at the root of it all the old tropes of mythology are the ones that create enduring stories for all time and all audiences.

Negotiating drawings with professionals

By Marja Nurminen

My doctoral research focuses on teaching drawing at art and design universities. The project stems from my long experience in teaching drawing in the fields of arts and design schools. In this research project my aim is to discern how artists and designers make sense of their drawing practices and experiences. My research question is: What kind of significance, experience and understanding is involved in the teaching of drawing at University College of Arts, Crafts and Design and at Aalto University, the School of Arts, Design and Architecture? I approach this question by interviewing altogether 12 artists and designers, who use drawing professionally in their working life. They come from two countries, Finland and Sweden and are alumni to above mentioned schools.

In this proposed paper presentation I will discuss how the participating artists and designers negotiated their drawing practices with their chosen piece of art. I asked them to have 1-3 drawings with them during the interviews. My aim is to look how our conversations and negotiations with the art works created new possibilities for understanding teaching and drawing. That is I will ponder the role of the artefact in the knowledge creation process.

Negotiating the corner: Intimate yet permeable

By Fiona Hamblin

Drawing upon personal creative practice, this paper will investigate my fascination with the corner as a place for play, where notions of connection, extension and anchorage are explored. In recent years I have developed a series of art works which inhabit corner spaces; I am intuitively drawn to corners – creating work that anchors pins to walls, from which threads extend and travel through space, carving out pathways, rhythms and connections. Corners have the ability to play with perception – a circular shape drawn across the corner distorts and fragments from different viewpoints; shadows play with angles, reflect boundaries; depth invites whilst extending into openness. Corners have tension, and a particular resonance, which for me provides fertile ground in which to negotiate material and bodily flows which trace our sense of being in the world. The very fact that a corner is a meeting point, as well as an opening, gives it intimate yet permeable presence. I will question the notion of the corner as a phenomenon, a place where ‘being in’ may be felt not in the sense of containment or immobility, but as ‘loci of intimacy and particularity, endowed with porous boundaries and open orientations’ (Casey 1997: 233)

No dickheads! A guide to creating happy, healthy, and creative teams.

By Luke Johnson and Rhys Newman

There is a perpetuated myth within the design community, that a single visionary is required to build great products. Rubbish. Great teams build great products; moreover, in my experience, the greatest teams prioritize and nurture a healthy and positive internal culture because they understand it is critical to the design process itself.

The following is an attempt to create a guide for the (often-overlooked, humanist leaning) behaviors that make a studio happy, functional and sustainable. I believe there is a straight line between how the studio feels, how we as designers treat each other, and the innovative impact of the team. The value of articulating the characteristics of an effective studio will hopefully make each team member a more conscientious contributor. Of course, these characteristics will ebb and flow to varying degrees and should not be considered concrete rules. Rather, these behaviors serve as a guideline for creating a consistently positive, and as a result, a consistently more creative place to work.

“No style design” is the fundamental of sustainable development

By Tianzi Shing

In modern society, many designers are looking for a design style, but when we are in a circumstance full of variety visual language, you would found that the value of a design seems to be more than just a style. Design is the consciousness of human development, which represents the knowledge level of human beings in the specific period, so the design is to solve the problem of human development. “No Style Design” is out of business, from the perspective of human beings to explore the future of mankind. Sustainable development is a kind of people’s consumption habits and life style, the designer should know their role in the process, guide people to the rational and healthy consumption, promote the use, do not advocate possession. Some people say that China has no design style, but if designer can solve the fundamental problem of China, for example, resources are far less than the population, then in the future, this kind of solution language will become the Chinese design style. This article analyses the Chinese local brand “Useless” which is out of business, it no longer only concerned with the design language, people-oriented of the design is the value of development.

On this road – negotiating infrastructure

By Ivan Markovi?

Similarly to the time of earliest ancient settlements when natural communication lanes were the spaces for transition and circulation of people, ideas, objects and entire cultures, artificial communication lanes today make up key places for the exchange and communication between still existing national borders.

However, these material platforms also play a crucial role in the creation and maintenance of global hegemony being the spaces where the flow of capital, production, labor and consumption is taking place. But, what happens if communication infrastructure is no longer understood in terms of underground pipes and wires, but as the urban structure itself? What happens to roads, highways? Is it possible to imagine a new purpose for them, to understand them not just as means to get from one place to another but also as means to stay, as sort of a new kind of settlement? Starting from the premise that “the material infrastructural platform of neoliberalism does not need to be destroyed, it needs to be repurposed towards common ends” (Srnicsek, 2013) the paper will analyze existing infrastructural systems, focusing particularly on roads and road networks and try to re-integrate them into the current debates on the possibility of the post-capitalist world.

Out of touch

By Martin Bonney

This paper investigates the sensory relationship between people and cloth through an MA Textile Design Innovation project. By adopting a multimedia textile design approach, different experimental tactile samples are produced and tested with potential consumers. The experiments will be conducted by myself the designer, in two stages: firstly the participants will respond through touch when blindfolded and secondly through sight, by viewing a range of textile samples.

The fabric samples are designed to explore surface imagery design and texture, utilizing digital screen print and hand/ multi-head embroidery. This carefully selected range of material substrates that will generate a communication of embodied experiences.

The broader context of this research discusses the importance placed within cloth from a consumer perspective, highlighting the qualitative information for practitioners to add a secondary layer of substance and meaning. The data will record both tangible/non-tangible characteristics allowing the reader to address contemporary concerns within consumer culture and the longevity of cloth that exceeds its primary function. Delivering emotional and experiential layers of interactive communicators, resulting in consumer wellbeing. Generating a need to embed experiences, communicating empathetic idiosyncratic materials, surpassing the materialistic consumer culture.

Poetic experience as Heterotopia

By Yunhyun Park

There is a perfect world that people ideally dream but doesn’t exist in real. We call it as “Utopia”. In contrast, there are some places that exist in real life and we call those spaces as “Heterotopia”. Heterotopia literally means ‘other place’ which concept is elaborated by Michel Foucault in the late 1960s.

Foucault proposed the notion of heterotopia as a theoretical approach explaining the urban spaces in the social context with 6 principles but couldn’t complete them after all. He emphasizes that the way we conceive space is always changing, and space constantly adjusts to different circumstances of history. Foucault’s challenge on the traditional perspective of linear time establishes a new way of understanding space in modern context. (Of other space, Michel Foucault, 1984).

I questioned what exactly heterotopia is and how to re-interpret this awesome word within our social context.

Therefore, the aim of this essay is going to look what new dimensions and connections are possible to explain heterotopia in our life. Especially, I will focus more on the relationship of space and emotions and look into the space as boundary, overlap and relationship that are shown as the transitional moment of Heterotopia.

Position statement: Invention in space

By Kathie O'Brien

Square 'A' illustrates the internal dynamics of Peckham Square and its pedestrians, furniture and architecture. It contains Wil Alsop's library, (2000) alongside a Sports and Healthy Living Centre emulating the work of Doctors George Scott Williamson and Innes Pearce's 1930's social intervention, the Peckham Experiment. The large canopy alight throughout the night, provides a purely local experience through Ron Haseldon's barometric pressure lighting. In summer artists present dance, music and arts installations. People busy the place going to shops, alighting from buses, returning home. Square 'B' considers the external viability of these constructions, where there is talk of demolishing the Canopy, switching off the lights and refurbishing the Square. Where encroaching gentrification feeds new 'tastes for consuming the city' (Zukin, p. 243), unconsciously confirming official rhetoric for growth. Physical displacement, where culture is socially constructed through the dominant designers (Bourdieu, 1984) and is placed alongside instances where those who desire the lattes and the urban diversity create new markets, Markets that make other people, long time residents—feel uncomfortable, driving them away through higher rents and house prices, creating divisive atmospheres on the street. After the planners have gone home.

Researching future worlds: how design research practices facilitate cross-disciplinary collaboration in a creative studio

By Ann Kremin and Cayla McCrae

How does world building use a design research methodology to unite multidisciplinary expertise into a single, co-created narrative?

World building, which borrows from the holistic design of science fiction worlds, can be applied to produce fictional narratives that address real-world problems in well-rounded and surprising ways.

A defining characteristic of a world building practice is the diverse backgrounds of its practitioners. As an emergent design discipline, it is being practiced in commercial and academic spaces, with applications ranging from speculative fiction to production design in entertainment media to pushing at the cutting edge of experience design for virtual and augmented reality.

At the core of world building is a collaborative research and design methodology that produces fact-based future conditions and all the contours and constraints within which a narrative will operate.

World building researchers synthesize research learnings into speculative provocations designed to facilitate collaboration among teams that consist of people from multiple disciplines with different ways of processing

information. We propose an analysis of the authors' experiences developing a method for conducting research and delivering findings for the emerging design practice of world building and its implications for the future of creative industries.

“Return to” the sensibility – thinking about the future of design

By Wei Shen

The author thinks that the design is sensible creation based on the reason. When Modernism Design built the rational design building, “Return to” the sensibility is not only the trend of contemporary design development, but also the inevitable development of the future design. In this article, “Return to” means designers getting back the importance of the sensibility design. Designers expand the rational design through the development of the sensibility design. In detail speaking, the sensibility design includes meeting the needs of personality, stimulating the innovation instinct and highlighting the human nature in the design standards and norms. This article discusses the “Return to” the sensibility of the design from three angles. They are history, nature and life. First, the historical perspective: The “life experience” is stimulated through the sensibility interest of the design. Second, the nature perspective: The “poetic nature” is shaped through the sensibility interest of the design. Last but not least, the life perspective: The “happy life” is lit through the sensibility interest of the design. The design of the future will be full of emotional glory, creative elements, and light of human nature.

Ruin Lust to Ruin Porn: Where has all the romance gone?

By Andrew Sneddon

Prada Marfa, (2005) is a permanent, site-specific sculpture created by Michael Elmgreen and Ingar Dragset, and destined to become a ruin. The sculpture also masquerades as an out-of-place shop in the Nevada Desert, constructed out of humble, local adobe. However, designed according to corporate specifications, it contains 20 pairs of shoes and six handbags from Prada's 2005 autumn collection. The artists conceived the sculpture to naturally deteriorate, decay and become a contemporary ruin. Elmgreen and Dragset are also known for raising political and socio-economic issues in their work, and exploring ideas surrounding alienation, exclusion and sexuality. This dysfunctional shop, come permanent sculpture, invites desire but denies and subverts ownership.

The paper considers Prada Marfa in terms of its position within site-specific art practices, with attention paid to ideologies of capitalism and gentrification of places. The paper also reflects on the artists' intention to critique consumer culture and our lust for ruins, where interest is placed on the experience economy of an audience. This interrogation allows for focused

discussion on the context of attraction, where an assessment of an object's value can be deflected away from its often, expensive use of materials or manufacturing process, to the spaces of its presentation.

Sarona: A sustainable fiber for active Sportswear

By Pooja Kapoor and Saroj Bala

DuPont™ has been the pioneer in developing new fibers, with eco conscious innovative ideas and solutions that are environmental friendly. Sarona has lesser environmental footprint. Producing Sorona® uses 30 percent less energy and releases 63 percent fewer greenhouse gas emissions. DuPont™ Sorona® can be used for active wear and for sustainable active sportswear clothing line for both performance and style. T-shirts for sportswear are designed mostly as a semi fitted garment but no contouring is done for fitting at bust line. While playing or exercising the t shirt has a tendency to gather above the bust and needs to be pulled back in normal position. If one could design extra bounce for the bustling, the t shirt will have advantage of the fabric not gathering up above the bust thus disturbing the shoulder line, while doing any sports activity. Since Sarona is a biopolymer, has stretch and does not wrinkle with good shape retention properties, it will be ideally suited for active sportswear.

The aim of the paper is to contour the T-shirt on bust line with different knit structures for active sportswear or leisure wear, which are sustainable, production friendly and test the fit for different sizes.

Science workshop design considering group work and reflection by RTV

By Sara Hojjat, Chiaki Fukuzaki and Tomoyuki Dr. Sowa

An important challenge of Japan educational system, is lack of interest among pupils in basic science such as physics. It is not confined to Japan, teaching of basic science is an issue all over the world. This research attempt to create an appropriate atmosphere to increase the motivation of elementary schools students in basic science and organize a situation for learning in group. To realize this goal, a workshop is designed based on the creative maze and mirror game which transfers the concept of mirror, light and reflection to students during joyful group plays. The workshop was implemented in an elementary school in Japan. The results of workshop evaluated by questionnaires and video/audio analysis and show improvement in all aspects. By RTV reflection and factor analysis, students were categorized into seven categories. Using these categories in group work, a solution to level up the science learning atmosphere based on creatively designed physics educational games is suggested.

Shakespeare could live happily in Tokyo

By Thomas Garvey

Forecasts for 2050 indicate a world population exceeding 9 billion and migration trends of people to urban centers are central to the subject of the quality of community life for citizens. Population density impacts lifestyle and the design of future living environments but the connections between density and quality aren't always direct.

Shakespeare's Hamlet found Denmark too small for his ambitions. Henry David Thoreau thought his small self-constructed cabin of 10 by 15 feet was sufficient for his famous 'life in the woods' from 1845-47. Kamo-no-Chomei's 10 by 10 foot 'hojo' was a chosen retreat and sufficient for his life in 1204 medieval

Japan. There are important lessons for young designers designing for life in future metropolises.

The objective of this paper is to highlight how designers can understand how to enhance the quality in particular of small-scale residences projected to come. Consideration of work that has been completed in the past, combined with a critical analysis of some of the living conditions we find today, provide results that contribute directly to the design and creation of improved small-scale living spaces in the future. There is a thread of inquiry that links people and places across time and across culture.

Shirting

By Elena Fajt

Shirting ... is ongoing sustainable fashion project which establishes a new way of clothing with different approaches and values both in the production process, as well as in the use of clothes. It highlights locality, participation, responsibility, ethics, ecology, education.

The project started few months before the famous declaration of trend forecaster Li Edelkoort "Fashion is dead. Long live clothing" and in fact highlights the importance of cloths as well as their messages.

The project is being developed through individual editions. Until now six editions were presented that include 38 unique shirts, traveling between users. Shirts are designed by various fashion designers who are also the first users. Shirts were so far worn by around two hundred users in Slovenia and in different parts of the world.

Project shirting... is a process that creates an opportunity for a different type of community. A community that rethinks and revalues the accepted fashion norms and creates relationships outside of the logic of consumerism. This creates new values and relations that lead to changes at the level of individuals as well as communities. In this respect, the project represents social innovation in which the key carrier is the design itself.

Site specific critical making with aluminium sandcasting

By Ian Lambert

This is a continuation of work already published and exhibited at conferences investigating practice as research. With reference to Dunnigan (2013), Sennett, (2009), Crawford (2010) and Ingold (2013), among others, I am experimenting with waste as both material and context, using discarded packaging as waste moulds and scrap metal as substance, producing sand-cast artefacts. This continuation of the work relocates the project from studio to public space using an off-grid mini-foundry to generate further creative outputs, following Ingold's notion of "making as growth" (2013, p.21).

I shall take my mini-foundry to Crammond Island, in the Firth-of-Forth. With a tidal causeway

Crammond Island is a popular destination for overnight outdoor parties. Here man-made litter gathers beyond the easy reach of municipal agencies - discarded drinks cans are found in abundance during the summer and I will smelt all things aluminium onsite and cast new forms. Creators of litter will become suppliers of a raw material. The onsite manufacturing aims to push a craftivist attitude towards industrialised consumers who remain largely disconnected from making/fabrication/manufacture (Barber and Osgerby, 2014, p.2)

Sketching interactions for everyday environments

By Austin Lee and Peter Scupeli

The moving boundary of the physical and digital experience in today's life has generated questions around designing for interactions in various types of environments. For example, the way we notice and experience environments is influenced not only by traditional materials that make up the space but also by digital factors, from cell phone receptions to apps associated with locations to Augmented Reality contents embedded in space. Emerging technologies in the modern digital world suggest new design opportunities. Designers need to understand the entire ecosystem of a product to deliver successful results. As conventional system design is often tied to the environment, the notion of designing for a single stand-alone artifact has become obsolete. Rather than only focusing primarily upon form and function, a designer should also build skill-sets in prototyping and designing for interactions in environmental context. In the School of Design at Carnegie Mellon University, we introduced Environments track to help design students understand today's environment that's inextricably linked to the digital world; learn the design processes for experience-driven multi-modal environments; and explore interaction design techniques for environmental communications. The course focuses on preparing designers to experience and design interactions for **physical environments**, **digital environments** and **hybrid environments**.

Sustainable cities and primary needs

By Tim Ramage

Complex systems grow to a certain scale at which time they need to restructure, redesign and redevelop themselves to maintain and maximize efficiency and effectiveness. Given the rapid and continuous growth of urban areas there is a critical exigency to reconceptualize the means by which cities meet and supply their resource needs and demands.

Functionally, cities cannot achieve sustainability if they cannot feed their population and meet the other primary needs of water, energy, shelter as well as the complementary needs related to health, education and employment. This presentation focuses on the interplay of urban agriculture, water systems, green infrastructure and energy as they currently represent the most promising design opportunities to turn competitive processes into complementary and even symbiotic relationships thus promoting the regeneration of natural capital within the metropolitan footprint. Utilizing an integrated systems approach, the waste – and potential pollutants – from one primary needs sector can become an asset to fulfilling the service requirements of another sector. This reduces the overall demand for resources as well as increasing the resiliency of the city.

The presentation will include both implemented and conceptual designs to demonstrate the value of this integrated approach.

Sustainability and collaborative approaches in the Canadian Arctic: the impact of place on design and production systems within Inuit communities

By Stephen Field and Thomas Garvey

The impact of 'place' on the way we create and design can be most often felt at the extremes. This paper looks at the Inuit housing crisis in the Canadian Arctic.

Through interviews with expert aboriginal business leaders, government housing managers, and private sector innovation developers, research led to the identification of critical barriers for establishing the development of northern design and production systems that could be sustainably maintained and manufactured within Inuit communities. Analysis of expert feedback also led to understanding how to improve communications between stakeholders from both different geographical locations and cultural contexts.

By identifying linkages (research needs, traditional values, economic demands, and technological advances), and their connections to the themes of sustainability, governance, and self-reliance, the research concluded by identifying a new holistic collaborative approach. It is demonstrated how this new approach of multi-sectorial

partnerships could be used to assist in the development of a design guideline for Arctic specific design and production systems.

This holistic perspective and these research outcomes, which were developed within an educational institution, will have a clear impact on design education moving forward. By demonstrating the success of collaborative approaches we are simultaneously demonstrating how greater future partnerships are possible.

System-thinking-based study on the sustainable utilization of water resources in ancient residences in Huizhou, China

By **Chen Wang, Haoming Zhou and Yixiong Hua**

In general, utilization of and interference to nature is inevitable during the whole life-cycle of residence, whereas some ways of maintaining the balance of ecosystem can be found. The vernacular residences around the world accumulate abundant valuable historical experience which could be utilized as the regional ecological knowledge database. This research examines some ancient villages in Huizhou, China which were built in Ming & Qing dynasties, and applies research methods including verification of historical article review, field work and ethnographic interview. Ancient residences which are regarded as an organic micro-environment system are investigated on different scales and at different levels, to unify both the construction of physical environment and the essence of dwelling. Based on systematic thinking and a theoretical framework, traditional sustainable design could be discussed and synthesized from an interdisciplinary perspective which involves technology and aesthetics, physical and psychological measurement, ecology and folklore, etc. In this way, traditional natural resources utilization methods, conceptions and living culture could be expanded further, and will play a greater role in current and future environmental sustainable design and practice.

Taking design education to future space ...Changing the 'place' to go online

By **Tripti Gupta**

It is an endeavor of any educational institute to teach students according to their needs and interests and balance it with the growing demands of quality and quantity from business perspective. Taking design education to online space is the future. Online learning is critical to cater to the digital natives and meet long term institutional goals of scalability.

My institute Pearl Academy has set a target of taking 30% of the learning online in 3 years. This change till now has not been easy. Overcoming resistance, decisions on resources, infrastructure improvement, training faculty

and students, adapting new pedagogical strategies, motivating everyone for online engagement, addressing academic integrity has been a part of the change in the culture of the place. The paper explores the journey so far. The challenges faced by the faculty and students, the reflections on opportunities and the way into the future. The Research Methodology used is qualitative data collected from interviews with school heads, faculty and students of School of Design and School of Fashion Styling and Textiles and quantitative data collected from LMS on student and faculty engagement at various stages. The journey into the future space is surely changing the perspective of design education.

Teaching the knowledge sharing - open higher education

By **Fabrizio Yalpreda**

Moving teaching methodologies toward new directions, introducing new approaches is not a new idea, however the digital revolution offers a great acceleration. By the end of the '60s, in fact, some innovations grew up, completely transforming the field of human knowledge: ICT, open source and the hacker philosophy, were immediately recognized as potential tools for the knowledge acquisition, sharing and propagation. Afterwards, a large number of new kind of teaching environments have developed: e-learning, ICT supported classrooms, online visual and text courses are only few of the available opportunities. However, the traditional teaching approach did not fade away, thus giving the opportunity to connect the past experience with future approaches. This paper is aimed to check if, and how Design teaching can be improved thanks to ICT technologies with an Open Source approach. For this reason, the application of Open Space Technology (OST) methodology has been tested: the research has been driven with the idea that students can be able to test the methodology by themselves, in an open teaching environment, based on the dynamic use of social networks. The case study has been developed within the Virtual Design course, Ecodesign Master Degree at Politecnico di Torino (ITALY).

The biggest tool in education with special reference to Pearl Academy, Mumbai

By **Paul Neeraj**

The purpose of the study is to focus on creating a teaching environment which changes the overall perspective of student's learning and engagement. The conclusions are drawn by the student's responses. Innovation in education is creating value for what is offered to students, which is nothing but a great learning experience.

My paper will throw light on this topic from a very different perspective and that is student's point of view. The focus is to make the class more engaging so that

students get to learn more. Today classrooms are not teacher centric, It is only student centric. Innovation has to be a two way process, innovator and acceptor. The methodology used to conduct this research is collecting primary data by sampling set of students from different streams, and understanding their behavior with the use of questionnaire method and also through conducting real time mock sessions in the class. The findings say that there is a larger scope to make the lesson plans more effective and engaging for the learners.

The Bioladder as a subject of culture

By Benny Tan

We live in a world that is constantly changing and complex. The advent of technology especially the digital phenomena and the complexity of social, cultural and economic challenges, making sense and understanding the world now requires lenses that are multi-purposed. The major problems facing humanity today involve complex systems of stakeholders and issues. These challenges involve large numbers of people and institutions intermingled with technologies, especially those of communication, computation, and transportation. Health, education, urbanization, and environmental issues have these characteristics, as do the issues of sustainability, energy, economics, bio-diversity, and overall well-being. Strategic alliances for designers in creating value and bringing outside domain knowledge into design to implicate the design process is a key strategy to negotiating impactful and relevant design outcomes. The research in this paper explores the strategies and techniques designers use in collaboration processes to solve design problems in a sustainable manner. As an outcome, this research paper will employ a case study to evidence design collaborative methodology using a developed collaborative design toolkit to navigate and negotiate a culturally, innovative and sustainable artefact – the Bio-Ladder. An artefact inspired by the bamboo in Cambodia and developed into a culturally innovative object for the modern world.

The Brutalist Wallpaper project

By Philippa Brock and Jo Pierce

This paper will discuss the approaches, techniques, processes and dilemmas being conducted by two practice based researchers, at the first stage of a long term research project into the documentation and research of wallpapers/wall decoration artefacts discovered in two neighbouring, decanted 'brutalist' late 1960's/early 1970's social housing blocks.

This paper will additionally investigate the ethical issues, methods of documentation and the subsequent sensitive use of the visual outcomes (in research terms), of decanted social housing residents' personal, private domestic decoration choices, within the current 'social cleansing' and 'gentrification' debates in London.

The research initially takes a case study approach, including the development of a specific investigative mobile 'tool kit' for artefact recording and collecting, visual database establishment and the classification/dating of the wallpaper types (where possible). This research will include identifying local social housing wallpaper suppliers.

The research has been undertaken to ensure that this valuable archive of a historical moment in domestic decoration is not lost.

Ultimately this research project will be leading to a completed visual database, multiple analysis of this information and the planning of future works exploring practice based, digital craft making artefacts from this initial body of work.

The education research on how to draw inspiration form the origins in product innovation design

By Hong Chen, Zhi Fan Guo and Ying Wang

The education research on how to draw inspiration form the origins in product innovation design-Taking the folding design as an example

This paper will mainly use existing folding objects as the origins of creativity, and develop application practices of innovative methods step by step during the teaching process. The first stage involves the experience and analysis of processing techniques and processing effect of the sheet material. The second stage involves helping students sum up the experience of processing training, in-depth observation and understanding on features in various aspects of folding patterns(including form, structure, function and so on). The third stage, as the key stage, is to encourage students to apply folding methods, combined with user needs, to carry out innovation and finish the new designs based on the effective process. These are to help students master the methods of creative design, and to cultivate the ability of innovation.

The effect of safe space on critical thinking in a design critique

By Jed Looker and Lois Frankel

Instructor behavior and studio design can act as external forces on the psychological well being of the design student and their effectiveness to think critically with their peers in a design critique. The design critique is a method of design pedagogy—a dialogue whereby the instructor directs the student towards critical thinking. Fear, stress and anxiety are often associated with design critiques, and can have a negative effect on critical thinking. As design pedagogy evolves to reflect the interdisciplinary nature of contemporary design practice, instructors will look for methods to facilitate the increasingly complex dialog between individuals of various disciplines. Safe space refers to

the psychological and emotional condition of the student while learning. A review of existing literature defines the attributes of both safe space and a design critique, and examines how instructor behavior and classroom design might affect these attributes. Findings reveal critical thinking and safe space are interrelated and realized through self expression; that dialogue is the conduit of self expression. This paper argues the attributes for creating dialogue in a design critique and safe space are the same, that the behavior of the instructor and configuration of the classroom can act as external forces on these attributes.

The expanded design studio: Otherness, innovation and virtuous action

By **Samantha Broadhead**

The paper analyses the narratives constructed by design students. The students were studying textile design; interdisciplinary design and visual communication at two different Higher Education Institutions (HEIs) in the North of England. Narrative inquiry was used to show the ways in which they reflected on and took stock of their learning experiences. Through their narratives it was possible to see the value of an expanded studio space.

An expanded studio space facilitated the day-to-day contact practitioners had with each other so they could develop a repertoire of knowledge and practice whilst the whole group created a reservoir of successful strategies for innovation. Increased exposure to otherness within the space enabled students to expand their moral actions, creativity and innovation. Acts of generosity and friendship were a means of creating an inclusive and dynamic working space.

The design studio has been described as a creative space. It could be argued that an expanded studio can: promote virtuous action between people; create horizontal solidarity through discourse and bring newness into the world through consideration of 'otherness'.

The future is present – designing time for sustainable change

By **Stephanie Carleklev**

In matters of teaching design for sustainability, we are still in a situation that requires us to break new ground. For sustainability to have a robust place in design curriculums and design processes, new sets of tools, methods and criteria are needed.

One important criterion is the aspect of temporality. (See e.g. Thorpe, 2008; Brand, 1999; WCED, 1987) Not thinking about long-term effects, treating design like it just happens in one moment and neglecting future needs has been a major cause of our unsustainable present. In this research project I explore design's relation to temporality, especially the potential and the

practical application within design education. How can time be implemented as a method to design for sustainable and resilient futures? To work with time offers at least two exciting possibilities. One is to extend the focus onto the whole life cycle of an artefact, exploring technical solutions and systems. The other is to focus more on design as a process rather than an object, and to design time itself.

My research, which takes place through creative workshops with students and staff at the Department of Design, Linnaeus University, hopes to inspire new ways of working with sustainability within design educations.

The future on a creative classroom

By **Maria Paula Barón Aristizabal**

Teaching for creative practices in the present-future involves enormous challenges. Crafts are becoming closer to technology everyday; by the strong connection they're building with material and what that socially mean. Time where technology surprises us is on the past. We are actually the ones that ask for innovation and never get overwhelmed by it. This paper reflect on experiences inside the course Digital Surfaces, where we try different actions seeking to find out new methodologies to approximate to objects and crafts in the tech-present, but most of all, guess and discuss what the future brings for crafts, craftsmen and creation process as a discipline. A path that finally drive us to be sure that the future classroom need to find how to teach our students to create and consolidate a voice that doesn't depend on the media, a future we suppose will be constantly evolving in an colossal speed, giving them a strong creative voice powerful and independent from media, that let them jump from different types of media, but at the same time a voice that challenge an enrich that media. The challenge with the crafts is to jump from generic to particular creations, from systematic to human touched.

The geography of the internet: the real metaphorical

By **Robin Turner**

Marshal McLuhan spoke about the global village – an interconnected electronic nervous system (www.livinginternet.com) – in the mid-1960s. While this metaphor nearly perfectly describes the shrinking geographical borders as a consequence of our current digital connectiveness, one has to wonder whether or not this metaphor still holds true.

Has the internet become a real geography? An inhabited place that hosts real (as opposed to virtual) structures? A full world with multiple political agendas and multiple cultural divides – a larger world without borders – as opposed to a global village?

This paper will look at the construction of personal online identities (and whether or not online personas – and online spaces – are more true to self, than our

analog equivalents). As a result, it will also investigate the impact that human identities have on determining and defining the meaning of analog space to better understand our current online 'global city-scape' – those megalithic institutions that we rally around, when we feel the need to unify, demonstrate our attitudes, our emotions, our political agendas. In conclusion, this paper will look at the prediction of McLuhan, in the context of the writings of Shelley Turkle, and the current internet landscape.

The gestural mark: Interpretation and translation through the weft knitted structure

By Ian McInnes

This paper documents a practice-led research investigation into the methods of interpreting and translating through the weft knitted structure, the gestural mark in drawing. The marks have been created by the author in response to battle maps, photographs and written accounts of WW1, which are then categorised into mark types. This sample study aims to provide a systematic analysis of iterative links between drawing and knitted fabric making and identify the scope of the interplay of yarns and weft knitted structures in replicating gestural drawn marks.

Both traditional and practice-based research methods have been used. This has involved analysis of definitions of what is meant by a gestural mark and the analysis of the work of selected twentieth century abstract painters and textile practitioners. It has also involved experimental practice through drawing gestural marks in contrasting media in monochrome and the exploration of selected yarn types and weft knitted structures and their combination, which are the subject of this paper.

The results identify the potential and limitations of the weft knitted structure as a mimetic of drawn gestural marks. Through the manufacture of the knitted fabric, alternative visual and material dimensions are identified as transformative and enriching the gestural mark.

The impact of Che Wong tribe resettlement at Kuala Gandah, Lanchang, Pahang through photographic images representation

By Fadli Abdul Razak, Abdul Razak, Mustaffa Halabi, Azahariand Adzrool Idzwan, and Ismail Ismail

The Che Wong is an ethnic group of indigenous people or known as Orang Asli. This group belongs to the Senoi group can be found in Peninsular Malaysia. Due to the current development, the government has taken a step to relocate of their settlement to village which was carried out in 2000. Indirectly, it has affected routine of their daily life. The objective of this study is to

examine the impact of resettlement among the Che Wong community by using photographic images. The methods of observation, interview and content analysis of images are conducted in order to gain related information. This study found that the children and teenagers have better exposure particularly in education opportunity and community relationship. The men and women have opportunities to shift from normal jobs as farmers to other jobs such as general workers, etc. On the contrary, some of the young generation tend to lose their interest in maintaining their own culture and heritage. Activities in producing crafts, hunting and farming have diminished in their daily lives. Directly, it imparts some negative implications of social and cultural extinctions, that can destroy the authenticity of cultural, historical and indigenous of Che Wong.

The making of world citizens

By Sakshi Jain

The rich tradition of telling tales through oral and written cultures in multiple languages, and through various folk and regional art forms is packed with cultural heritage, individual diversities and multilingual identities. Today, the group of creative contributors, the practitioners of this art form suffer from economic poverty. There are also individuals who are unaware of this power packed practice that has much to teach us about tolerance, equity, equality and strength. They suffer from the poverty of imagination, visual expressions and linguistic literacy. Sustainability of these seminal practices of storytelling in oral, visual, or written forms is essential for the evolved sensitivity and sensibility, especially in the world with such diverse social norms and practices. Design intervention can enable these diminishing storytellers to take their valuable practices outside of their limited physical boundaries, and empower them socially and economically. When these stories are interwoven in subtle and intuitive ways with objects that we interact with on day-to-day basis, they have the ability to create the holistic experience of enjoyment, exploration and engagement. They can open the world of deep thinking in us, to create world citizens who are more informed, tolerant, aware and liberated.

The meaning of shared spaces and the effect on the sense of belonging for older women residents of multigenerational cohousing communities

By Corinna Robitaille and Lois Frankel

By 2036, seniors will represent 25% of the Canadian population (Bohnert et al., 2015), with women comprising more than half of this group (Statistics Canada, 2011). The growth of this population urges consideration of how best to design housing that fits their current and future needs. Cohousing is one option for women seeking to live within a community as they age. This study explores

the meaning Canadian women over the age of fifty living in cohousing attach to intentional and liminal shared spaces in their community; identifies the design elements of the built environment and participation in design processes that reflect or contribute meaning; and determines if such spaces contribute to a sense of belonging in that community. The research uses an exploratory mixed-methods approach of personal interviews, a design workshop, and a Cross-Canada survey.

The findings suggest that design and inclusion in the design process affect a sense of belonging to community as expressed through the voices of women living in cohousing. These findings contribute to discussions of the design of future spaces for belonging. They also highlight the value of design education in facilitating research that inspires creative problem solving of issues reaching across interdisciplinary fields.

The poetics of programming

By Susi Clark

My MA focuses on the development of a design process for weave that validates the exploration of the space, which exists between the pragmatic, programmatic and poetic requirements of the craft. This space could be described as a form of tension, resonance or oscillation but is essentially transitional.

I intend to demonstrate, as described by Sennett (2008) in 'The Craftsman', that repetitive activity is essential to craft skill, not only because it imbues the craftsperson with technical virtuosity but also that it is intrinsic to the act of creation and innovation.

To effect this, the design programme is formed by practice-led research consisting of thematic study and response, of data collection and analysis, and of prototyping.

The thesis begins by analysing the Japanese film, 'Woman of the Dunes' (Teshigahara, 1964) to visualise how repetitive activity affects behaviour and mind state. The film also scrutinises how matter changes mutably, dependent upon external and internal factors.

In addition, personal recording is used to identify when, where and how, as a researcher/practitioner, I move between states of physical and mental activity. This is to discover how repetitive activity moves from being located in the physical, becoming a synergy of physical and mindful actions.

The potentiality of play

By Kirstie Jamieson and Pankhuri Jain

'The Potentiality of Play' is a PhD research project, driven by the complimentary methods of design ethnography and research through design, to explore potentiality of play in children with learning difficulties. In its scope, the project seeks to understand and respond to the distinct play environments produced in India and Scotland.

Article 31 of the UN Convention on the Rights of the child to play asserts a universalism that invokes play and the design of spaces or play, but what does this universalising mandate do in terms of design for play? The question of place understood as "A space, which has a distinct character" (Norberg-Schulz 1980), is not acknowledged in the UN charter. Therefore, design's role in providing objects and spaces is lost to the abstraction of an ideal.

Piaget (1896-1980) believed that children's interactions with their environments create learning. In order to understand the different approaches of energetic, spontaneous and physical play in relation to children with learning difficulties, case studies in Scotland and India explore the localities of play. This paper explores how place-sensitive case studies provide an opportunity to explore how objects and spaces feature in the matrix of forces, in order to support learning and development.

The relationship between sustainability, community identity and cultural symbols: Comparison case study of Dong minority and Tibetan minority villages in China

By Sunghee Ahn and Renke He

This research searches the strategic impact of relationship between cultural elements and isolated minority communities' identity. Research hypothesis is how these cultural identities can contribute to re-built the strong community develop strategy or policy which leads to establishing community coherence and securing long term community sustainability in village regeneration. The research methodology is action research based comparison case studies of villages in two minority village areas, Dong minority in Tongdao county and Tibet minority in Qinghai county in China.

Rapid rural development in China pushing these minority villages facing the economic and cultural transition as well as new media shock through internet mobile communication tools. In this context, unique cultural identity composes sustainable advantage of minority community based in residents' participation.

Community and place identity can be represented by visual symbols from cultural images including textile and architecture and immaterial heritages including song and dance. Through the comparison of above cultural elements which relate to the community and place identity, this research develop a sustainable strategy and policy model to be adopted by other minority communities as well as two case study villages.

The role of branded artefacts in celebrating events

By Yvonne Trew (This abstract was presented as a full paper in the student strand of the conference).

The Courtaulds Pretty Polly Hosiery Archive present an opportunity to preserve artifacts in the company archive and to gather oral histories from employees of the East Midlands region's knitting and hosiery

manufacturers. The aim is to present and develop an understanding of the role of branded artefacts in celebrating anniversary events. The final output from this particular project will be the development and implementation of a communication strategy for the Pretty Polly Brand Centenary celebrations in 2017. Incorporating the theme of future histories students will curate an installation that includes text, image and sound to transmit, circulate ideas and present the project concept for the CUMULUS conference.

As some areas of the fashion industry appear to be seriously questioning what the future has in store, how we as educators deal with future spaces in terms of research, may need to consider the Place in which we reside. But perhaps consider the spaces in between that have become bypassed by the relentless drive to consume. The findings of a cross-disciplinary collaborative project undertaken by postgraduate students that will benefit the company but also facilitate a body of research that has lasting impact in the fashion industry and fashion education sector.

The unbiased physicality of a creative space

By Fabienne Munch

Recent spread of unchained online exhibitions and conversations leads to the belief that the preferred space for identity expression of self is now virtual. Communicating or working via online based networks gives the comforting feeling of community belonging yet at the same time some sort of invisibility. But this trend eclipses the power of a physical space where inclusiveness and diversity are by design part of the contextual construct and allow for the expressive interaction of all. The paper will describe the constituents of a physical design space where the modus operandi and an open-mindedness culture allow for the expression of all parties involved and still carry the tenets of community belonging for diverse cultural and disciplinary backgrounds.

Thinking out of the blocks: Mapping the journey of designers and entrepreneurs from Jaipur that have taken the craft of block printing from tables to labels

By Taruna Vasu

Block printing of Sanganer and Bagru (Jaipur) is treasured as a heritage craft of India. Indian crafts have survived and sustained for generations of craftsmen either because they enjoyed royal patronage or were embedded in culture, festival or ritual of the society. However lately the new- age patrons of this craft are in new avatars as entrepreneurs, brands and designers. These pioneers have taken the lead in crafting success stories that originate from their local context to create an impact globally. This paper intends to build a narrative of the evolution of block printing from the modest printing tables of the chhipas (community that practices this craft) to the racks of successful and renowned brand/labels based out of Jaipur. The essay is based on descriptive analysis of personal interviews of the key people associated with labels and brands such as Puja Arya, Killool, Anokhi, Ratan Textiles, Ojjas, Rasa, Madhurima Patni etc. It shall also probe the way ahead for the future of this craft by exploring its influence on young designers from Jaipur who aspire to visualize Block Printing in a contemporary and futuristic fashion.

This is not a studio. A space and time to un-work.

By Mark Luyten

Generally art education defines art practice as studio-based. Art schools embrace the studio as the site par excellence where the (controllable) production of art takes place. Art, in other words, is taught and hence made in the studio.

But doesn't the current post-whatever era of post-media art and post-studio practice force us to reconsider both the conceptual confines of art production in general, and the spatio-temporal framework of the studio – the traditional atelier d'artiste – in particular? Are we still dealing with a localized, withdrawn, private place or are we rather facing an open, nomadic, shared setting/set of interchangeable conditions?

From 24.1 until 1.2.2014 Sint Lucas Antwerpen (B) in collaboration with ECAV, Sierre (CH) and GradCam, Dublin Institute of Technology organized an Intensive Program, Staging the Studio, aiming to investigate to what extent the contemporary space of production can be (re) explored, (re)discussed, (re)defined.

Guided by three parallel strands of thinking up the space of the studio ('Representation', 'Reconstruction' and 'Theatricality'), students were invited to explore the modes, means and spaces of their own art practice.

Tools for reflection within smart textile teams

By Sarah Walker

Multi-disciplinary collaboration presents many opportunities to combine skill sets, knowledge and to further understand other disciplinary fields. The potential for new innovative strategies to be developed are huge. However the space in which multi-disciplinary collaboration occurs can become increasingly complex. There are often existing barriers that lead to tensions within multi-disciplinary groups when various skill sets, personalities and roles are brought together.

Research to date has explored numerous approaches towards facilitating multi-disciplinary groups including the use of relational and participatory methods from co-design and therapeutic practices. These approaches primarily focus on the individual and encourage people to acknowledge themselves within environments where they share with others who have diverse backgrounds.

This paper reflects on previous experiences of being part of multi-disciplinary teams within the field of smart textiles. This paper will discuss the identifiable and observable characteristics found within these teams and how as a result, reflection has been identified as a method towards supporting how to balance the desired qualities of individuals. The paper will propose a selection of tools for reflection to be used within mixed-discipline teams and conclude on how these tools could potentially encourage innovation within mixed-discipline teams working in the field of smart textiles.

Transit social innovation design on local cultural heritage: A case study of Ya'an black pottery design and development

By Jun Zhang, Yuan Cao and Tie Ji

With the flourish of cultural creative products and tourism consumption market, it can be seen more and more commercial-driven re-design and development among local cultural heritage and craftsmanship. This paper draws attention to the sustainable development of local immaterial culture & product by introducing holistic design thinking, cross-culture & disciplinary research, systematic implementation on the new relationship between local culture, anthropology and social innovation, with the goal of sustainable development. This paper proposes a system design and transition research in a rural area, Ya'an, Sichuan(South-west of China) and focused on black pottery, a typical provincial local cultural heritage product, which extremely facing the sustainable development challenges and barriers related to: lack of financial sources, access to market and innovation, skills improvement and intellectual property rights, education and training to young people, production conditions

and other serious obstacle to sustainable development. Series of social economic research and design conducted by a multi-disciplinary & international team, co-works with local craftsman communities as practitioners and learner, holds the integration of design thinking for cultural welfare ideas, combines a variety of design methodology such as service design, business model design towards building new design pattern which lead to sustainable design and production capacity.

The research on the application of unconscious behavior in the sustainable product design

By Hong Chen and Ying Wang

The design psychology points out that human's unconscious behaviors can better reflect their genuine needs. This article will begin with clarifying the research value, basic classification and characteristics of the unconscious behaviors, as well as qualitative and quantitative surveys on relevant users' unconscious behaviors. The surveys include the process of manners, ways of usage, psychology of usage, environments of usage and personal experience, etc. Then, this article will research the relationship between user needs and unconscious behaviors, between the applications of unconscious behaviors and sustainable design, through analyzing the user needs reflected by effective unconscious behaviors and case studies of the applications of unconscious behaviors in product design. The aim is to explore the possibility and feasibility of designing products with more human concern and experience optimization, in order to develop further sustainable design.

Transportable space – holographic volume as spatial carrier

By Andrew Pepper

Holography has promised much and delivered less.

There is a naturally acceptable enthusiasm for the luminous novelty of this photonic process that powers (and undermines) our expectations. So, where are we in the development of a visual device that allows us to record volume (in three-dimensions) and then transport it to other geographic locations? What changes take place in our understanding of 'place' when 'actual' space is moved to another location and 'sits' within a different set of visual and spatial references?

There is a very real fascination with the artefacts which holography allows us to record, but those objects are not real. They are high-quality facsimiles surrounded by a corresponding (and overlooked) three-dimensional space.

This paper examines the basic vocabulary of visual holography, the metaphorical starting point of the holographic 'window' as a view into another location - one that is only 'visible' because of the artefacts it

contains and postulates on the impact of repositioned holographic volume.

There is no science-fiction here, only demonstrated fact that we appear to be ignoring. 'Place', and the objects that make it visible, are no longer stable.

Typography & death

By Marie Sterte

This project explores typography in the context of death, mourning and the memorial grove. Can typography reflect the process of mourning through use of alternative materials and processes? I have explored the possibility of decomposing typography, and typography that gradually disappears by nature's interplay. In these experiments the letters or names were 'typeset' using the materials of moss, ice and beeswax. In addition, I have interviews with individuals that recently lost a relative on the topic of future funerals. The project has also drawn on collaborations with Master students at Linnaeus University and Bachelor students at Hong Kong Design Institute. Together we explored how future funerals might be conducted. In workshops students made postcards from their imagined futures and the imagined experience of a funeral in the year 2074. In its early stage, the research project's findings are juxtaposed in booklets. The research continues with refined typographical experiments, and discussions on death, mourning and typography with key stakeholders, such as funeral directors, using the booklets as starting points.

Unexpected connections in design through combining multiple disciplines

By Camilla Park and Bryan Howell

If I fill up with my head many different colors, I'll get unexpected new colors out. I've heard it said that as a designer, you're only as good as your most obscure reference. Knowledge in multiple fields allows for unexpected connections, metaphors, and comparisons that drive innovative solutions to design problems.

I am an industrial design student with a secondary major in French and a job as a biology teaching assistant. My French education led me to do design research for Alzheimer's patients in Paris, while my biology work has provided direct aesthetic inspiration and a scientific mindset for design research. Generally, my biology experience transfers more easily to design work than my French experience, because biology is a more concrete, applied science than French language and culture. However, exploring the connection between fields with higher contrast will lead to more dynamic results. To explore the value of unexpected connections in generating innovative design, I will consciously incorporate French and biology into design by designing a birdhouse based on the principles of French designer Mathieu Lehanneur, specifically focusing on the influence

of French culture on his work and his focus on involving scientists and scientific knowledge in his projects.

(Un)organizing innovation in SMEs in the creative industries and the role of creative leaders

By Marlin de Bresser, Sangeeta Karmokar and Bertan Selim

Many small and medium-sized enterprises (SMEs) depend on their ability to be innovative in order to achieve and sustain a competitive advantage. However, innovation processes within SMEs should be assessed independently from generic innovation processes within the industry. E.g. SMEs in the creative industries tend to use less structured approaches to innovation which holds valuable lessons regarding to creative leadership and accepting a crucial aspect of innovation: the unexpected outcome. This paper explores critical points of thinking regarding (un)organizing innovation across SMEs within the creative industry domain. Key questions are: what can be organised? And what should be left as untouched and unorganized as possible? What does creative leadership look like in SMEs in the CI? Semi-structured in-depth face to face interviews of 45 minutes each will be held at 5 small medium enterprises (SMEs) in the creative industry in Tilburg (the Netherlands)* who have defined innovation as a core value. Interview data will be analysed in order to distillate best practices and critical points to consider for further research. Our findings reveal critical points of thinking for innovation minded organisations.

Using images in enhancing learning skills among pre-school children

By Nik Nor Azidah Nik Aziz, Mustaffa Halabi Azahari and Wan Nor Ayuni Wan Mohd Zain

Preschool education has become one of the fundamental aspects in our society. Most of the parents today realized that their children need to be exposed with proper early development process. This process includes in the aspects of understanding and recognizing skills in pre-reading, language, vocabulary and numeracy skills. In some parts particularly in advanced countries, the use of images have become as one of methods in teaching and learning. In Malaysia, this method is believed has not been fully practiced in pre-school education. The objective of this study therefore, is to explore the role of photographic images in enhancing learning skills among children at kindergarten. The methods of observation and interviews are employed in gaining relevant data at selected Kindergartens in Malacca, Malaysia. The findings of this study indicated that children are likely reacting positively and effectively when the teachers used various images. The fundamental aspects of cognitive which involve the process of gaining knowledge and understanding of subject are better than conventional method of chalk

and talk. They absorbed information given in faster way when the teacher tried to deliver the contents of any subject. Students become more enthusiastic in learning the subject in full of fun and non-stressful.

Using me: Exploring customised apparel as cultural artefacts

By Estefania Escobar

Customization can be defined as user modification of product or service to individual taste and needs. Manufacturing developments, industry application and the Internet have allowed consumers to customized their own shoes, dresses, and hats to name a few. The apparel sector has seen examples of customization since 1998 with examples such as NIKEiD, YoBag, and MiAdidas. By customizing, consumers are embedding their identity and preferences into an object, and combining it with the possibilities offered (Ulrich et al 2006; Schreier 2003).

This paper explores how customized apparel can be understood as cultural artefacts through the concepts of material culture, meaning, and consumption. As makers of objects, consumers become co-creators of their own apparel through customization, and thus these objects possess a meta-context, either identity, experiences or preferences.

This paper is divided in three sections. The first section presents why customized apparel can be seen as cultural artefacts. Based on two consumer interviews and respective artefacts, the second section proposes material culture and consumption (Miller 1995) to understand how consumers identify with customised clothing in material and individual spheres. Finally, the paper discusses consumer's cultural practices to express social outstanding (differentiation through possessions) and cultural position (possessions communicate specific cultural discourses).

Washed visual communication – How can people become more aware of the health washing phenomena?

By Tobias Svensén

This paper describes early findings of a research project exploring the possibility to establish patterns and cues in how visual communication uses graphic design to manifest health washing. Health washing is the phenomenon of when a company or organization communicates a product or service as healthier than is proven. The project explores if there are recurrent features in graphic design of advertising campaigns that can be considered health wash, and how consumers can be alerted to and supported in discerning health washing. The project will result in a checklist and/or a brand book for health washing. This is to enable end-users to identify health washing in the everyday visual communication, and therefore encourage end-user to more critically examine visual communication in the media as well as in service-scapes.

Water distribution systems in the city and building through water dispensers

By Alex N Kalenga and Gopal Meena

Water is an omnipresent subject at every environmental forum; everyone acknowledges the need to manage this resource, which, is depleting at an alarming rate. In many cities across the globe - governments, organizations and individuals have been planning to curb or stop spoliation of this resource which is essential to human life.

In a country like India, this resource is misused and abused without any thought of future availability. We will understand the causes of water spoliation at the municipal corporation in Delhi, its distribution chains - through trucks on one hand, through Reverse Osmosis in homes and offices on the other. We will present our study of the existing system and evaluate the quantity of fresh processed water spilled during transportation and the water drained as a result of RO treatment.

At the end of this study, we will provide you with results which show that the ratio of wastage in either systems are exponentially high. And we hope, to persuade the policy makers to look into fresh water management more carefully and save this precious resource.

What is “here?”

By Christopher Hethrington

Image D is a static representation of place, while F is the, yet to be explored, curious potential of space.

As the world becomes more mobile and our media more remotely accessible, communication in all its forms is becoming mediated by a sense of place. The situating of information and experience within a physical geo-located space opens opportunities for a more rich and contextually meaningful communication. In this emergent space of location-based media we are just beginning to explore the possible ways of expressing the value and meaning of place. Too often, visual communication design defers to a simplistic mediation of location-based information as a “you are here” pin on a proprietary Google map.

This research paper poses the question; what is “here”? In our attempts to mediate a sense of place, how do we contextually, rhetorically and phenomenologically navigate this emergent space of location-based media? In this place, what can we better understand, what are the ways of knowing, what do we feel, and how do we evocatively express that feeling?

Finally, if “D” is where we are now, then this paper explores “F” and anticipates the destinations beyond it.

in this place: conference programme

WEDNESDAY 27 APRIL - THURSDAY 28 APRIL

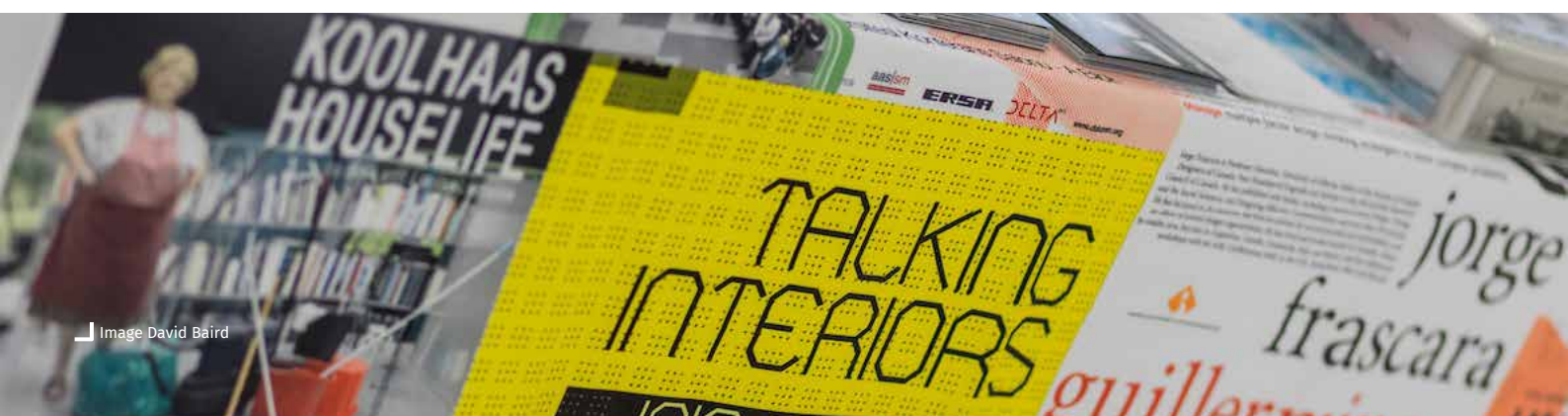
WEDNESDAY 27 APRIL							
09.30-13.00	Registration open	Cumulus Executive Board	X-Files working group				
13.30-17.00	Registration open and Cumulus working groups	Design 4 Sustainability	Contemporary Art	Fashion and Textile	Interior and Furniture	REVEDA	X-Files
17.00-18.00	Speaker briefing						
Evening	Delegates free time						
THURSDAY 28 APRIL							
09.00-12.00	Registration open and Cumulus working groups	Design and Innovation	Contemporary Art	GENSAI Design	X-Files		
13.00-17.00	Registration and conference opening	Welcome by NTU and Cumulus	Contributions from Prof. Duncan Higgins (Chair and Keynote) and Luisa Collina, Cumulus	Contribution by Kathy McArdle, CEO Nottingham Cultural Quarter	Keynote Speeches from Dr Daniel Glaser, Director Science Gallery, London and Wolfgang Buttress (Artist) and Dr Martin Bescsik (Physicist, NTU)	Presentation by John Mathers, CEO, Design Council UK	
17.00-19.00	New members fair and Cumulus working group	Leadership and Strategy					
19.00-21.30	Drinks reception at Nottingham Castle						

FRIDAY 29 APRIL - SATURDAY 30 APRIL

FRIDAY 29 APRIL						
09.30-12.00	Academic and professional sessions	Negotiating Artefacts Welcome by Janna Graham, Head of Public Programmes and Research at Nottingham Contemporary. Chaired by Prof. D Higgins 5 Papers	Innovation Welcome by Marjolijn Brussard, President, ArtEZ University of the Arts in the Netherlands. Chaired by Prof. A Kent 7 Papers	Future Craft Welcome by Jason Beaumont, Director at Confetti. Chaired by Prof. T Fisher 10 Papers	Future Space Welcome by Skinder Hundal, CEO at New Art Exchange. Chaired by Dr. A Souto 8 Papers	Sustainability Welcome by Steve Mapp, CEO at The Broadway. Chaired by Prof. V Dhupa 5 Papers
13.30-16.00	Academic and professional sessions	Negotiating Artefacts	Innovation	Future Craft	Future Space	Sustainability
16.30-17.30	Plenary session: report back from Chairs and winning papers	Wonder Design and the Exploration of Senses and Imagination	Work on the Move	The Potential of Rural Craft in Promoting Community Empowerment	A Never Ending Project into Future Design Spaces	An Exploration of the Social Functions of Public Art
17.30-19.00	Delegates free time					
19.00-22.00	Conference dinner					
SATURDAY 30 APRIL						
09.00-12.00	Cumulus General Assembly	Exhibition and workshop: Publishing Rooms				
13.00-16.00	Student academic sessions	Negotiating Artefacts and Future Craft Chaired by Prof. D Higgins 5 Papers	Innovation and Sustainability Chaired by Prof. V Dhupa 5 Papers	Future Space Chaired by Dr. A Souto 5 Papers		
16.00-20.00	Delegates free time					
20.00	Free music event: WorldService Porject & Zeitgeist					

SUNDAY 1 MAY

Delegates were encouraged to explore the culture, arts and heritage of Nottingham and Nottinghamshire.



review of in this place



Anne Bonnar

Anne Bonnar co-founded Bonnar Keenlyside in 1991 following a career in theatre and arts management in Scotland and London including management roles in producing theatre including as a production associate for a West End producer, theatre manager at the Young Vic and marketing manager at the Citizens' Theatre. She has specific expertise in PR and marketing, producing and touring theatre commercially, both in Scotland and internationally.

Anne Bonnar co-founded Bonnar Keenlyside in 1991 following a career in theatre and arts management in Scotland and London including management roles in producing theatre including as a production associate for a West End producer, theatre manager at the Young Vic and marketing manager at the Citizens' Theatre. She has specific expertise in PR and marketing, producing and touring theatre commercially, both in Scotland and internationally.

Bonnar Keenlyside is one of the UK's longest established and most respected management consultancies operating in the arts, cultural and heritage sector.

Anne has extensive experience in working with arts clients to explore multiple options, and carry out the design and delivery of major change projects. Her expert specialisms include:

- Theatre including producing theatre
- Designing and leading organisational change and development
- Working with artistic leaders in developing and achieving shared visions.

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the play's the thing: in this place



Image David Baird

Delegates at the Cumulus conference included members of university communities of art, design and media, some of who were new members of Cumulus, some academics, administrators and students and also a small number of art and design professionals. As an independent advisor and facilitator working in the arts, cultural and creative industries who had never been to Nottingham and never worked full time in a university, I was more of an outsider than any of the new delegates so easily identified on day 1 eating lunch alone.

My brief was to attend, observe, listen, enter into dialogue with delegates and offer my reflections as to whether the conference was adventurous, useful and of quality.

I will declare my interests. Although an outsider, I am not neutral. I am drawn towards art which provokes my mind, spirit and senses. I buy or covet goods and services which are of high quality, beautiful and useful. I design, with care, all my processes and tools to help people and organisations define and achieve their goals. I believe in equality and in democracy.

While the Cumulus association encompasses the wide fields of art, design and media in education, the emphasis at this conference was on design.

While the Cumulus association encompasses the wide fields of art, design and media in education, the emphasis at this conference was on design. New members showcasing their wares were, in particular, being those in fashion and product and service design rather than art or media. New members pitched learning opportunities in 'international design in sustainable innovation for human solutions' and 'creative thinking' and offered specific courses in a multitude of disciplines and practices across the wide spectrum of art and design and its application in society.

Through the conference themes of Negotiating Artefacts, Future Craft, Innovation, Future Space and Sustainability, several strands of enquiry were explored. At the base, one strand clearly linked design to economic success and financial value. For many delegates, the emphasis is on providing students with the tools which will support them in making a living not only in design skills but in developing businesses. Papers and practical examples focused directly on aspects of innovation and ways of working, offering academic reflections on current real-life practice around, for example, co-working and collaboration. This strand provided a grounded base for reflections on art and design where the transactions and value might never be monetised.

The exploration of art included the wonderful presentation by Wolfgang Buttress and collaborators Dr Martin Bencsik and cellist Deirdre Bencsik on The Hive, the extraordinary project to create a structure for the 2015 Milan pavilion based on bees. Buttress demonstrated clearly his motivations, needs and position as an artist, citing his need for control and limits in order to achieve quality at the same time as sharing with us his humanness. His foot sometimes freed itself from his sandal and touched the ground.

“I’m not an architect, I’m an artist, so I was more interested in the experience and in how you could convey an idea and a feeling through an experience rather than an object or a building. It would be easy to build a shed and say this is impressive. But I think sometimes you can say more by being quiet.” Wolfgang Buttress in Dezeen.

Similarly, others shared processes where the artist takes a clear ethical or political position, where the ‘design’ is to inspire deeper understanding of past histories and bring about change. Artefacts used to contest historical narratives included human remains in museums and the bloodstained cloth of conflict in Northern Ireland. The moral responsibility of the artist to bring about change in society was also voiced in other sessions with advice from senior artists to young students about the importance of taking a position and helping as well as studying people dispassionately. Student papers were presented for the first time at a Cumulus conference and fascinating insights were offered into the threatened crafts of Madhubani in rural India and Yanchuan patchwork in China. But what practically can be done to prevent the end of traditions where there is no commercial market? While academic research might be confined to an objective study, some artists feel a responsibility to bring about change. Ultimately, each

individual artist or designer needs to take a stand which is true to him or herself.

Similarly, much of the enquiry on design processes explored their application in education and social contexts. Design processes can be used to find solutions to any problem and to engage individuals and groups and are therefore invaluable in many contexts particularly at this time, when community empowerment has found favour in many historically top-down institutions, partly as a consequence of our socially networked society. It’s no surprise then that there was considerable sharing of examples where this works, including in urban planning, in space design and in education. Many of these processes have a well established application in social and educational settings and the theory and practice is supported by knowledge of psychology, education and management science.

But where there was something new was in the application of product design to the social design process. Where designers added their artistry to the cards and artefacts produced as pieces in the game, something magical happened. Playing a game with beautifully designed Wonder Cards (PUC Rio) or material capsules (Aalto University) creates a more immersive experience than the usual aids of teaching and coaching. The application of design to play, ‘the highest form of human activity’ (Nietzsche) or ‘the essential feature in productive thought’ (Einstein) might offer the richest seam for educators in this field. In developing this, design schools could learn from academics and practitioners in

human behavior. A teacher, a trainer, a facilitator and a leader of organisations will have studied and applied design principles alongside studies of psychology and anthropology to understand individuals and groups. Understanding the players as well as the play pieces and processes will lead to more productive play.

Several definitions of the differences between art, craft and design were offered during the conference but none of these distinctions resonated as much for me as the difference between design as a top down and masterful process and design as an enabling process.

What might be described as the more traditional process of design, illustrated by the greats from Zeus to Corbusier is where the designer, recognising his greater gift and power, creates goods and services for the benefit of humans. In today’s world, this links to innovation and economic wealth. As John Mathers of Bureau of European Design Associations declared, ‘designers are the leaders of the future’ and much education relates to training designers for this role.

“I’m not an architect, I’m an artist, so I was more interested in the experience and in how you could convey an idea and a feeling through an experience rather than an object or a building.”

The shadow of this style was also glimpsed on several occasions. A shocked ripple went round the room when the neuroscientist Daniel Glaser, leader of London's new Science Gallery acknowledged, as a white middle aged man, the challenges of the ruling elite in engaging with black and ethnic minorities. Similarly, other presentations mused on apparent gender and race inequalities as a side effect of their main studies. There were several explorations of design to combat exclusion including INDIAFRICA, using the universal process of making a cup of tea (Pearl Academy, India) but overall there remained discomfort amongst some that traditional hierarchies and exclusivity were evident.

Outside of the sessions, the conference created the space for aeration of the endemic irritations of academics associated with institutions, with frustrations about structures and resources shared and lightened. The trading exchange for was some the most important function of the conference. International exchange brings benefits not only in the exchange of ideas, but in attracting students and funds. Delegates really enjoyed being at the conference, not always looking for anything new, but interested more in connecting with others.

But there were new seams and threads. Nottingham's art galleries and the city's creative industries provided the perfect net with which to interact with the conference themes of In this Place. At Nottingham Contemporary, situated in the historic Lace Market, Simon Starling's stunning work explored past manufacturing histories,

connecting the past with the future, honouring tools and artefacts.

In the Foxall Brothers' Publishing Rooms at the Bonington Gallery, we got to play with being personally scanned then challenged to reflect upon our own mundane self-publishing.

The exhibit which most connected with the special points about design and play was at the New Art Exchange, where we were not only able to touch the art but to stand on it and play in Doug Fishbone's Leisure Land Golf. Through putting on a dozen mini-golf settings from individual artists, we had a lot of fun whilst provoked to question not only the politics of consumption and the leisure industry but, even more personally, the unseen consequences of our pursuit of winning.

Weaving in and out of the conference sessions with art created a deep souvenir of the explorations of the conference, In this Place. For educators, there are clear opportunities to develop links with the human sciences to develop the design process as used in social and educational contexts.

my lasting impression?

The importance of play, the music of the bees and the cello and the foot on the ground.



in this place review committee



Duncan Higgins

Professor in the School of Art and Design at Nottingham Trent University

Conference Chair

Member of the Cumulus Review Committee

Chair of Cumulus Strand: Negotiating Artefacts

Duncan is a visual artist based in Sheffield, UK.

He is also a Professor in Fine Art at Bergen Academy of Art and Design.

Most recently he has had solo exhibitions at Lithuanian National Museum of Art Kaunas, South Bank Centre and Royal Festival Hall, London; Czech Cultural Centre and Russian Centre for Art and Science, Prague; Solovki State Museum Reserve Russia, Academy of Arts in Warsaw, Poland and Room8, Bergen, Norway.

Duncan has been a winner of a prestigious National Endowment for Science, Technology and the Arts Fellowship. Since 2005 Duncan has been developing an on-going body of work collectively titled unloud, it uses painting to explore how to (re) integrate images through art into historically active conversations concerning both shared history and contemporary experience of violence. It asked how the production of painting can communicate an understanding of violence, faith and place through a research process involving the production of: paintings, photographs, videos, texts, critical reflection, teaching, workshops and fieldwork.

Awarded the National Asian Woman of Achievement Award in the UK for her contribution to culture.



Venu Dhupa

Visiting Professor in the School of Art and Design at Nottingham Trent University

Member of the Cumulus Review Committee

Chair of Cumulus Strand: Sustainability

Currently running a niche creative and organisational development consultancy (VSDB).

Recent clients include Stonewall, British Land and the Adult Dyslexia Society. Former roles include: Director of Creative Development at Creative Scotland where she was part of senior start-up team with responsibility for the Arts and for International Engagement World-wide Director Arts for the British Council where she led and successfully completed the first international consultation/review in 25 years on the Council's global arts strategy; Director of Creative Innovation at the Southbank Centre (Europe's largest cultural centre); Fellowship Director at NESTA, the UK's National Endowment for Science, Technology and the Arts; Chief Executive at the Nottingham Playhouse one of the UK's major repertory theatre companies and Producer (Mobile Touring) at the Royal National Theatre. She was appointed as the inaugural Chair of the East Midlands Cultural Consortium by the Secretary of State to co-ordinate and write the 10 year cultural strategy for the region.

Alongside these professional roles she has taken on a number of Board responsibilities, including: Trustee of the Theatres Trust; a Member of University College London's Museums and Heritage Committee; a Governor of Guildford Conservatoire and a Council Member of Loughborough University. She is a Fellow of the RSA; Co-Editor of the International Journal for Creativity and Human Development; a Member of the European Cultural Parliament and an External Examiner on the MA in Creative Entrepreneurship for the University of East Anglia London Centre. She has been the Creative Director for the celebrations for Commonwealth Day in London and she has been awarded the National Asian Woman of Achievement Award in the UK for her contribution to culture.

Ana's research interest lies in architecture as a cultural manifestation of national identity



Ana Souto

Senior Lecturer at the School of Architecture Design and the Built Environment at Nottingham Trent University

Member of the Review Committee

Chair of Cumulus Strand:
Future Space

Ana did her first degree in Madrid (Spain) in Art History.

She then moved on to do a PhD on architectural history (UNED, Spain, 2001). She spent two years teaching and doing research in Mexico (2004), until she finally moved to Nottingham to complete her PhD in Hispanic Studies at the University of Nottingham (2007). Ana has been a Lecturer in the School of Architecture at NTU since 2007.

Ana has been leading the history, theory and research modules on undergraduate and postgraduate courses for a number of years. She is also part of the supervisory teams for PhD students with topics related to memory and identity in Architecture.

Ana's research interest lies in architecture as a cultural manifestation of national identity. In this context she dealt with the search for national identity in post-revolutionary Mexico, and the 1929 Iberoamerican Exhibition in Seville. More recently she has been working on the connections between memory, identity and architecture, with an especial interest in Germany, where memory (both history and collective memory) plays an important role in the construction of a new German identity.

Ana is now working on the commemoration of European conflicts in the built environment, questioning the validity and currency of war memorials. She plays a key role in the development and leadership of the MArch course. Her strong research background finds its home in the Architecture group courses where she continues to lead the research modules on undergraduate courses, and contributes to both research and design modules in the postgraduate courses. She is also part of the supervisory teams for PhD students.

Ana is currently involved in a new research project on Memory and Identity. It is a collaborative project with other colleagues which aims to show the importance of museums' architecture when it comes to construct, reconstruct and / or narrate a nation's identity. Ana actively contributes to journals, publications and conferences.

His work draws on his background in craft practice and stresses the materiality of our interactions with things, and therefore their design.



Tom Fisher is Professor of Art and Design in the School of Art and Design at Nottingham Trent University.

After study in art and design and some years running a small craft business, he took his PhD at the University of York in Sociology, concentrating on the role of artificial materials in consumption experiences. His current research is informed by the interest that researchers in the human sciences show in Design and one of its objectives is to see if these ways of thinking about technologies and 'social practice' might help Design to reflect on itself. Work on information technology since the 1980s has pointed to principles of connectivity, co-determination and resistance to change of 'socio-technical systems' that can be generalised to the social, ethical and environmental dimensions of design. His work draws on his background in craft practice and stresses the materiality of our interactions with things, and therefore their design. It has led to a book on the everyday re-use of packaging, as well as funded research on sustainable clothing (Defra), and industrial heritage (AHRC).

Tom Fisher

Research Coordinator for the School of Art and Design, Nottingham Trent University

Member of the Review Committee

Chair of Cumulus Strand: Future Craft

Professor Kent has initiated a number of academic conferences and symposia including the first Design and Marketing symposium in 2011.



Anthony Kent

Member of the Review Committee

Chair of Cumulus Strand: Innovation

Professor Kent completed a PhD from the University of the Arts London for his research into the locational contexts of fashion retail stores, their built environments and interior design.

Previously he undertook a funded MBA, specialising in retail, and holds a BA (Hons.) in Modern History from the University of Oxford where he received two awards. He has worked as a product planner for a footwear company and retail management in the Buying and Merchandising function, in the UK. He is a Member of the Chartered Institute of Marketing, Fellow of the Royal Society of Arts, Fellow of the Higher Education Institute, and sits on the Committee for the Marketing Special Interest Group of the British Academy of Management. He is a member of Design Management International and a non-executive Director of Cybercard Ltd.

Professor Kent's research is centred on interdisciplinary approaches to marketing and design, focusing on brand image and identity in retail stores, and more recently the convergence of physical and virtual environments. Professor Kent has a further interest in research methodologies and their application across disciplines. Professor Kent was Principal Investigator on an AHRC-funded research project, 'Metamorphosis of Design Management' examining the relationship between education, research and industry in this field. Professor Kent has initiated a number of academic conferences and symposia including the first Design and Marketing symposium in 2011. Previous projects have included EU funded programmes on business mentoring, skills training and development.

Over 15 years of experience in the international arena as a board member and chairman of various networks and as a speaker.



Marjolijn Brussaard

Former Dean of the School of Art & Design, Nottingham Trent University

Vice Chancellor / President at ArtEZ University of the Arts

Marjolijn Brussaard (1962) has a strong connection to art education. She herself completed her studies at the HKU University of the Arts Utrecht, where she worked for many years within various capacities.

Her last position there was Faculty Chair of Art and Economy. In 2012, she was appointed Dean of the School of Art & Design of the Nottingham Trent University in England and in the past three years, she has achieved impressive results there. Marjolijn Brussaard has over 15 years of experience in the international arena as a board member and chairman of various networks and as a speaker.

in this place peer reviewers



Helle Juul

Architect is the CEO and Founding Partner of the JUUL | FROST Partnership

Nottingham Trent University would like to thank the following individuals for the input they made into peer review of the Abstracts and Academic Papers.

Studied in Denmark and Norway and is the team leader for her practice on a host of innovative projects that cover a multi aesthetic perspective on arts interpretation of time and space, including; Concept development; Development of urban strategies; Implementation of urban space analysis; Research; Lecturing; and Dialogue planning.

She has overall responsibility for national and international projects and is a consultant for many of the largest educational institutions in the field of urban development and urban space. She also teaches and researches Campus consultancy projects which constitute another important field of work, and Helle is a consultant for many of Scandinavia's largest educational institutions.

Helle Juul is responsible for 'Urban Space as a Development Strategy', which developed a new approach to the function of public spaces as a catalyst for city development by focussing on trans-formation and significance as strategic instruments. This demonstrates the role of the architect revolves around people, the social glue, requirement based design – the life lived. She believes that architecture plays an essential global role and is an important instrument in the development of society and cities as well as the individual person. The breadth of knowledge from the local to the global society as a whole is precisely the fascination that drives the results that are moving the present mind set towards a future one.

Helle Juul is engaged by the ways in which globalisation, coupled with the current urbanisation, is creating new conditions for our cities. Presently, multiculturalism, otherliness and 'the foreign' are conditions that continuously make new demands on urban planning - there is a lack of meeting places for what we could call the value plural city. Helle Juul emphasises that urban space should be inclusive, provide social meeting places, be a platform for ex-change for a city's varied population. These new urban spaces require new hybrid strategies that correspond to changes in society. Intercultural planning accepts diversity as a norm, which requires an inclusive strategy. Public space can be, in other words, society's social glue.

Based in London, working in the UK and internationally, specialising in leadership and entrepreneurship development.



Nicola Turner

Director of NT Creative Arts

Nicola Turner is the Director of NT Creative Arts.

She works as a cultural and creative consultant and offers event and project productions and management services and teaching, facilitation and coaching in the cultural and creative sector. She is based in London, working in the UK and internationally, specialising in leadership and entrepreneurship development.

Recent projects include the Making Digital Work event at the Library of Birmingham for the Digital R&D Fund for the Arts, The 'D' Word event for NitroBEAT and the Barbican, conferences and events for the Paul Hamlyn Foundation, the International Creative Entrepreneurs programme for Creative Scotland and advising on the ACCELERATE and Realise Your Dream Programmes for the British Council Australia.

Nicola is an Associate Tutor on the MA in Creative and Cultural Entrepreneurship at Goldsmiths College, University of London.

Previous full time posts include: Assistant Director for the Cultural Leadership Programme (CLP) leading on the strategic development of the work-based learning and development priorities; Artist Practitioner Leadership Development and International Leadership. Her work has included leading the development and delivery of CLP Networks and Placements. Nicola worked with Director Hilary Carty and Graham Devlin to write 'Meeting the Challenge', a publication examining leadership development in the cultural and creative industries.

Programme Manager, Fellowship Team at Nesta for four years, specialising in talent development across Science, Technology and the Arts and International Development Projects.

She has also held posts at the University of the Arts London and the Royal Society of Arts, Manufacturers and Commerce (The RSA). She is on the Board of the Tinderbox Project, Janis Claxton Dance and Unfinished Business.

Discovered and restored the lost medieval foundation of Wingfield College.



Ian Chance

University of East Anglia and
Wingfield College

Ian studied at the Slade School of Fine Arts.

Discovered and restored the lost medieval foundation of Wingfield College. In 1981 he founded and directed Wingfield arts, an international programme across 3000 square miles of Eastern England, for 25 years this was a model for the arts in rural England. During this time he produced and curated and commissioned performing arts, music and visual arts from 45 countries.

Ian has won the Financial Times Arts & Business Award for best UK sponsorship and has twice been nominated in the Creative Britons Awards. He holds an Honorary Degree from UEA and is a Fellow of the RA. Currently Ian is a Director of Farleys Yard Trust, establishing the first Masters in Creative Entrepreneurship in the UK at UEA.

Much of her work develops through a serial publication, the Pam Flett Press, which explores the visual, verbal and temporal possibilities of 'essaying' the everyday



Joanne Lee

Senior Lecturer in Graphic Design at
Sheffield Hallam University

Joanne Lee is an artist, writer and researcher with a curiosity about daily life and ordinary places.

Much of her work develops through a serial publication, the Pam Flett Press, which explores the visual, verbal and temporal possibilities of 'essaying' the everyday, and via the opportunities for production that arise in dialogue with creative and critical friends. The Pam Flett Press has appeared in PROGR-Fest, PROGR - Zentrum für Kulturproduktion, Bern, Switzerland; Offprint, Tate Modern and KALEID London, an exhibition showcasing the best books by European-based artists, and at conferences including Perequian Geographies, University of Sheffield; Provocative Plastics, Arts University Bournemouth; Art of the Edgelands, University of Exeter; Art, Politics and the Pamphleteer, Peoples History Museum, Manchester, as well as occasioning a chapter in *Materiality and Popular Culture: The Popular Life of Things* (Routledge, 2016).

He explores digital mediation of fashion makers' sensory and emotional experience



Douglas Atkinson is Innovation Research fellow at The Digital Anthropology Lab, London College of Fashion, University of the Arts London.

He explores digital mediation of fashion makers' sensory and emotional experience and changes in the way we design and make due to increasing detachment from physical materials.

Douglas Atkinson

London College of Fashion

Her work has been featured in many books, publications and exhibitions, from Vogue to Fashion Theory.



Amy Twigger Holroyd

Designer

Amy is a designer, maker and researcher. Through her 'craft fashion' knitwear label, Keep & Share, she has explored the emerging field of fashion and sustainability since 2004. Her work has been featured in many books, publications and exhibitions, from Vogue to Fashion Theory.

Amy's doctoral research at Birmingham Institute of Art & Design focused on amateur knitting as a strategy for sustainability and informed her forthcoming monograph, *Folk Fashion: Understanding Homemade Clothes* (I.B.Tauris, 2017).

Following her PhD, Amy undertook a research fellowship at the University of Leeds, investigating the role of design in revitalising culturally significant designs, products and practices. She is now a Senior Lecturer in Design, Culture and Context at Nottingham Trent University.

He has had extensive international exhibitions and has worked on large international art projects.



Johan Sandborg is Professor in photography and Pro rector and head of research at Bergen Academy of Art and Design.

He is an artist based in Bergen, Norway. He has had extensive international exhibitions and has worked on large international art projects. His work questions the assumption that the photographic image is a representation of what has been in front of the camera at a specific moment. His work explores the photographic image as a language and as a deliverance of a performative act.

Johan Sandborg

Pro Rector and Professor in
Photography , Bergen Academy
of Art and Design

LOOKING FORWARD

Nottingham Trent University and Cumulus would like to thank the following who worked in partnership to enable 'In this Place' to happen:

Aēsop

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Nottingham Conference Centre

Nottingham Contemporary

Sarah Connor, Marketing Executive, Nottingham Trent University

Sarah Dossor, Research Office Team Leader, Nottingham Trent University

Tracey Newton, Marketing & Academic Administration Manager, Nottingham Trent University

Nottingham Trent University Staff and Student Volunteers

from this place.....

The next Cumulus Conference will be in Hong Kong between 21-24 November 2016.

The theme of Cumulus Hong Kong 2016 is 'Open Design for E-very-thing' and will be hosted by Hong Kong Design Institute, a member of Vocational Training Council of Hong Kong.

Information can be found at: www.cumulus.hkdihongkong2016.org

For more information about Cumulus go to: www.cumulusassociation.org



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