Cumulus Working Papers

Aveiro

32/14

A? **Aalto University**
School of Arts, Design
and Architecture

Contents

FOREWORD Luisa Collina

Designers of the future should be able to discuss in a global, open, shared and sustainable way

The theme of the Cumulus conference held in Dublin in November 2013, 'More or Less – Design in an Age of Austerity', could certainly not be exhausted in one sitting. What we call the age of austerity is probably more of a crisis in the system, one that will modify some of the ways we think, work and design. For this reason the theme of the current conference in Aviero is dedicated to the differences and changes which characterise a period of transformation: uncertainty, ambiguity and complexity.

The awareness of change in paradigm forces us to identify the challenges of the future, the emerging issues which design (and creative disciplines in general) must look at. These issues must be addressed nowadays in a global context. We live in societies in which everything is interconnected and interdependent. The Cumulus Aveiro conference deals with some issues that are fundamental for the whole world: cultural diversity (which means differences in customs, traditions and places that are projected, in their diversity, towards a global world); the new forms of society that will come to be created, based more and more on sharing and connection; the way education must change in order to adopt a global point of view.

One of the main characteristics of Cumulus is its heterogeneity; it is a network of autonomous entities which interact. There are already cultural differences within Cumulus and it is perceived as one of its strengths. Just as sharing has been one of its founding values right from the start of the initial university network that sought through exchange to raise the level of formative training and research. Just as, ultimately, the aim of proposing a professional training capable of adapting to the changing times is guaranteed precisely by the capacity for exchange that exists within the association.

Over the next few years, the involvement of students into the activities of the association will be progressing. It is natural that the future designers will have to be the best prepared to deal with the challenges of the future. They will also have to be able to discuss in a global, open, shared and sustainable way.

As the management of Cumulus, we commit ourselves to further extending the relationships of the association, which is still not represented equally all over the world.

Finally, we will continue to intensify the relations between individual members and their local contexts (local administrations, companies, professional associations and civil societies).

I would like to thank all those who have made this conference possible.

First of all, a big thank you to the Rector of the University of Aveiro for hosting our Cumulus family in this campus, which is in itself a highly valuable lesson about the Portuguese architecture, with buildings designed by famous masters like Alvaro Siza Vieira, Eduardo Souto de Moura, Adalberto Dias, Nuno Portas, Carillo da Graca and so on. Thank you for offering us such a great architectural beauty.

Thank you to António Vassalo Lourenço, director of DeCA, for warmly welcoming us.

Thank you to Teresa Franqueira, conference Chair, for your enthusiasm in agreeing to organize this conference.

Thanks to Ana Afonso for the organization of the secretariat and to all the staff. You have done a wonderful job!

And of course thank you to all our Cumulus members, colleagues and friends.

Luisa Collina
President of Cumulus
Professor, Politecnico di Milano, Italy
luisa.collina@polimi.it

WHAT'S ON TRACKS AND FIELDS

cultural diversity   social engagement   shifting education
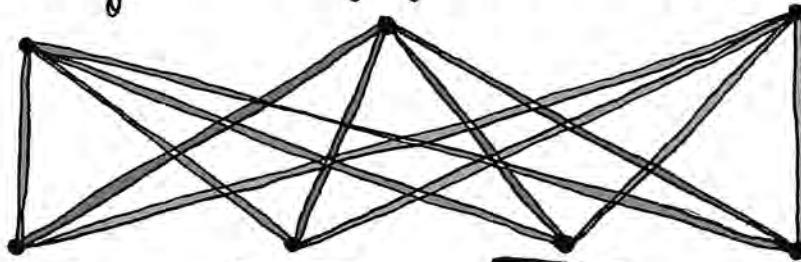
DESIGN   ART STUDIES   DIGITAL MEDIA   MUSIC

MULTIPLE PERSPECTIVES & COMBINATION POSSIBILITIES

CROSS-DISCIPLINARY ACTION

`INTRODUCTION` Teresa Franqueira

Welcome to Aveiro!

The 2014 Spring Cumulus conference "what's on: cultural diversity, social engagement and shifting education" aimed to bring together theory and practice to discuss ways in which Design, Art, Music and Digital Media are contributing, or can contribute, to challenges in an era of global transformation characterized by uncertainty, ambiguity and complexity.

This edition was held at the Department of Communication and Art of University of Aveiro, which is a multidisciplinary department that gathers the areas of Design, Art Studies, Digital Media and Music.

The conference had joined together designers, artists, musicians, theory-based researchers, and educators and developed interdisciplinary discussions on the proposed themes:

Cultural diversity
- Olden urban vs new rural realities
- Future cultural heritage
- Contemporary antagonisms (local/global, analogous/digital, hi-tech/low-tech, craft/
- industrial, convergences/divergences, …)
- Inter/Trans/Multidisciplinarity approaches
- Ludicity and communication artifacts

Social engagement
- Social-driven approaches
- Co-"everything"
- Community activation
- Social empowerment
- Responsible citizenship
- Economics for the people

Shifting education
- Education for future generations
- Beyond lifelong learning experiences
- New media for new education
- Customized learning environments and self regulated learning
- Transdisciplinar educational approaches
- Open educational resources

All the papers, projects and posters were double blind-reviewed by the scientific committee.

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Genk, Belgium*
WELLINGTON JUNIOR
Universidade Federal do Ceará, Brasil

Speakers

Teresa Franqueira
University of Aveiro, Portugal, Portugal

Is a designer and holds a PhD in Design. As a designer, she has participated in several national and international exhibitions and has developed both interior design projects and projects for the Portuguese glass industry. She has also been a jury member of several design competitions, and a consultant to the Design+ programme promoted by the CPD (Portuguese Design Centre). She was also commissioner for the More Design More Industry Programme in Paredes.

She has been lecturing at the University of Aveiro since 2001 and has developed her research with Ezio Manzini at the Politecnico di Milano.

Teresa is a senior researcher at the ID+ Research Centre, coordinator of the ID+ DESIS Lab, and a member of the international DESIS Network – Design for Social Innovation and Sustainability. Her research interests focus on themes related to service design and social innovations, and alternative scenarios towards more sustainable economic and social models. Within this scope she has published various papers and participated in several international conferences. She has been invited as a keynote speaker and to take part in several workshops, particularly in relation to scenario building and the identification of possible solutions to be used for specific projects in creative places (Italy, Portugal, Sweden, UK, Finland and Brazil).

Manuel António Assunção
Rector, University of Aveiro, Portugal

Holder of a 1st degree in Physics from the University of Lisbon and a doctorate from the University of Warwick, Manuel António Assunção is Full Professor of Physics at the University of Aveiro, Portugal, and researcher at the Institute of Nanostructures, Nanomodelling and Nanomanufacture (I3N) at the same university. He is author of the book *Introduction to Quantum and Statistical Physics*.

Currently Rector of the University of Aveiro (from February, 2010), he has a vast experience of university governance, having served as Vice-Rector in three previous rectors' teams. He was also elected twice as President of the Pedagogic Council. At the moment heads the Commission for International Matters of the Portuguese Rectors Conference.

Manuel Assunção managed and participated in many international initiatives in the areas of institutional development and strategic management of universities, quality management and lifelong learning. He was the elected President of EUCEN – European University Continuing Education Network, for 6 years, and currently is President of COLUMBUS, a consortium of European and Ibero-American Universities.

He worked closely on the issue of university's relationship with the Intermunicipal Community of the Aveiro Region and with industry. Manuel Assunção has been involved in the recent establishment of PCI – Creative Science Park, and acted as an expert within the National Strategic Reference Framework. Other iniciatives include the creation of Fábrica – Aveiro's Living Science Centre and the leadership, as President, of the Beiras Philharmonia Orchestra.

António Vassalo Lourenço
Universidade de Aveiro, Portugal

António Vassalo Lourenço holds a doctorate in Orchestral Conducting from the University of Cincinnati (USA). He is currently the Director of the Department of Communication and Art at the University of Aveiro, where he also teaches conducting and group music classes. He has been the conductor and artistic director of the Filarmonia das Beiras Orchestra since 1999. He previously worked as with the Portuguese Youth Orchestra and the Concert Orchestra in Cincinnati.

Between 2000 and 2004, he was the Artistic Director of the International Festival of Music in Aveiro, and from 2002 to 2003, he held the position of Artistic Co-ordinator of the Portuguese Symphony Orchestra and the São Carlos National Theatre Choir.

In 2006, António Vassalo Lourenço founded the Opera Studio in central Portugal, a project which has offered important opportunities, in terms of providing training and by performing operas all over the country, presenting not only some of the most important works in the repertoire, but also productions in Portuguese, Portuguese operas and children's operas.

Luisa Collina
PhD, Full Professor, Head of the M.Sc in Product Service System Design at Politecnico di Milano President of Cumulus International Association of Universities and Colleges of Art, Design and Media

Architect, Ph.D. 1998 Politecnico di Milano, she is Full Professor of Design and Head of the Master of Science in Product Service System Design at theDesign School of the Politecnico di Milano. Her main interests concern strategic design and design driven innovation at system level, with a particular focus on the field of interior and service design. Since 2000 she has been in charge of the international relations and projects of the School of Design and of the Design Department at the Politecnico di Milano. She collaborates with universities, research centres and companies in national and international research programs and strategic innovation projects in the design field. The results of her research and didactic activity have been presented through various international conferences and publications. Since 2000 she has been member of the PhD board in Design at the Politecnico di Milano. She is Rector's Delegate for Expo end Events at Politecnico di Milano and since 2013 she is President of Cumulus, the International Association of Universities and Colleges of Art, Design and Media.

Keynote Speakers

Josephine Green
Beyond20: 21st century stories

"We have to embrace complexity, connectivity and fluidity if we are to live well and prosper in the future"

Josephine explores and articulates this critical period of transformation that we as a human society are experiencing. Based on her frameworks of Pyramids to Pancakes and Scarcity to Abundance, she challenges us to think and to act differently in our world.

She believes we need a different way of creating, innovating and being in the world if we are to live well, prosper and safeguard the future. She demonstrates the very real need to go beyond the present growth paradigm, to decentralize and distribute innovation and design and to embrace complexity through new organizational, cultural and leadership models.

Josephine regularly delivers international presentations and is an advisor to European Futures and Research platforms. She lectures in masters and executive education programs at a number of UK and European Universities and is Visiting Professor at the University of Northumberland at the faculty of Art and Design and Social Sciences. Josephine was appointed Senior Director of Trends and Strategy at Philips Design, in the Netherlands in 1997. She left Philips in 2009 to return to the UK and her company, Beyond20: 21st Century Stories explores our Change of Age. She studied History and Politics at Warwick University and has lived and worked in the UK, Italy and Holland

Adriano Duarte Rodrigues

Holds a degree in Theology (1968) and a Masters in Sociology (1970) from the University of Strasbourg. In 1977, he was awarded a Doctorate in Communication by the University of Leuven

He lectured in the Department of Communication at the University of Leuven (1971–77), and is currently Professor Emeritus of the Faculty of Social and Human Sciences at the Universidade Nova, Lisbon, of which he was the Director (1988–1993) and President of the Scientific Council (2000–2003). At the Faculty of Social and Human Sciences, he taught Theories of Communication and Pragmatics, for the degree courses in Communication Sciences and Language Sciences; Media Fields and Discourse and Analysis of Conversation on the Communication Sciences and Linguistics master programmes; and Discursive Interaction for the doctorate programme in Linguistics.

Adriano Duarte Rodrigues has been a guest lecturer/researcher at the University of Leuven, Belgium, the Ecole des Hautes Etudes en Sciences Sociales in Paris, the University of Brasília and the Federal University of Pará. He has been invited to give various lectures and short courses in Brazil, particularly at the Federal Universities of Ceará, Pernambuco, Maranhão, Bahia, Minas Gerais, Rio Grande do Sul, Santa Maria, Unisinos, at the Pontifical Universities of Rio de Janeiro, Rio Grande do Sul and at the University of São Paulo.

He is the director of the GIID Research Group for Discursive Interactions at the Faculty of Social and Human Sciences.

He is a member of the Editorial board of twelve international academic journals. Adriano Duarte Rodrigues has published various articles in both national and international specialist journals. His publications include: *Estratégias da Comunicação* (2001, 3rd edition), *Comunicação e Cultura* (2010, 3rd edition), *Introdução à Semiótica* (2000), *A Partitura Invisível. Para a Abordagem Interactiva da Linguagem* (2005, 2nd edition), *O Paradigma Comunicacional. História e Teorias* (2011).

Track 1
Cultural Diversity

Paola Trapani

Milan 2033, seeds of the future

Abstract

In 2013, the Politecnico di Milano celebrates its 150th anniversary. The closing event scheduled is a major exhibition at the Triennale di Milano, entitled *Milano 2033. Seeds of the future.*

On this occasion, the University doesn't want just to celebrate its history; rather look to the next near future and reflect on the issues of mobility, housing and production, with a special focus on the impact that energy, new materials and ICT will have on our daily lives in 20 years.

150 micro stories, told during "impossible interviews" to the future citizens of Milan in 2033, illustrate how it could hopefully be life at that time: the public and private mobility, the living with the related services, organized according both top-down and bottom-up criteria, the new horizons of work and production, the return of the clean factory within the city and the growing phenomenon of makers.

Along the path, prototypes, tools and models designed at the Politecnico during these 150 years reveal a special bond between the past and future of the city, the visible and the invisible dimension, the memory and the vision.

The concept of the exhibition and the project layout is by the renowned *Studio Azzurro*, the Milanese group founded in 1982 to experiment the expressive possibilities of the new technologies in video-environments, sensitive and interactive spaces for museums and cultural institutions, theater performances and films.

Keywords

Multidisciplinary approach. Cultural diversity. Urban future scenarios. Past/Future. Memory/Project. Physical/Digital. Emotional/Objective. Interactive storytelling. Sensitive space.

Introduction

On Sunday, 29 November 1863, the Istituto Tecnico Superiore di Milano, the original nucleus of the Politecnico di Milano, was founded under the guidance of Francesco Brioschi. 150 years later, in addition to celebrating this anniversary, the university took advantage of this important event to create, over the course of an entire year, a journey to rediscover its origins and identity, creating ties with the territory in which it operates on a daily basis and to reflect on its role in a future perspective.

It is within this framework that Milan 2033. Seeds of the future. 150 years of the Politecnico di Milano took shape: an exhibition, in collaboration with the Triennale di Milano, that looks to our next twenty years and how the research and design experiments currently underway will shape our lives in the city, in Milan and in other realities throughout the world. "How will we travel, how will we live and how we will work (and study) in 2033?" and moreover "Which new communication technologies, materials and energy sources will constitute our everyday world?" These are the questions that were posed to a group of professors and researchers from different disciplines called on to take part in a large scientific committee.

Methods

It has been possible to address the theoretical and creative effort implied by those challenging questions only through an extensive multidisciplinary approach: for this reason Seeds of the future is a collective exhibition, involving a scientific committee of 50 professors in 12 Departments of the Politecnico di Milano in an unprecedented debate between different areas of knowledge.

A true multidisciplinary approach, however, is always easier to mention that to achieve. The main question to address was a feasible way for an institution like the Politecnico di Milano, where so many different disciplines and backgrounds coexist, to design coherent visions for the future. Actually architects have visions often related to the physical dimension of the city (the so called bricks and mortar approach), engineers nurture technological visions, but often hyper-specialized and therefore necessarily partial, designers are more interested in forms of social innovation.

On three different topics of our everyday lives – living, working, moving around – and three transversal themes that permeate our daily life – energy, new materials and ICT technologies –, various impromptu meet-

ings were held, under the Rector's guidance, during which colleagues from different disciplines offered reflections, shared doubts and questions, reported cases and examples as well as outlined ideas and suggestions for the future.

The produced material, characterized by a "multiple and different point of view of the city", constituted the foundation for the subsequent work: on one hand to organize and sort the collected fragments of the future, and on the other to tell the story of the emerged contents, avoiding cryptic or didactic styles and languages.

To work on this systematization, two variables were borrowed from the European research project *Spread 2050 Sustainable Lifestyles* and used to organize the collected material. One variable is linked to the kinds of technology and the other to the leading values and principles supporting society. Technologies can be mainly pandemic (i.e. globally adopted dominant technologies) or endemic (i.e. emerging in different ways in the various local contexts). With regard to the values that support growth processes, it must be said that these values can, on the one hand, chiefly favor individual subjects (individual persons or companies) whose capacities make them rise above the context and that are able to successfully compete at a global level. On the other hand, they may also prevalently support communities of people (such as institutions or self-organized communities) who share responsibilities and generate the kind of "collective intelligence" that is often behind many cases of innovation. In the first case, the focus is on the best, in the second case on communities.

The two axes of technology and social principles create four quadrants, which must be considered distinct but equally legitimate scenarios that occur in all three sections (move, live and work) of the path of the exhibition.

The governed city: *technologies offered by the global market support forms of innovative management for the common good*. In this scenario the city of the future calls for a strong focus on the decision-making processes, the enhancement of social networks, timely communication, the need to participate in collective decisions: the task of those who govern the city will be (even more) to define the rules of co-operation, adjust standards to encourage innovation, managing negotiation processes between social groups;

Innovation on a global scale: *pandemic technologies for individuals who work at an international level.* The "universal language" of technology and entertainment, the global brands that unify today the world culture is well represented by the environment of any international airport. We face the challenge to make a more efficient use of resources, optimize energy consumption and provide timely services when needed. Energy production will be therefore without borders. Digital worldwide platforms will be used to connect all public utilities such as electricity, gas, water, waste management, mobility, emergencies and security;

The talent of individuals: *endemic technologies for individuals (makers, new entrepreneurs and new generation artisans) who work locally*. In order to meet the new demand for more personalized products and services, a new production system is already being created thanks to the availability of technology, the accessibility of common experiences, to the openness to the community and networks of expertise. Youth entrepreneurship initiatives give life to start-ups that appear as a small business or a high-tech craft, located in the basement of our home and ready to meet demands on the other side of the world. Production may even be performed by consumers themselves, the makers, with 3D printers. In micro-enterprises, the factory is replaced by a simple flat, often the home of the entrepreneur, as was the case for artisans in the past. The entrepreneur does not require large amounts of capital and risk, but rather creativity and a strategic vision;
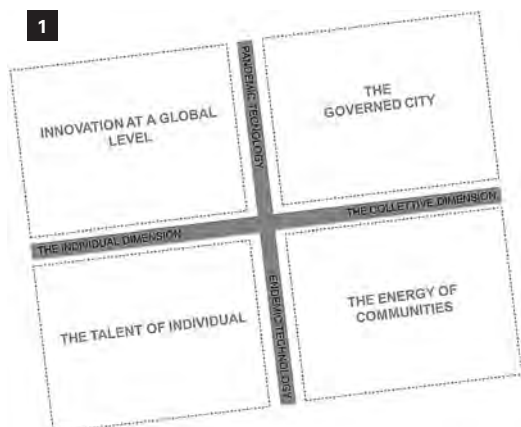

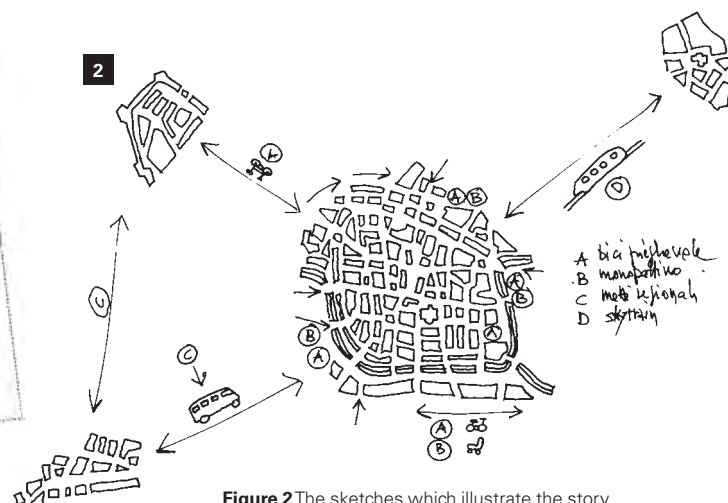**Figure 1** The systematization matrix.

Figure 2 The sketches which illustrate the story.

The energy of communities: local technologies for a group of individuals who share community and solidarity values. In a connected world, small is not small, and local is not local. What is now small and local is also a node of the Internet. Its ability to be relevant, therefore, does not depend on its size, but on the nature and quality of its connections. Hence, the potential feasibility of a new socio-technical distributed system is born, in which the "global" emerges from the connection of a multiplicity of "local systems". That is, systems whose scale and complexity are such as to be understandable and controllable by community residents, and adaptable to the resources available to them.

The brief model outlined here was used to classify suggestions and the current kinds of innovation, to speak about what everyday life in Milan could be like in 2033 and to tidy *memorabilia* related to the recent history of the Politecnico di Milano.

Results

The exhibition unfolds smoothly and without interruption through 12 installations, which develop the four scenarios according the three main themes of *mobility*, *housing* and *work*, intersected by the transversal ones of *energy*, *materials* and *ict*. The installations consist in transparent glass totems, "inhabited" by the transparent images of the future citizens of Milan in 2033, featured by students, colleagues and friends of the Politecnico di Milano. When asked, through the visitors' simple gesture of tapping the glass, they tell us about their travels and work, their home and what they eat, the children's education and what it means to grow old… Every narrating voice is synchronized with an animation projected on the floor. A sketch, like that of a pencil on a notepad or chalk on a blackboard, interprets and visualizes each of the 150 stories, which constitute the core of the exhibition. The sketch is surrounded by a dashed bounding box, because in technical drawing you use the dashed line to design something hidden by something else. Similarly the future is not in front of us, but it hides behind the present time/space.

The glance on the sequence of totems stimulates the visitor to compose endless montages, combining the images by proximity, causality, analogy. Everyone can cut them differently and no default viewpoint is privileged. The environment is designed as a "project sheet" on which to walk in order to know, without a unique or fixed path. The sketch, as a manual practice, becomes a privileged language: materializing the line in movement, it explains, predicts and illustrates something that has yet to exist, leaving room for any changes during the work in progress. The resulting environment is dialectical and immersive and endowed with unexpected dynamism.

Along the path real objects reveal other stories within the story. The parade of the so called *memorabilia* expresses the historical and mnemonic substrate of the exhibition. These projects, prototypes and products, which have been designed during 150 years by distinguished professors and students of the Politecnico di Milano, have introduced forms of disruptive innovation in the past and still carry the meaning of "future visions in the past". Therefore they function as connectors of visible and invisible dimensions, events and people far away in space and time.

Hanging on the wall of the gallery you will find the so-called *Seeds of the future* collection, which presents projects and case studies, sometimes still in the very early stages of development, that may have a significant impact on our future lives. These include examples of important international architectural firms next to photographs of more ordinary – but still rare – products, services or buildings; models being studied and tested in the university's laboratories next to prototypes made by big companies and research centres.

The last part of the exhibition focuses on the university's history, from its establishment to the present day, explaining through dynamic visualizations and videos how the Politecnico di Milano came to be what it is today.

The *Semi di futuro… e oltre* [Seeds of the future… and beyond] ending note stays with us as we head towards the exit, the entrance to the near future. All these visions of life as it may be in 2033 lead us to ask ourselves some questions, to think about what we believe the next twenty years will be like and what actions are needed for our wishes to come true.

The result produced, on the whole, has an intangible quality, which goes beyond the installation that was on show at the Triennale di Milano from October 8 to December 22, 2013: the awareness of the role and ability of the Politecnico di Milano's professors, researchers, students and the community as a whole to create and design advanced, multiple and positive visions, capable of impacting the life of the city (in Milan as well as other places in the world) in the coming years.

150 scenarios of daily life narrated by citizens in 2033 to make the future friendly and designable and to stimulate a proactive debate on the possible innovative and environmental directions to be taken.

Conclusion

The exhibition features 150 stories from everyday life, some advanced and others more traditional, some focusing on the talent of the individual, others more on a collective dimension. The scenarios may come true or they may occur in an opposite way. In 2033 some of the seeds of the future presented will still be in the germination process, others fully developed, while others will disappear without a trace; we will recognize our-

selves in some, and less in others. This is not what matters. Rather it is important to focus on possible futures that encourage us to reflect on ourselves, how we envision ourselves over the next twenty years and which actions to take in order to outline what we hope will become a reality.

At this point, one might wonder why we have chosen a timeframe of 20 years and not of 10 or 50 years.

20 years is a period of time short enough to avoid simple science fiction clichés, but extensive enough to catch a glimpse of possible changes – some small, with a limited impact , others more radical – in our days. Innovation occurs at different speeds in various fields, from the accelerated pace of ICT technologies, from energy research and new materials to the slowest fields of infrastructure and construction. We will all be 20 years older: young people will be adults and adults will be elderly, the elderly will be extremely elderly, newborn babies will be 20 years old. If we close our eyes and think about how we will live, instead of a completely different world, we see a changed world, perhaps even profoundly, which is inevitably rooted in the world of our daily experience

The interesting feature about this near future is that the way change is designed is up to us. We are the ones that, starting from the problems and opportunities of today, have to design the future. In order to design the

Figure 3 One of the twelve interactive totems with the interview to a Milanese of 2033 about the mobility.
Figure 4 The Memorabilia parade along the exhibition path.

future we must have a vision of where we want to go and put relevant technical solutions to the test. Like a child that looks to life and approaches the age of 20 with many opportunities and possible futures, each person will have to choose their own. Not starting from scratch, but building on the shoulders of the previous generations that came before them.

Therefore, understanding where we want to go is the first and decisive step: towards a world that is more fair? More sustainable? With more or less freedom? With more or less individual responsibility? But equally crucial is our ability to build technical solutions that are capable of opening new doors. The two dimensions, values and techniques, are closely intertwined and it would be wise to work on their relationship.

The imaginative language of the exhibition is invented by Studio Azzurro, a framework of artistic research, that expresses itself through the languages of the new technologies. The group of video artists established in 1982 by Paolo Rosa, Fabio Cirifino and Leonardo Sangiorgi, for over 30 years explores the poetic and expressive possibilities of these means, so crucial to contemporary relationships, through the realization of sensitive and interactive environments, theatrical performances and films, internationally acclaimed.

In this occasion they wish to arouse curiosity and stimulate confident reflections about our own future, in tune with the design responsibility that the Politecnico di Milano has been spreading from Milan to the rest of the world for 150 years.

Those expecting to see the fiction special effects will be disappointed. The animations are produced through a simple pencil and every 3D hyper-realistic rendering is accurately avoided. The resulting poetic and deliberately abstract images are intended to trigger emotions and thoughts, rather than to disclose complex scientific content or anticipate what our reality will be 20 years from now.

These scenarios, which are very different from one another, stress a significant underlying decision not to aim at a single all-embracing future, but on the contrary, to aspire to a multitude of possible, multiple, changing, permeable, combined, high tech and low tech, advanced and traditional futures, in which everybody will be able to freely organize their daily life.

The future development of the project itself is actually under evaluation in form of a *Seeds of the Future* observatory and a think-tank of the "Made in Polimi" design scenarios.

Paola Trapani
PhD
Politecnico di Milano
Italy
paola.trapani@polimi.it

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Angela Norwood

In Search of An Oral Form of Design: Mobilizing Inuit Cultural Heritage

Abstract

This paper explores the notion of an "oral form of design" in response to questions at the heart of a new major partnership project titled "Mobilizing Inuit Cultural Heritage." It brings together Inuit and Qallunaat (non-Inuit) who are all engaged in various ways of exploring the cognitive and cultural gap between orality and materiality – information exchange and manifestation of knowledge for Inuit in the Canadian Arctic. Our team will work with Inuit, particularly in Nunavut, to create new forms of cultural production, to exert their voices and in so doing attempt to redefine contemporary Inuit identity. Through discussion of Deleuze and Guattari's smooth and striated space, Ong's orality and literacy, and the role of art and design, the author suggests that design practice that deploys Ong's secondary orality can provide opportunity for Inuit youth to participate in making a future that evolves contemporary Inuit identity, and gives agency for exerting Inuit voices.

Keywords

An abiding belief in the power of creative expression to affirm identity, reinforce cultural connection and to heal social wounds is at the heart of a new six-year Partnership Grant being funded by the Social Sciences and Humanities Research Council of Canada (SSHRC). Our project is titled "Mobilizing Inuit Cultural Heritage" (MICH). The project brings together ten academic collaborators and nine institutional partners who are all engaged in various ways of exploring the cognitive and cultural gap between orality and materiality – the primary mode of information exchange and the manifestation of knowledge that comprise the basis for cultural and personal well being for Inuit in the Canadian Arctic. The problems caused by the current misalignment include alarming high school drop out rates, the suicide rate among young people, especially men, lack of hope and loss of collective voice. Through the course of the project, our team will work with Inuit, particularly in Nunavut, to create new forms of cultural production, to provide forums through which the can exert their voices and in so doing attempt to redefine contemporary Inuit identity.

The central issue that unifies this diverse group of participants is how digital technologies can facilitate a range of creative practices to reconnect Inuit young people to their culture and define it for the 21st Century. In seeking ways to reconcile new and so-called alienating technologies with traditional and interpersonal oral culture, the principle investigator and visionary behind the project, art historian Anna Hudson, asked, "Is there an oral form of design?" In other words, can design practice provide a means for accessing and externalizing traditional, oral-based knowledge? This paper is an attempt to respond to that question. I will discuss Gilles Deleuze and Félix Guattari's concept of smooth and striated space and relate it to fundamental differences between Arctic Inuit and Qallunaat (non-Inuit) world-views. I will compare those oppositions to Walter Ong's definitions of orality and literacy. Then I will discuss them as they relate to the Inuit creative practices we know as art and design. At the intersection of these spatial and intellectual dichotomies emerges Ong's secondary orality via web-based tools, the deployment of which may lead us to an "oral form of design" that allows for transnational communication, dissemination of Inuit voice and re-affirmation of identity.

Smooth and Striated Space

According to Deleuze and Guattari (1987:474) the concept of smooth and striated space describes differences between nomadic and sedentary orientations. Smooth space is that which is occupied without being delineated. Striated space is delineated in order to be occupied (Deleuze & Guattari: 477). In striated space, fixed points are the priority while in smooth space the destination is subordinate to the journey, or the process. This dialectical construction of spatial relations conjures the vastness of nomadic experience, as in the Arctic, contrasted with surveyed lots on once unoccupied territory, such as the settled communities in which Inuit were compelled to live. Deleuze and Guattari add, "smooth space is constantly being translated, transversed into a striated space; striated space is constantly being reversed, returned to a smooth space." (1987:474) They make the process seem gradual, almost evolutionary but the shifts from one state to the other can be cataclysmic as well.

"Nunavut can be understood only within the context of [the] dramatic shift from land to village life" (Billson, 2001:284). During the mid-20th Century the entire cultural orientation of Inuit was upended, as they were systematically driven into settlements in order to secure Canadian sovereignty in the Arctic. "The sedentarization of Inuit in the 1950s and 60s alienated them from the land and from their traditional culture, and contributed to engendering social pathologies that are still being battled today: low self-esteem, alcohol and substance abuse, family violence, youth suicide, and welfare dependency" (Légeré, 2009:211). In a matter of mere generations, Inuit transformed from self-sufficient nomads to being dependents of a state system based on a cash economy in which most lacked skills or means to participate.

Concurrently, the Inuktitut language was undergoing a similar permanent transformation, into syllabic form to allow for written texts. While written texts feel to many like a betrayal of the oral culture, they are necessary for conducting the government in Inuktitut (http://www.gov.nu.ca/en/Fonts.aspx) a, priority of the Nunavut government.

These three modes of striation – permanent communities, cash economy, written language – and the continued struggle of Inuit to prosper within each system are physical manifestations belied by the genteel way Deleuze and Guattari state, "That there is such a distinction is what accounts for the fact that the two spaces do not communicate with each other in the same way" (1987:475).

Within the last decade, another form of striation has appeared in the Arctic via digital media including mobile telephones and, despite intermittent and expensive Internet service, networked computers and hand-held devices. While elder Inuit fear these devices are objects of cultural alienation, our project suggests the opposite. We see the Internet, that ultimate striated place, as a site for exploratory possibility for a return to smoothness.

Inuit youth already patiently and methodically upload videos to YouTube, to give voice to their daily life. By reaching out over digital channels they "mediate aspects of their everyday realities for public viewing and root themselves simultaneously in global Internet and Arctic spaces" (Wachowich & Scobie 99). We believe that the ability to transcend geographical and political boundaries will help young Inuit reconnect to a smooth way of being in and of their world. Access to Inuit-owned media providers such as Isuma.tv, and to sites like YouTube also foster communities of peers, based not on striated measures like social status, but on the smoothness of common interests.

Orality and Literacy According

A major concern of Inuit, and one that would seem to be the basis for other forms of their wellbeing is the preservation of their stories. Inuit scholars are in the midst of transposing their oral culture to written texts in an effort to record what is known as Inuit Qaujimajatuqangit (Khao-yee-muh-yah-tut-khang-geet) (IQ) or Inuit traditional knowledge held by elders who remember life on the land before settling in communities. There is a palpable sense of urgency around this work as the elders age and pass away. The generation of scholars doing the recording, with experience in both the oral and literate worlds sense that "though words are grounded in oral speech, writing tyrannically locks them into a visual field forever" (Ong 2012:12). The knowledge of a word's existence in visual form forever after precludes the conception of that word as sound, as having basis in orality, as being smooth.

The apprehension and suspicion of written culture felt by Inuit is expressed by senior instructor of Inuit Studies at Nunavut Arctic College, Susan Enuaraq when she asks, "Does it continue the colonialist mindset when I, as an Inuk, always have to refer to the written word rather than relying on my ancestor's knowledge stemming from oral traditions? When will we have the same credibility? Isn't an Inuk's knowledge of her world sufficient" (ISC:77)?

Ong writes that for oral cultures, "The past is not felt as an itemized terrain peppered with verifiable and disputed 'facts' or bits of information. It is the domain of the ancestors, a resonant source for renewing awareness of present existence, which itself is not itemized terrain either" (2012:97). Ong is describing oral culture as being akin to Deleuze and Guattari's smoothness. Ong also insists, "without writing, human consciousness cannot achieve its fuller potentials, cannot produce other

beautiful and powerful creations. In this sense, orality needs to produce and is destined to produce writing" (Ong 1987:14). Ong suggests that the smoothness of orality must, by necessity transverse to the striated practice of writing. However we know from Deleuze and Guattari that the striation will not last either, but eventually allow for different forms of smooth expression.

Preservation stabilizes and reifies that which used to be – whether actually or nostalgically. It resists change even as the Inuit scholars have embraced contemporary media including written text and digital audio/visual recordings. The resistance to change has created irreconcilable conflict as "Culturally, Inuit are rapidly losing the traditional life skills that ensured survival for their grandparents; yet, they have not acquired all the skills that postindustrial techtronic society requires" (Billson 2009:289). Renowned Inuit artist, Abraham Anghik Ruben, lamented Inuit youths' near complete adoption of digital devices and claimed them technologies of cultural alienation. Our project has at its core a belief in the very opposite of Ruben's notion. Wachowich and Scobie insist that, "Internet technology must be seen within a long history of the technologies used by Inuit to bring their world into being" (2010:98). And in fact, they posit, "the Internet has become one of the tools that will ensure the survival of Inuit young people in the 21st century" (2010:99).

Building on a basis of respect for the IQ (traditional knowledge) principle of Pilimmaksarniq or "aquiring skills through practice, effort and action" the digital gaming company Pinnguaq has launched the Nunavut Code Club, at which participants ranging from ages 6 to 20 use code to develop games. Pinnguaq and Code Club founder, Ryan Oliver says, "Long term, my hope is that this interest leads to further pursuit of computer science and eventually that Nunavummiut are able to compete and represent themselves on the world stage through technology" (XX) He believes that Inuit need access to technology, not only as users, but as computer scientists and technicians, in order to gain control over ubiquitous devices and their role in daily life. Oliver and others view these forms of technology as equivalent to the advent of snowmobiles in the Arctic, once frightening now essential and understood.

Through television and film production to personal video diaries, through cataloging and curating archives of artifacts, through creative making practices, the primary goal of all participants on the project is providing a channel for Inuit to exert their voices. The apparent irony of our being in the position to lend a traditional oral culture their "voice" is tempered by our use of the word "mobilization." For the non-Inuit (qallunaat) on the team, preservation is not our primary concern. We find the word, "mobilization" more useful for our purposes in part because it seems more active and is not under the burden of a time constraint. The most significant difference we see between preserving and mobilizing is in the potential for systemic change. MICH seeks to counter decades of erosion of cultural identity by helping instill Inuit youth with agency to create cultural artifacts and by extension redefine Inuit identity. We see mobilizing as calling for active engagement on the parts of both makers and viewers of cultural artifacts. Mobilizing creates space for anyone to become a maker, and for makers to awaken their voices and share their stories. Our hope is that mobilization activates people to claim agency in changing their current conditions.

Art and Design

Inuit art production as a commodity for participation in the cash economy was introduced to residents of Cape Dorset and developed in large part by James Houston in the 1950s. After several years of experimentation the first collection of prints was released in 1959 (Lalonde & Ryan 2009). With international critical acclaim, the business of art making has flourished in several communities throughout the Arctic and particularly Nunavut ever since.

The art was (and continues to be to a certain extent) about nomadic experience, revealing a smooth worldview, without being of or essential to it. The prints and drawings on paper function as a form of text, spatializing a version of Inuit experience.

All the visual manifestations of communication, from graphic images to the syllabics that visualize and spatialize the language to books preserving oral tradition in written form, are emblematic of that which is not oral, a striation no matter how expressive, a surrender of familiar smoothness. These inscribed forms of visual media are detached from their maker-authors (2012:77). Ong describes that detachment as a loss of accountability because there is no ability for immediate interaction with the author. Unlike these forms of cultural expression for which Inuit have become known, today's youth seem more interested in the relative immediacy of the networked digital realm. It is at once ephemeral and established, and most importantly, allows for a kind of interaction with the maker, through commenting and sharing.

Former Nunavut Arctic College Campus Director, Peesee Pitseolak-Stephens said, "Art is in every thing. It is in nature, it is in our tools – where the tip of the harpoon meets the handle – there is beauty there. It is art. I don't know why we separate this idea of art out of everything else we learn. Everyone can make art." I replied that what she described is the way we discuss design – as human endeavor to devise things that are beautiful in their utility, powerful in their ability to communicate, and at their best, aid in our survival. However,

I knew I did not convince her. Art – as a word, an enterprise, a category of artifacts – is powerful, laden with decades of painful meaning as the drawings and prints continue to represent a way of life that is lost to Inuit. Writer and curator Bernadette Driscoll Engelstad confirms that, "The art historical canon describing the development of contemporary Inuit art consistently – and persistently – overlooks a basic fact: that art has always been fundamental to Inuit culture. Design sensibility, aesthetic appreciation and skill in craftsmanship are richly evident in the archeological and historical record, informing the utilitarian function of objects and enhancing the efficacy of hunting tools, clothing and other forms of cultural production" (McMaster ed. 34).

Proof of Inuit affinity for design is embodied in the documentary film made by Bernadette Dean and Zacharias Kunuk. Their documentary, called *Inuit Piqutingit (What Belongs to Inuit,)* follows a group of elders as they travel to museums in several North American cities to see, for the first time, Inuit artifacts from the nomadic era held in the museums' collections. As curators open drawer after drawer of categorized artifacts, the elders see their ancestors' tools for both survival and leisure, laid out in striated presentation. In some cases the elders explain to the unknowing curators the purpose of particular objects.

An elder by the name of Rhoda Karetak said to a group of Inuit youth at the end of the documentary, "Our ancestors were smart. We saw they could make anything. You can be proud" (Kunuk & Dean 2009). The proof they found was in the artifacts, in the patterns of the clothing, which the women could read for their utility and regional differences, the craftsmanship and ingenuity of the objects for the purposes they served.

Art on paper was brought to the Inuit, an expressive practice in a striated context. Design as an iterative process for externalizing utilitarian and aesthetic knowledge has always been present. The evidence is their survival for thousands of years. So then, can design – usually relegated to the striated side of creative practice – claim a place in this project as distinct and legitimate for the reclamation of Inuit identity? If the transference of knowledge orally is smooth and design, in this context, is also smooth, then we are approaching something akin to an "oral form of design."

Secondary Orality and
a Return to Smoothness

Ong writes, "Our understanding of the differences between orality and literacy developed only in the electronic age, not earlier. Contrasts between electronic media and print have sensitized us to the earlier contrast between writing and orality. The electronic age is also an age of 'secondary orality,' the orality of telephones, radio and television, which depends on writing and print

for its existence" (2–3). The Internet is certainly another channel for secondary orality. Its presence in the Arctic bolsters our belief that the timing is right for our project, which seeks to connect organizations and people engaged in various forms of Inuit cultural production, through digital platforms.

Questions that originally inspired this project were, "What are the young people doing in terms of creative expression?" "Why is visual art production – drawings, prints, carvings – for which their culture is known, on the wane for this age group?" "How can we engage young people in meaningful ways through the forms they wish to make?" Increasingly popular among young people are oral and performative modes of expression – spoken word, rap, throat singing, uploading videos on YouTube. On the surface, this activity would seem to be, at least in part, a collective effort to reconnect to their oral heritage.

Students at Nunavut Sivuniksavut in Ottawa, an eight-month college program for students from Nunavut, produced a video parody of the popular "Gagnam Style" video to promote the Inuktitut Language program at their school. Although the video has had over 81,000 views, it has also drawn criticism for its use of traditional clothing in what some commenters consider a disrespectful context. Nineteen-year-old Kelly Fraser, recent alum of the program says, "Our intention was to make our language stronger and just make a fun song. I understand that people might feel the songs disrespected our culture, but if we don't do anything about our culture, if we don't promote it, then we're going to lose it. It might not be traditional but there are a lot of things that are not traditional, like skidoos (sic)…" (August 15, 2013). Fraser is quickly gaining popularity in her own right across the circumpolar region as an Inuk singer because of her YouTube videos that are all covers of famous songs she has translated to Inuktitut. "I even saw a young girl from Akulivik who made a video of herself lip-synching to my song" (August 15, 2013). Fraser is describing cultural information exchange across a vast distance that is made possible through web-based platforms demonstrating Ong's secondary orality.

MICH originally also grew out of a regional museum's desire and political impetus to reconnect Inuit people, art and by extension, their traditional knowledge through the digitization of an archive it holds of over 100,000 artifacts. Ultimately, the digital archive will be available for people to input information they may have about the subjects or makers of the artifacts. It will inform public school curriculum and be accessible throughout the communities via large servers called media viewers, which can hold enough information that they simulate an internet-based platform in a vast region where widespread connectivity is still a challenge and prohibitively expensive for many residents.

In addition to facilitating access to archived images, we will conduct workshops and contribute to public school curriculum to provide a reconnection to making through an iterative design process. Whether using analog or digital means, Inuit youth and young people will engage with a form of smooth orality. We are confident they will move between analog and digital realms as effortlessly as their southern counterparts. Contemporary indigenous artists are engaging in both handmade and digital practices. Christine Lalonde, Associate Curator of Indigenous Art at the National Gallery of Canada says, "I think the emphasis on the handmade is because it's recognized that that process is knowledge, and that knowing how to do these things is a way to transmit knowledge and keep it alive" (12 August 2013). In a related and, we would argue, legitimate vein, Wachowich and Scobie declare of young people posting videos to YouTube, "It is not the form that matters, but the act itself of uploading" (2010: 100). Each is an act of exerting voice, knowledge, and identity through available and meaningful tools.

Deleuze and Guattari warn us not to place the burden of cultural survival on the concept of smoothness. Nor do we wish to romanticize its potential. However, we believe that movement toward a form of smoothness – the proposition of seeking an oral form of design, engagement with an iterative process that relies on varied skills and contributions of makers and honors the role of the user – can provide opportunity for Inuit youth to participate in making a future that evolves Inuit identity, redefined for survival in the contemporary context.

Angela Norwood
Associate Professor, Department of Design
Chair, Department of Design
York University
Canada
anorwood@yorku.ca

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Silja Nikula

Case study in visualizing "the spirit of a place"

Abstract

This research deals with manifestations of the spirit of a place and visual narration thereof. The study evokes a discourse on the narrative possibilities of a still picture. The research is in the domain of visual communication design, and it focuses on pictures used as an essential communicative tool of a graphic designer. It sheds light on the creation of a picture and on its language as a producer of meanings. Simultaneously, the process of creating a picture is viewed as visual narration.

Keywords

Place. Picture. Image. Visual narration.

Artistic part based on theoretical concept

I started from my own experiences of the spirit of places as a tourist. The spirit of a place as a salient concept of humanistic geography draws on the personal experience of an experiencer (Relph 1976). I was also the creator of the pictures in this *practice-based* research. The artistic part consisted of three exhibitions arranged by the author between 2009 and 2011. The artworks of the first exhibition were based on a trip to Prague, while the second exhibition drew on a trip to the Lofoten Islands. The third exhibition was based on experiences from several places, and it enriched the material on the part of visual narration.

The frame of reference entailed a discourse between image creation and theory. I brought out the contents of mental images formed on the basis of my experiences. As an illustration method I used wood-block printing, and the final graphic images were created after my travels. The structure of the research comes from mental and pictorial representations as shown in *figure 1*.

Figure 1 Representation as a structure of the research (Nikula 2012)

Method

Experience process model

I first constructed *an experience process model* to illustrate the multidimensional contents of experiencing the ambience of a locality. In this model I combined different kind of images in physical and mental world as W. J. T. Mitchell (1987) defines them. According to Mitchell I use term "graphic image" when meaning concrete material images that can be seen – even touched – in our physical world. This model also shows what kind of ingredients are involved in the visual narration. Influences can come from indirect culture texts as books and travel brochures; also my own previous life story is involved.

Physical world   Mental world   Physical world

Immediate   *Reflected*   *Aesthetic*
experiences   *experiences*   *experiences*

Place — Perceptual Image — *Recollective imagination* — Mental Image — *Creative imagination* — Visual narration — Graphic Image — Verbal Image — My life story — Indirect cultural texts
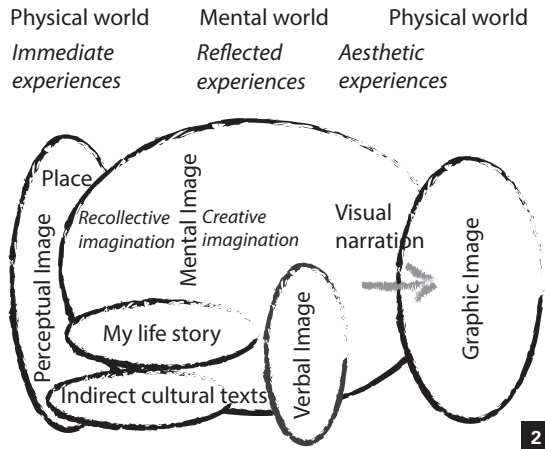
Figure 2 Experience process model (Nikula 2012)

Analysis model for narrative layers

On the basis of my own artworks I thereafter produced a model of analysis to depict the structure of the pictures and the meanings they contain. In my model I combine *visual narratology* and *semiotic concepts*. I also pay attention to the *experience process model* that I constructed earlier. Within each picture I paid attention to the composition and the properties of elements (see Engelhardt 2007). Using the analysis model I divided the created pictures into six modes. Each of these presentation methods emphasized different sides of experiencing the ambience of a locality, and their methods of visual narration also differed from one another.

Results

I present six different modes as visual presentation methods, including one example picture of each. Meanwhile, I discuss the limits of visual language, and also its potential to direct a viewer's attention to a narra-

tive, to get meanings interpreted. The concept of image is broad and entails various forms already within a graphic image.

The modes. Methods of visual narration

1. Scenery. No living creatures

This is a category of pictures with no living creatures. According to Seymour Chatman (1978), a narrative without an agent performing action is impossible. Pictures in the first mode are depictions of scenes or spaces where happenings could take place. In my sceneries, I refer to the place in an iconic way, showing the way things really are (Mitchell 1987). *Iconicity* is one positive property of images, based on a correlation with its object – at least some qualities are similar. Based on iconicity, real-world optical experiences can be imitated (Messaris 1997, 3). For me, these images work as documents that are witnesses of my visit. Compared to detailed photographs, these images are simplified. They don't repeat all. But all the visual elements are meaningful as the illustrator selects them (see Barthes 1986).

Metonymy is a way of creating realistic impressions based on associations. When seeing one small part, the bigger whole can be traced (Fiske 1994; Mitchell 1987). One scene can represent the whole town or certain kind of city life. Still images have the ability to expand their stories outside of their frames, and metonymy as a rhetoric means enables tight expression. I framed one scene that was interesting to me. Later I noticed that advertisers of tourist attractions have actually selected and presented many of the same scenes that were my favourites. I couldn't rid these images from my mind through media presentations.

Compared with realistic photographs, the illustration technique has left its mark: woodcarving can add

Visual narratology

Criteria: living creatures of not

Criteria: Composition, presenting an event on a picture space

Experience process model

Criteria: where the ingredients come from

Properties of elements

Possibilities to add meanings.
Criteria: semiotic properties: Signs and rhetoric figures

MODES

Scenery

adding creatures

difference based on composition:

Episode   Chronicle   Collage

adding new kind of ingredients

Etnofiction

Comment

Figure 3 Analysis model for narrative layers (Nikula 2012)
Figure 4 Six modes presented as a metaphor of narrative layers (Nikula 2012)
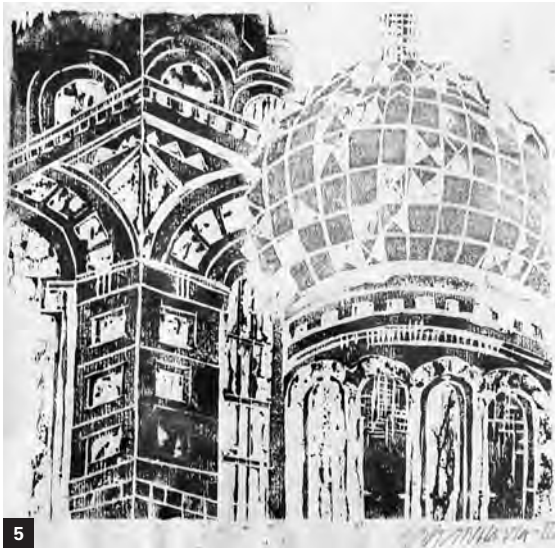
Figure 5 Example of the mode Scenery. Based on my travel to St. Petersburg. Woodcut. Silja Nikula 2011.
Figure 6 Example of the mode Episode. Based on my travel to Prague. Wood-cut. Silja Nikula 2008.

its own connotations to the work. As an illustrator, I can take advantage of the style of lines, forms, and colours to show a variety of emotional feelings. In suggesting meanings, the role of the illustrator is salient. Still images can call forth a variety of emotional responses. In my example picture, depicting a part of the town St. Petersburg, I haven´t still used the whole potential in expressing my feeling through carving style.

What comes to living creatures in still images context, I argue that events can be seen even if there are no people or other creatures visible. The illustrator can put hints as clothes drying or tools left, and the picture can be interpreted as one moment in a chain of events.

2. Episode. A moment of happening

I define figure 6 as an *Episode,* because the moment presented in it really happened. I stepped up to the Town Hall Tower in Prague, and saw the scenery with its red roofs. According to narrative theory of literature (Chatman 1978), the picture carries more meanings that the previous one, because there are people included.

Some moments stayed in my episodic memory even after travel (see Glass & Holyoak 1986). They concern strong emotional feelings or are otherwise meaningful. In my Prague picture characters added to the streets reveal a chain of events that could otherwise not be seen (Chatman 1978). The picture captures one moment of an event and insists viewers to interpret it. So the sto-

ry before and after can also be seen. When compared to narratives in literature or audiovisual presentations, presenting time-flow through still images has its limitations. The composition is in two-dimensional space, so the actions are emblematic and eternal (Goodman 1981). But there are still ways for illustrators to suggest meanings as time passing by and events going on, such as creating back and front areas in the picture surface. Also a viewer's eyes can, to a certain degree, be led by arranging lines and forms of elements.

The grammar of visual design consists of conventions for representing and interpreting pictures. While expressing my ideas and working with my images, I noticed that the conventions presented by Kress and van Leeuwen (2006) should also be considered as meaningful potential. These researchers already have adapted narratology in still images in their *grammar of visual design*. Meanings can be suggested by using high or low angles in composition. Also framing, seeing objects from far distance or near-by are important tools for illustrators to create meanings. Kress and van Leeuwen separate narrative images from conceptual ones: narrative images have vectors, lines leading away from things, body parts and gazes. They show directions in interactions of people presented. Especially diagonal lines carry the idea of movement. In my pictures I did not use these conventions by purpose, but realized them afterwards. It shows how automatic these conventions of presenting are.

Figure 7 Example of the mode Chronicle. Based on my travel to Croatia. Woodcut. Silja Nikula 2011.
Figure 8 Example of the mode Collage. Based on my travel to an island on Heinävesi, Finland. Woodcut. Silja Nikula 2011.
Figure 9 Example of the mode Etnofiction. Based on my travel to Lofoten Island. Woodcut. Silja Nikula 2010.
Figure 10 Example of the mode Comment. Based on my travel to Lofoten Islands. Woodcut. Silja Nikula 2010.
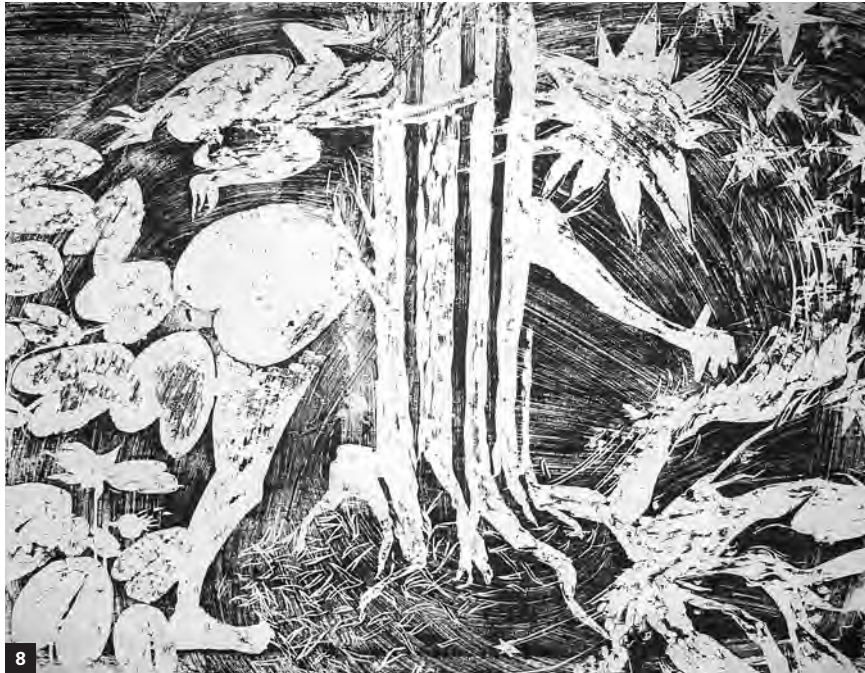
I agree with Slomith Rimmon-Kenan (1999) that the concept of narrative has to be modified on the basis of presenting medium, also taking into consideration the conventions in composition and how they suggest meanings.

3. Chronicle. Time passing by

This mode of *Chronicle* is also presenting an event, but using a series of pictures, somehow combined together. There has to be at least two different pictures, referring to the times of happening and telling. When these pictures are put after each other, a new meaning can be interpreted. In my *figure 7*, I pay attention to the direction movement: in most western countries walking from left to right means going forward. More generally this convention is defined as left side carrying something old or already known, right side having new or somehow problematic issue (Kress and van Leeuwen 2006).

There are means for illustrators to emphasize the idea of moving by "speedlines", or in my wood block printing by carving direction. Dynamic impression is added by using diagonal composition; also placing elements fore and back can create the idea of time-flow. One idea is to use same characters in different places, causing that different times are interpreted. In my picture the stages of movement are very clear, but the idea could be presented also by morphing the phases more smoothly, like creating metamorphosis. If we move towards cartoons, here comes finally the question, if the presentation actually is one entire still picture any more, or is it many still images put together. As one perspective to the *spirit of place*, this mode shows how tourists are often active and curious to see as much as possible. This mode emphasizes happenings, and the idea of the visual presentation is based on movement. The scenery at the back is in most cases still seen, to present the place for those actions.

4. Collage. Fragments of my travel

Different events, situations and ideas are combined into a coherent whole within the mode of *Collage*. There is a certain theme under which the entire situations are gathered. The theme can also be thought as a message, plot or simply an idea. In my compositions I used ideas from previous modes as material: the parts of the whole often consisted of sceneries, people and all kind of things I had seen during my travel, and details of them. But they were arranged as a composition by using different scales and perspectives. Visual coherency was created, to put the parts of the collage together.

This presenting could also be thought as viewer being in different places at the same time.

For my example *figure 8,* I gathered moments of experiences on a small island during one week in the summer 2009. I was swimming, fishing, having sun and enjoying the dark evenings with my family. The coherent whole is created visually by using only one colour, to collect the items together. Also I found similar forms from nature and my body: as stars and my hair. Using rather dry colour makes the direction of colouring visible, and perhaps emphasizes the idea of time passing by: days and hours after each other. This mode shows how memories of travel often consist of fragmented moments.

5. Etnofiction. New story is born

Whereas *Episodes* call back moments experienced, *Etnofictions* create new reality. They have roots in real-world happenings, but in my imagination the experiments are combined with new kind of material. Fictional elements come from history, mythic stories, literature, etc. All kinds of intertextual or intervisual material can be used (Nikolajeva & Scott 2006). When these are combined as a visual composition, a new story is born. Non-existing fantasy creatures can well be presented in a realistic way by using a linear perspective. The presentation can be seen as one moment in a chain of happenings, as in the mode *Episode*, but now unnatural elements are included. The idea of the *Etnofictions* is to part from real life and approach towards imaginative world. Visual means, as unnatural colours and plasmatic forms, can be used to violate the reality. The expression can resemble surrealist Dali's paintings.

In *figure 9,* I also deal with Kress and van Leeuwen´s (2006) conventions, now concerning upper and lower parts of a composition. Whereas the lower part is "real", the upper is ideational, presenting something new. According to this statement, my composition strengthens the idea of an imaginative story: while the scenery is quite realistic – still simplified – the floating animal in the upper part is not natural. Also these information values carry narrative potential. While I was travelling on Lofoten Islands, I saw this kind of scenery, but the dragon came from the mythic stories of the Vikings. The idea for the animal came from "Saga of Sigurd", telling how Sigurd, after drinking blood of a dragon, got the ability to hear birds singing. I still added typographic hints, rune writing, to refer even more to the mythologies and history of the place. In spite of the letters meaning nothing, some intertextual connections can be seen, if this historical writing is known.

6. Comment. We are living our stories

I started to create *figure 10* after visiting Fishing Museum in Å, the most southern fishing village on Lofoten

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Islands. Finally, multiple ideas and elements were combined, and the presentation became a metaphor.

First, I saw in the museum how cod liver oil was traditionally produced, and how the old bottles looked like. Then suddenly came to my mind, that I had seen same kind of bottle in my childhood, and tasted the oil. My mother gave it to me, and I didn´t like the taste. Then I looked at the tag of the bottle and saw my own picture on it. I saw a small girl as a part of the graphic composition, and her hair was cut at the same way that I had in my childhood. In the final composition also other elements were included: within my travel I had seen a lot of codfishes hanging and drying, many of them mouths open. So I constructed a picture where I am pouring the codlever oil back to where it came from.

Nelson Goodman (1976, 8) names this kind of constructing as "putting a layer of comment". In this mode, the illustrator's attitude and opinion are strongly seen. Tourists often use their own inside stories as a part of their telling about experiences. We are actually "living our stories", and new meanings get interfered in the previous ones (Bruner 1986). I found *metaphors* as useful rhetorical means in representing personal meanings in my pictures. In the metaphorical expression, qualities are transferred from one to another by combining

the usual with the unusual. Often, images of concrete physical things or situations evoke an analogous abstract concept (Messaris 1997, 9). Metaphorical dimension is one class of iconic signs, based on similitude.

To put more meanings, also *symbols* can be useful within this kind of pictures. Symbols have narrative power, in giving rise to connotations. They are useful in packaging meanings – in case they are understood right. A symbol is a sign when it is used and understood as such, based on convention or habit (Fiske 1994, 70,72). Understanding of symbols also depends on the context; for example, colours can have symbolic meaning but often appear in the form of elements.

For this project, while the *episodes* came suddenly in my mind, the *comments* took more time to transform in my imagination and to find their visual form. The pictures in this mode were born last. As a graphic designer I find visual metaphors challenging, because within communication use they have to be somehow understood, but still fresh and surprising.

Discussion

In this study I did not define the communicative aspects, audience, and presentation medium of a picture. Instead, I focused on the beginning of the design process where an idea develops and begins to assume a visible form. Narrativity was seen broadly as a viewer's possibility to discern meanings in a picture. Meanings arise both from the properties of elements and their composition. Woodcutting as an illustration method adds its connotations to a presentation; it enables one to simplify and thus compress the expression. The multiphase method of woodblock printing matured my experiencing and brought about new personal meanings. The ultimate ideas were often changed.

The study evokes a discourse on the narrative possibilities of a still picture. It pays special attention to the ways in which symbols and metaphoric expression can give rise to connotations and thus increase the variety of meanings construed from a picture. In fact, the whole concept of narrativity should be redefined in the context of still pictures.

I also see my method as an important part of this research, combining artistic work with theoretical discussion. Also adapting narratology within the context of still images is quite new, especially in the context of drawings. For an illustrator working within visual communication I see my metaphoric model of narrative layers as a practical "tool-box", to be adapted and varied in different situations, showing narrative possibilities. Sometimes the strength of images comes from their iconicity and indexicality; in other situations we need symbolic elements and metaphoric expression to get the message through.

Silja Nikula
Doctor of Arts
University of Lapland
Finland
silja.nikula@ulapland.fi

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Aysun Aytac

Local/global antagonisms: Cultural analysis of contemporary bathroom and its elements in Turkey

Abstract

This study[1] claims that, at today's homes, the contemporary bathroom fulfils the need of having a tidy and visually attractive or 'pretty' bathroom, however, it does not meet all the functional or cultural needs of the family members. There is a range of activities and strategies that mostly women/housewives employ to appropriate their bathrooms in order to sustain both the pretentiousness of the bathroom and the daily usage in the same space. Based on this claim, the study aims to find out, in a Turkish context, how women appropriate and incorporate the contemporary bathroom and its elements into their everyday routine in order to fulfil their needs according to their cultural habits.

This study can be seen as an attempt to reveal the antagonisms between the culture of the users and the contemporary bathroom designs in Turkey. The findings will show, how, in today's Turkey, users organize and use their bathrooms, and will help the creation of a bathroom which will be adaptable for Turkish market, hence Turkish users.

Keywords

Bathroom. Cultural Habits. Everyday life.

Introduction

The domestic bathroom, being the fundamental space of the modern daily life today, had been mostly the topic of historical, architectural and technical studies in the world literature. Besides the literature on bathroom, there are also many studies done particularly on water closets/toilets regarding their history, socio-cultural evolution and technical details. In addition, there are also comprehensive studies on the history and the socio-cultural evolution of norms and ideals of hygiene and cleanliness mostly in the area of sociology. The concern of this research is the socio-cultural and the material culture aspects of the today's domestic bathroom and it is expected that the study fills a gap in the literature, while it tries to understand how the contemporary bathroom is being used and organized within the daily life practices in Turkey. The motivation of the study is the personal observation of the contemporary domestic bathroom being a 'showroom'. Women/housewives organize their bathrooms mostly according to the socially accepted aesthetic values, popular trends or with 'what is on the market' rather than their 'real needs'. As a result, the contemporary bathroom fulfils the need of having a tidy and visually attractive or 'pretty' bathroom, however, it does not meet all the functional or cultural needs.[2] In order to sustain both the pretentiousness of the bathroom and the daily usage in the same space, women appropriate their bathrooms. They create systems or arrangements that are constituted by some strategies; they make changes and they appropriate the space through the everyday routine in order to meet their needs. Based on this claim, the aims of this study are, to find out, in a Turkish context, (i) how the bathroom and its elements are used, experienced and appropriated according to the cultural needs and habits; (ii) how women incorporate the bathroom and its elements into their everyday routine in order to fulfil their needs. Bathroom is one of the everyday spaces where cultural beliefs, values and norms of a society can be observed. Understanding what and how cultural norms and values work in the contemporary bathroom would

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2   What I mean by 'cultural needs' is, making habits of things by living in this particular society and/or some special ways of doing things that we learnt from our families. For instance, soaking stained clothes/white clothes in water one day before the laundry day, performing ablution, traditional ways of bathing, traditional cleaning habits, etc.

reveal rich data for industrial designers and how they can be integrated into new design ideas would be a challenging study (Moalosi et al., 2010). The findings are hoped to contribute to the creation of a bathroom which will be adaptable for Turkish market, hence Turkish users.

Westernization and the emergence of the 'modern' bathroom in Turkey

In Turkey, before the contemporary bathroom, traditionally, a water closet was located outside the house in a courtyard or a garden, which later was relocated in the house. This crouching type of water closet fixture called *alaturka*[3] is still used in some regions across Turkey, Middle Eastern and Asian countries (Figure 1). For bathing, people were usually going to *hamams*, the Turkish public bathhouse, which was also a place to socialize (Figure 2). Apart from *hamams*, there were bathing spaces reserved in the houses called *gusülhane*[4] which was a small closet having water containers and drainage. They were located in the bedrooms for married couples to wash after sexual intercourse which was obligatory according to Islamic rules.

With the foundation of the Turkish Republic in 1923, many radical reforms were launched in order to change the social, political, cultural and economic structures of Turkey. The main aim was to shape a new nation according to Western models while abandoning the Orientalist representations of the Ottoman Empire. This transition was also manifesting itself in the architecture and design culture (Bozdoğan, 2001; Gürel, 2008). The 'fixed'[5] bathroom space was becoming widespread very slowly and it was being represented and perceived as an important agency of Westernization and modernization (Cengizkan, 2002; Gürel, 2008). According to Gürel (2008), the case of 'modern' bathroom in Turkey is a concrete example of how modernity "embodies the destruction of the old, traditional, familiar and inherent as well as the introduction of the new, progressive, up-to-date and extraneous" (Gürel, p. 216).

Starting from 1928, the 'modern' bathroom with fixtures (built-in bathtub, *alafranga*[6] toilet, wash basin and

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3 *Alaturka* means 'according to Turkish style' adapted from French *a la turca*.

4 *Gusülhane* means 'the place for the complete ablution', one of the rules of Islam which requires to clean the whole body.

5 Throughout the world, morphologically, the bathroom presented various forms during the 19th century (Giedion, 1955). Around 1900, the portable bath space has been transformed into a fixed and a standard space and a fixed position in the home with industrial 'fixtures' which Giedion defines this as a transition "from a nomadic to a stable condition" (Giedion, 1955, p. 682) (Figure 3 shows).

bidet) was seen in the multi-store apartment buildings and became a high standard prototype (Yavuz & Özkan, 2005) (Figure 4). With the proliferation of the apartment flats in the first half of the 20th century, the bathrooms became widespread in the urban areas. However, the fixtures of the 'modern' bathroom were strangers to the society. For instance, the built-in bathtub was the symbol of status and Westernisation, but Turkish people did not prefer bathing in filled water; according to their beliefs and habits, the body was supposed to be washed with running water as they used to do in *hamams*. It was also taking up too much space in the bathrooms and it was only used as a shower basin (Bektaş, 1998; Gürel, 2008)[7]. New uses were invented among women, e.g., storing water in case of a water shortage, using it as a washbowl for large textiles like curtains, carpets and blankets. In addition to the built-in bathtub, *alafranga* toilet was being regarded as a stranger since the society was used to the *alaturka* toilet; the crouching type. In order to propose softer transitions, starting from 1936, the *alaturka* toilet was being kept in the building plans separately from the 'modern' bathroom (Bozdoğan, 2001). After many decades, most of the *alaturka* toilets were going to be converted into *alafranga* types within later renovations since the *alaturka* toilets were perceived as a symbol of backwardness, underdevelopment and insanitary conditions, however it is still preferred by many users (Gürel, 2008; "Tasarımcı gözüyle (interview with Müçteba Kundul)," 1990).

The other 'stranger' in the modern bathroom was the *bidet* which was initially used in France for washing the genital area after sexual intercourse (Rybczynski, 1987). In Turkey, this fixture was taking part in the bathrooms between the 1950s and the 1970s because it was perceived as a symbol of wealth and modernism, and it was sold as a set with the water closet (Gürel, 2008) (Figure 5). Later, the bidet started to loose its popularity since it was taking up too much space in the bathroom and the *alafranga* toilet was already had a built-in tap for cleansing since washing with running water after defecation is a requirement according to the faith and habits of the society. Hence, if the bidet was installed already, it was occasionally preferred to be used for washing feet since it was useful that way as well. In an interview in 1990, the designer of Serel indicates that bidet was not very popular in Turkey, thus they sell 1 or 2 sets out of 10 sets with bidet ("Tasarımcı gözüyle (interview with Müçteba Kundul)," 1990).

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6 *Alafranga* means 'according to French/European style' adapted from French, refers to the Western water closet.

7 See Bektaş's (1998) short article on how the bathtub raised the building cost, how it became the symbol of wealth and how it was foreign to our lifestyles in Turkey.

Figure 1 A typical *alaturka* type toilet (www.vitra.com.tr).
Figure 2 'Turkish Bath' by La Barbier, shows women and children having bath and socializing in *hamam*, copper plate print technique (Yılmazkaya, 2003, p. 35).
Figure 3 The plan of Statler Hotel showing the two rooms with compact bathrooms with common ventilation and plumbing shaft which aroused the tendency to combine the bathroom into the apartment plans which ended up in the standard American layout (Giedion, 1955, p. 698).
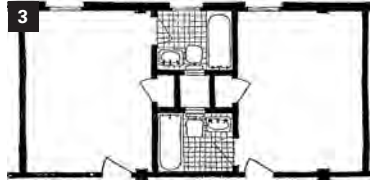**Figure 4** *Bidet* and *alafranga* toilet in an un-renovated DHMİ Cooperative flat in Ankara, Turkey, built between 1958-1960, photographed by Gürel in 2006 (Gürel, 2008, p. 228).
Figure 5 A plastic *maşrapa* rests on the countertop, used to pour water above the toilet bowl during ablution (photographed by the author).

The concept of culture and appropriation

According to Williams, culture is a *whole way of life* (as cited in Bennett, 2005). It is the particular way of life that a society lives, or of people, a period, a group or humanity in general; it involves ways of thinking, understanding, feeling, believing and acting 'characteristic' of a particular group thus not 'characteristic' of another group (Inglis, 2005; Linton, 1999; Williams, 1985). In other words, it "determines the uniqueness of a human group in the same way personality determines the uniqueness of an individual" (Hofstede, 2001).

Culture does not consist of only words or intangible concepts; it is always around us – in our very everyday life – "represented in material forms and social practice" (Schudson, 1989, p. 154). Therefore, it also includes the objects we use in our everyday lives, i.e. industrially designed products. However, objects do not simply exist in a culture, they define it as they penetrate to its beliefs, values, fears and fantasies (Kline, 1992). From the standpoint of industrial design, design and culture are intertwined, as well as everyday life.

There is an interaction between design and culture; design changes culture, but is also shaped by it (Moalosi, Popovic, & Hickling-Hudson, 2010). The customs, values and habits specific to a culture might require specifically designed products rather than standard products commonly sold or imported in the market. Forms of a product might be defined by specific cultural needs and conditions, thus they might be meaningful only in that cultural context. Special two-pieced teapot set, so called *ince belli* tea glass, Turkish coffee pot and coffee cup, water closet with the nozzle for water cleansing and squat toilets are some examples for the notion of culture influencing design in Turkey.

In everyday life, culture and cultural habits might lead to the organization and appropriation of our environment, in other words, consciously or subconsciously, we appropriate our environment through our culture. According to some authors (Nippert-Eng, 2010), we construct the 'territory of the self' with our extended selves, some of which may be clothing, photographs, tools, decorations, workplace surroundings etc. Creating the 'territory of the self' can also be considered as an assimilation process of an 'alien' environment or a product. Miller (1987) argues that mass produced commodities are products of human labour and they are alien to us when they are first produced, however, they are appropriated, thus, inalienated through an expanded process of consumption, and are recast as inalienable cultural material.[8] The instant we start to use a product or live in an environment, we transfer and internalize them into our lives with constant appropriations, we

charge them "[…] with particular inseparable connotations" (Miller, 1987, p. 190). Building on Miller's arguments on inalienation, Lupton and Noble (2002) suggest that appropriation is about making an object 'mine', in other words it is "the incorporation of an initially 'alien' object into subjectivity via everyday use" (pp. 5, original emphasis).

Simply, we appropriate the new and the unfamiliar space by organizing our things and establishing new everyday routines and habits, and make it one with our on-going life, in other words a place we can call our own (Berglund-Lake, 2008).

Some authors think that we appropriate objects by adding or changing functions in order to adapt or alter them for different purposes (Burkhart, 2006), for instance, using the bathtub for water storage. According to Parsons (2009), such purposeful appropriation of objects highlights the potential of objects and should inspire designers. According to Suri (2005), these actions show how we engage, adapt and make sense of our designed world and they are important source of insight for designers in creating new design opportunities and providing better solutions.

It is important to note that, appropriation is not a one-way relation, as if only users do appropriate artefacts or spaces. In the same way, products can shape, transform and in Latour's (1992) words, even 'discipline' users' behaviour and practices through everyday use (Ilmonen, 2004).

The method of the study

The aims of my study require exploratory qualitative research; a constructionist model which involves ethnographical focus on the domestic bathroom. The study is being conducted with a holistic approach, with the direction of an interpretive aim and with an inductive analysis. Semi-structured interviewing is chosen as the primary data-gathering tool since it is broader and more free, allowing the inquiry to go further and/or deeper (Fontana & Frey, 2005). Observation and trace analysis are chosen as secondary data-gathering tools.

The study is being conducted with housewives/women living in Izmir[9]. I interviewed with 15 women. I excluded men/husbands from my interviews since as a traditional role, the house belongs to the women in terms of organization, decoration, renovation, design, cleaning etc., in other words, women has been assigned as the homemaker throughout the history (Heynen & Baydar, 2005). I select the participants through friends and family network in order to provide a degree of so-

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8 Miller builds his arguments on Hegel's (1977), Marx's (1973, 1974, 1975) and Simmel's (1968, 1978) thoughts.

9 Since I live in Izmir and due to the accessibility reasons, I chose my participants from Izmir. Izmir, being on the very west of Turkey, is the third biggest city in Turkey and has a population of 3,948,848 (TÜİK, 2011)

cial acceptance. The interviews took approximately 50 minutes to 1.5 hours, which were digitally recorded, supported by the bathroom photographs with the allowance of the respondents and notes, and fully transcribed for analysis.

I try to make descriptions and explanations by analyzing the data with the ethnographic data analysis tools. Mainly, the excerpts turned into my notes, notes are grouped and formed the codes, and similar codes and codes that can be merged came together and helped me to generate the concepts.

Findings and discussion

As I analyse the interview data – although they are subjected to change – I have generated four concepts till now. These include (1) *Women Own the Bathroom*, referring to the domination of the women on the bathroom usage, organization and cleaning, (2) *Bathroom is a Showroom*, referring to the pretentious side of the bathroom, in other words the image women wish to create, (3) *the Practices Performed in the Bathroom Change through Generations*, referring to the differences in the bathroom use and cleaning practices between generations, and (4) *the Contemporary Bathroom is Inadequate*, referring to the physical incompetency of the space and its elements. However, I hereby present some of the antagonisms I found between culture/cultural habits and the design of the contemporary bathroom in Turkey.

One of the obvious antagonisms in the contemporary bathroom in Turkey is the contemporary bathroom being not designed to ease the practice of ablution.[10] Ablution requires washing the face, arms and feet. According to the data gathered, the older generation tend to pray and perform ablution compared to the young. The common but non-ergonomic solution to wash the feet is to raise them above the washbasin. In order to wash the feet during ablution, one of my informants and her husband (age 64 and 66) are not able to raise their feet above the washbasin and they do not wash their feet in the shower cabin as well due to the visual concerns. If they wash their feet in the shower cabin 5 times a day, the water splashes on the transparent glass walls of the cabin, the high hardness level of the water leaves water stains and since the wife feels uneasy about it, it needs to be wiped of after each use. Instead of that, they raise their feet above the toilet bowl 5 times a day and pour water with a plastic container (maşrapa) which rests on the counter all the time (Figure 5), and she is kind of embarrassed of it and says;

Figure 6 Traditional ways of bathing. On the left; a plastic stool to sit on, a plastic bucket to store the water and a plastic bowl to pour the water in the shower cabin. On the right; a foldable seating unit mounted on the shower cabin wall of a renovated the bathroom (photographed by the author).

"Actually, it [maşrapa] does not suit there but we have to use it, of course we take it away when guests arrive [laughs]". I realized that the women desire to keep the bathroom visually attractive and trendy, however their cultural habits contradict with the design and the elements of the space. This also occurs when again older generation prefers the traditional ways and tools of bathing. One of the women (age 66) I interviewed uses a plastic stool to sit on, a plastic bucket to store the water and a plastic bowl to pour the water in the shower cabin; a way similar to bathing in *hamams*. In order to be more modern and practical, another informant and her husband (age 63 and 64) mounted a foldable seating unit on the shower cabin wall while they were renovating the bathroom (Figure 6).

Similar to many cultures, in Turkish culture, it is the woman who makes the home. The data gathered through inquiries made with the 15 women, supports the notion of the female domination in the house – thus the bathroom – in terms of organization, usage, renovation, decoration and cleaning. All the 15 women implied or indicated that they have the control on the bathroom space.

During the interviews, they used the first person possessive suffix while talking about the bathroom and its elements, such as my bathroom, my detergents, my cupboards etc. This feeling of ownership also shows how much they feel responsible for the bathroom hygiene. One of the outcome of the data is keeping the bathroom clean and tidy is very important for the women which is directly related to the 'showroom' notion of the bathroom and the perception of hygiene in Turkish society. Since culture is learned and transmitted through generations by living and doing as it is impossible to avoid it (Hofstede, 2001), the perception of hygiene and thus the practice of excessive cleaning in

Figure 7 Some examples of the 'extension of the bathroom' created by the women (photographed by the author).

bathroom have been transferred through generations among women in Turkey. Throughout my observations, I realized that women buy various types of detergents for various elements and purposes in the bathroom, which also related to the frequent cleaning and wiping of the space and its elements. Using and keeping too many detergents, various types of cleaning cloths, plastic buckets, mops, bucket and wringer sets, plastic washtubs, brushes, sponges lead to the problem of storage. These tools and elements are important part of the material culture of the contemporary bathroom in Turkey, however the contemporary bathroom was not and still is not being designed with the consideration of this notion. Since the laundry room has not been the part of our apartment flat culture, the common apartment plans do not include a laundry room either. Thus all the women I interviewed have created an extra space to store such tools and elements, which I call the 'extension of the bathroom'. They either use a balcony, a dark and small room or the toilet room for storing such material (Figure 7). As one of the informants (age 33) indicates, "We do the dirty jobs in there [toilet room transferred to a laundry room]", the bathroom extensions become the backstage of the desired bathroom as a 'showroom'.

As a conclusion, the data show that some patterns of specific use, organizations and appropriations in the

contemporary bathroom are related to the local culture and habits. There is a contradiction between the design of the space – which is globally defined as the 'modern' bathroom'– and these cultural habits that require specific tools or practices. Friedman (1995) defines culture as the essentialization of difference. Similarly, Appadurai (2003) specifies the concept of difference as the most valuable feature of the concept of culture. Pointing the differences that have cultural dimensions are important in 'design-wise' since the culture in which the product designed may be different from the one in which the product will be used. Nowadays, design companies and industrial designers are challenging the difficult task of designing products for cultures other than their own. In order to design the right product for the right user, industrial designers should be aware of the local or the cultural context of the desired product. In other words, in order to embody the cultural factors into products, industrial designers should learn and deeply understand the users' culture; his/her lifestyle, needs, and values rather than leaning on their intuitive knowledge (Heskett, 2002; Moalosi et al., 2010).

Aysun Aytac
Izmir Institute of Technology
Turkey
aysunaytac@yahoo.com

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Magdalena Cattan,
Rodrigo Díaz & Mauricio Tapia

Exploring the edge: An approach from design and technology to wicker craft

Abstract

Craft, as a manifestation of immaterial cultural heritage, is constantly vulnerable to permanent transformation or even disappearance due to the decay of the industry and the decreasing number of craftsmen directly affecting the transference of knowledge which is done orally. In this scenario, it becomes necessary to revitalize this sector from different fronts.

From the Design discipline, we proposed an approach related to the new technologies within the craft sector – digital design and laser cut – aiming to use those tools as a contribution to the revitalization of this industry. Even when at first sight, it can be perceived as a threat for the preservation of cultural heritage, this path is presented as an option to diversify the market and improve the productive processes yet keeping the craft technique developed by the artisans as the core.

The approach is presented in two tracks based on the wicker craft case. The first, a teaching experience with industrial design students and, secondly, an ongoing University of Chile funded research – diffusion project in collaboration with the artisans' community.

Introduction: craft + design

when discussing about the concept of immaterial cultural heritage, it should address those manifestations which are unique and vulnerable with regard to a specific territory. Immaterial culture is characterized by a series of specific traits. It can be traditional or contemporary but it is always alive. It has an integrative character being representative of a human cultural group and thus belongs to a determined territory. Additionally, we can also say that our most tangible manifestation of immaterial culture is handcraft.

Craft as cultural manifestation, posses many definitions. In 1997, Unesco defined a Handcraft Product in the following manner: "*The Crafted Products are those manufactured by a craftsmen, by hand, with tools or mechanical media, as long as the manual contribution prevails as the most substantial component of the final product*". In this definition we can identify two core areas: "crafted product" and "craftsmen". For this reason, it is necessary to recognize that the cultural heritage is not only in the final crafted object, but in the expertise and techniques developed by a craftsman during his lifetime. It is there where heritage actually resides.

According to Zoran (2012), "*The results of a craft process are unique artifacts, each subject to the judgment, dexterity and care of the craftsperson. A craftsperson makes a series of personal and subjective decisions that define the object.*"

Within the crafts context, the knowledge is traditionally transferred orally. Therefore it becomes important to protect and preserve the practice and practitioners, instead of only focus in handcrafted objects. The effort should mainly be oriented toward encouraging the craftsmen to keep manufacturing their product, transferring the knowledge into their communities. (Nélida Marta Rey, 2011)

Nowadays, even when handcraft sector plays an important role in develop small local economies, there is an imminent challenge for the practitioners regarding how to transform this activity into a path of development for their communities, instead of just generate new market products for ethnical tourism. They wonder how to improve their productive processes whilst keeping the heritage as pure as possible.

Within this scenario, an ongoing discussion on the relationship between Design and Craft becomes relevant. It is argued that Design intervention within the Crafts sector should ensure results that will not turn in-

to something completely different from the traditional cultural manifestations. Collaboration and Participation are the key to approach a joint project with this characteristics as is mentioned by Brown (2009) "…*we can use our empathy and understanding of people to design experiences that create opportunities for active engagement and participation*". The choice to get involved with the communities will assure better outcomes from all the actors.

Authors as Hovanessian (2008) and Brazier (2004) refers to cases of Design Support for the SMMES, wherein they agree on Design as a unique power in helping small enterprises toward differentiation and innovation which is fundamental for their survival in the market. They consider Design as a medium to improve communication, product development, and innovation, and designers as professionals with intuitive and organizational competence, able to construct ideas that have emotional meaning yet are functional at the same time.

The Handcraft sector, has a behaviour that differs from the traditional business probably because the context in which their activity is developed; the preservation of the cultural heritage from an specific community and territory, presenting a complex scenario for any approach. In this context, more than a Design Intervention there should be collaboration in equity and knowledge of the crafts particular nature. Nélida Rey (2011) mentioned in her work that "*there is an coincidence in that the collaboration between artisans and designers, based in mutual respect and shared work, can help to revitalize the craft, ease the improvement in quality of the productive processes and boost the creation of products adapted to the current markets.*" In sum, Crafts and Craftsmen's practices are immaterial cultural heritage to be preserved.

Usually, Design intervention in Crafts is consider as an interface, a bridge between tradition and modernity, a delicate area of work where it essential no to completely alter the heritage. An interesting type of intervention aims to preserve cultural resources through the documentation, analysis and classification; materializing the knowledge transfer, usually done orally.

What should be the next step? How can designers be part of this? How to approach the theme positively? From which front it is possible to participate? How should this relationship be developed?

In the following content, the experience of an academic team from the Design Department of University of Chile, will be presented as an approach for working with handcraft – specifically Wicker craft – from a technological front in order to combine the richness of the traditional techniques with the efficiency and flexibility of new technology tools, whilst having revitalization and revaluating of the sector as a core goal to.
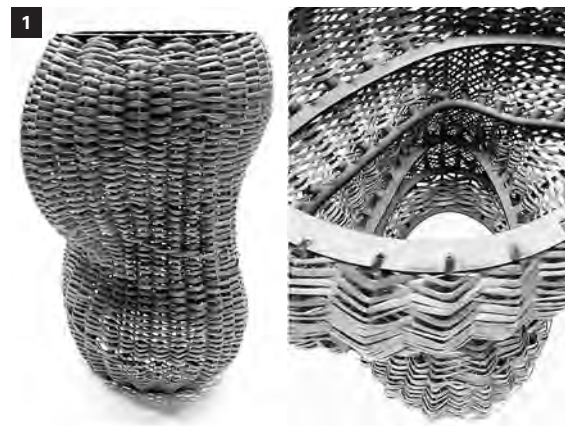
Figure 1 *Contemporary Antagonist.* New Technology / Crafts, Techniques. The image from GS project which is exposed in this paper, shows a product developed with both elements creating a new language. Image by author.

Experimenting crafts + technology + design

Since the Arts and Crafts movement where William Morris, in a reaction against industrialization, goes back to the pre-industrial era putting value in the quality of the handwork, is possible to identify the collaborative triplet: Crafts-Design-Technology. With that referent, the relationship between craft and technology – high and low – is evolving at different speeds – with technological evolution currently much faster than its application in Handcrafts. Richard Sennett (2009) explains it with the story of the pottery lathe "*We are mistaken if we think that in traditional crafts communities, techniques were rigidly fixed. It was actually not.*

Pottery, for example, changed dramatically when a rotating stone on which the mass of clay was placed began to be used, because there appear new ways to stretch the clay. However, this important change was the result of a slow evolution, requiring several hundred years."

The morphology of objects is highly subject to the available and mastered technology at the moment of manufacture, in the case of crafts; the craftsmen usually maintain their traditional ways of doing things or update their tools and process very slowly, sometimes aiming to keep purity in their work which grants a strong visual identity related to the community and territory or, in most cases, due to a lack of resources, knowledge and skill regarding digital tools and new technology.

Nowadays, access to technology is easier and lately digital manufacture is becoming highly popular. The craft sector, still lagging behind, is being used as a research subject to explore new possibilities presented by those technologies. One example of this is the project *Hybrid Assemblage* lead by the MIT' researcher Amit Zoran. Zoran is exploring "how craft practice can be combined with digital fabrication", reflecting on the issues of destruction, uniqueness and assemblage, twist-
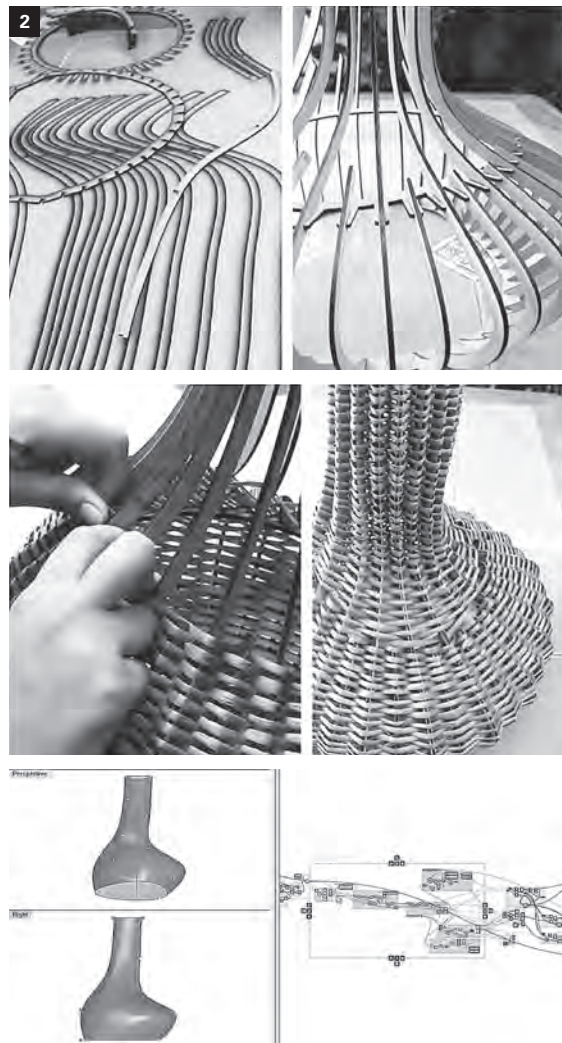
Figure 2 Silva's constructive process based in digital and cad cam tools. Image by author.

ing the main characteristics of digital fabrication – which is the chance of identical repetition, and productive process memory – proposing the production of unique objects that craftsmen create – using digital technology.

Another example is our research line based on Wicker Craft, which started after the result of a *graduate* study project called *Mimbre* (Wicker) CAD CAM.

Wicker CAD CAM

Woven wicker is a traditional craft manifestation form the central south of Chile, were mainly basketry and furniture is created by Craftsmen who are around 50 years old. They are concentrated in the small town of Chimbarongo where the wicker grows naturally. During 2012, Gonzalo Silva, an industrial design student from Universidad de Chile, developed his final graduate project, exploring the formal boundaries of traditional woven wicker, transferring knowledge from the digital scope – applying parametric/cad-cam design

tools – to handcraft production, aiming to amplify the diversity of artisanal objects.

In his project, planned as an experimental project, the traditional woven techniques were untouched due to their heritage character. Therefore, only the objects – structures /frames – were intervened or re-created, generating new shapes which were able to be transformed by controlling certain shape parameters with a software called grass hopper. This obtained clearly different results from the rigid wooden and metal skeleton that are traditionally used which present limited formal possibilities, and therefore little differentiation between products in the wicker craft industry. Indeed, the project goal was focused on raising the personalization level in wicker craft products; diversifying the formal language regarding the creativity of each artisan, and diminishing the current homogeneity in the industry.

The process developed by Gonzalo Silva (figure 2), was mainly focused on the digital tools that are described briefly in the following sequence: 1. Design a simple object in 3d modeling software Rhinoceros. 2. Transform the shape into a series of ribs whose measurements can be controlled by the parametric design software Grass Hopper. 3. Study the structural behavior of the skeleton and digitally simulate the wicker weave 4. Send the skeleton to the 3d printer 4. Build the shape. 5. Wicker weaving made by craftsmen.

Silva's reaches his goal generating a different morphological proposal, closer to the formal contemporary languages, but keeping the weaving technique as the main element of the object, which can be considered a balanced result of a collaborative process. Although the main focus of Silva's project was to explore parametric design, obtaining a series of experimental–nonfunctional objects was identified as a potential research line in the topic. We recognize two tracks to be deepened from our discipline: 1. Formal experimentation with local resources through digital tools, and, 2.Development of a collaboration model among designers and artisans focused on knowledge transference.

These tracks were developed during 2013, and concreted by the creation of the research line "Design and Innovation in Traditional Knowledge", comprising a group of professors from the Design Department at Universidad de Chile lead by the authors of this paper. Its goal is to rescue the material and immaterial, technical and cultural patrimony of Chile together with the study of and projectable experimentation with local resources. In the following section, the development of these tracks will be exposed.

The wicker-design course:
Knowledge transference methodology.
The formal experimentation track mentioned beforehand, was addressed through the teaching in the main

design course at FAU Universidad de Chile, called "Taller". The exercise aimed to transfer the knowledge from Gonzalo Silva's project to the 3th and 4th year design students.

The course is aligned with problem-based learning methodology, adapted to the field of design. Four stages are established: Diagnoses – Proposals – Evaluation – Production. Finally, the course is expected to transfer the knowledge gathered into the community. The method starts by looking for a preliminary diagnosis based on identification of problem symptoms through key questions and observation of the elements to be transformed or improved, framed in the context of the project scenario, which could be in present or future time. Next, variables are determined aiming to develop proposals starting from the basic and adding complexity throughout the process. The following step involves an evaluation within the real context with real users, before finalizing with the production process. The model implies recursion as the student might identify a new problem in the 3rth stage that leads him/her to the beginning of the process.

Another relevant issue for the teaching model is based on transference, aiming to gather knowledge/reflective information that could be used as the basis to start a new proposal or replicate the current one. The transference takes place by compiling technical information sheets or project memories with information about: the diagnoses – the problems and opportunities

identified proposals and, for the main part, a detailed description of productive processes, time-scales, materials and technology used in each sample or product. In the case of the wicker exercise, the main focus was on the diagnoses, proposal and transference stages,

The students were asked to explore the edge limits of the material (wicker) and the weaving techniques through morphologic exploration applying parametric design tools and cad-cam technologies. This exercise was divided in two stages:

1. Learning about Technology, Materials and Software.
2. Designing a product.

In the first part, the students were asked to work in pairs and develop a series of 2D woven wicker samples, managing parameters in relation with the weaving techniques (type of stitch e.g. 1.1, 1.2) and the construction of the skeleton-loom controlling measurements between weft and warp (figure 3). Later, they were asked to add curves and double curves to the samples, aiming to learn how the material behaves with the transformations of the skeleton and identify its limits (figure 4). We expected the students to think "out of the box" pushing the wicker to its limits, generating unusual and esthetically attractive shapes.

In the second part, the students gathered in teams of 4 and were asked to develop a product based on the samples from the first stage (figure 5).

Figure 3 & 4 2D and double bend samples made by the students. Image by Magdalena Cattan
Figure 5 Experimental object developed by a student with digital tools and woven wicker. Image by Magdalena Cattan.
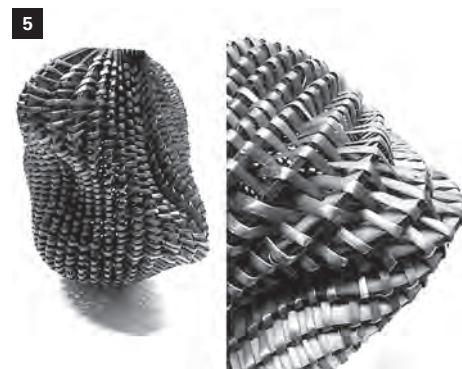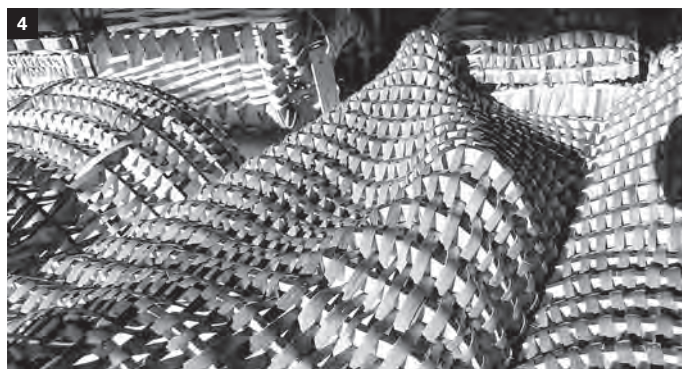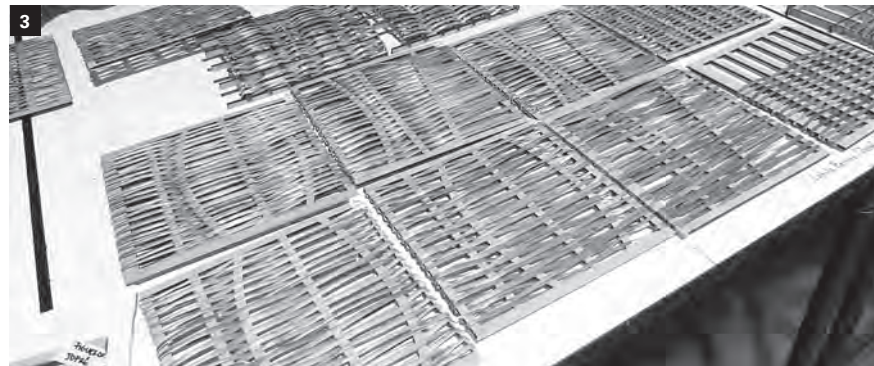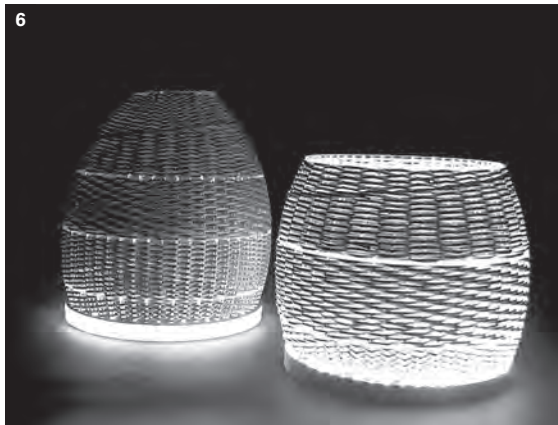
Figure 6 Luminescent object developed by a student using wicker + acrylic + led. Image by Andrea Lizana.

The outcome was a large quantity of unique samples exposing the versatility of the material for morphological experimentation. Among the results, luminous objects were the most audacious and widely proposed including the use of other materials, such as acrylic and treated natural fibers (figure 6). In sum, a new language of wicker craft was developed in the student's products, proposing shapes that were not possible – or very difficult – to reach with the traditional methods giving a contemporary halo to the results.

**Exchanging knowledge with
the wicker craftsmen community.**
Since Silva's project, we visualized a great opportunity to revitalize the wicker industry by transferring this new knowledge to the Craftsmen in Chile, taking into consideration the precariousness situation of their industry. These artisans are mainly located in the small town of Chimbarongo, distance 160 km to the south of the capital, Santiago. In this area, the wicker (*salix viminalis*) grows naturally generating a small basketry and furniture industry around it.

Currently these artisans are diminishing in quantity. The average age is 45 to 48 years old, and only 15% are younger than 40. This is because new generations see in it a poor labor potential in comparison with others trades (cnca Craft Area, 2012). Many moved away from the rural areas to the cities searching for better options. Also, basketry has very low projection in the craft sector being monetarily undervalued. The result is a decayed industry which is critical from the patrimonial point of view, especially because it is passed on via oral tradition.

Based on this diagnosis, our research team started a project called "Wicker: Design and Innovation in Traditional Knowledge" with funds from the University of Chile.

The goal of the project is: The revaluation of wicker's cultural capital and its revitalization as an economic

activity. By identifying the " preservable " and synergic opportunities with new technologies, transferring this knowledge to the younger generations in order to preserve the practice in the long term, and stimulate the activity in the present..

Through work with artisans, it is possible to identify existing capabilities and potentials around wicker, linking them with development opportunities delivered by new technologies. Thus, the existing cultural capital is cautiously opening opportunities to boost their economic activity extending the capabilities of the craftsmen in the process of realization of their ideas – on a morphological, constructive and functional level.

The methodology of work considers: 1. To revive the history, practices and proper technologies in wickerwork in order to rescue the "features" and bases of traditional craftsmanship, in turn identifying the state-of-art activity. 2. To develop, in conjunction with the artisans' community, production-technological, educational and commercial strategies to revitalize the sector identifying opportunities for synergy between traditional and current processes along with new technologies – parametric design modeling and laser cut basic training. 3. Transfer the results developing potential merger between new technologies and traditional knowledge, focusing on new generations. For this action, a workshop for primary-school students will be created by craftsmen and designers, teaching the traditional wicker techniques combined with the use of new technological tools. 4. The results of the research will be published in a book together with an exhibition of the objects obtained from the school workshop.

Currently the project is developing the first stage, which implies filed research in the locality of Chimbarongo. We have begun using the Unesco Heritage standard applied to ethnography tools, structured interviews and audiovisual register with a group of wicker agroproducers and craftsmen aiming to deepen our knowledge on their particular productive process.

At the end of this project, we expect to trigger an interest through the installation of new technologies in those who today do not see a future in Wicker Craft. It is our hypothesis that new generations in the community might be interested in this new path. Thus, we do not expect to transform any step in the current process but to present an alternative of differentiation and revitalization.

Future perspectives
In the near future, we expect to systematize the Wicker Craft experience developing a collaboration model of knowledge transference between designers and artisans, opening a technological door as an option for revitalization of the sector, putting value in traditional practice and cultural heritage. With this model it will

be possible to replicate the experience with other craft manifestations in Chile. In this way, the research track "Design and Innovation of traditional knowledge" can be thought of as a productive bridge between the university and the community, and as retribution from the academic sector to the citizens.

For future teaching experiences, we expect to work directly with the artisans' community as the academic research project will strengthen the relationship with the guild. Also, it is necessary to move forward from the morphological experimentation to the development of new products aiming to generate a tangible contribution in the sector, generating objects susceptible to commercialization.

In conclusion, traditional craft techniques have been slowly modified and improved by the existing technology throughout time. Today, the installation of digital fabrication and new technological tools into the sector, far from being a threat, is an opportunity of revitalization and differentiation, as long as equity and heritage respect are the motto. The collaboration between designers and craftsmen from this front can generate new languages which could become part of a contemporary manifestation of our traditional culture and a representation of these times. The collective work, we believe, is the right path to the preservation and prevalence of the Craft Heritage.

Acknowledgments

Magdalena Cattan
Academic, Instructor, Design Department,
Faculty of Architecture and Urbanism
University of Chile
Chile
mcattan@uchilefau.cl

Rodrigo Díaz
Academic, Design Department,
Faculty of Architecture and Urbanism
University of Chile
Chile
rdiazgronow@uchilefau.cl

Mauricio Tapia
Academic, Design Department,
Faculty of Architecture and Urbanism.
University of Chile
Chile
tapia.reyes@uchilefau.cl

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Maria Alicia A. Sarmiento

The art of Gromyko Semper: A study of digital selves and deterritorialized displays

Abstract

Philippine Art History, as both a discipline and a literary category, has thus far been limited to the results of traditional gatekeeping. By (re)presenting art history as a mode of local connoisseurship, the validation of creativity and the professionalization of the artist are filtered at the local level, prior to the achievement of international success. In the Philippines, this translates to the migration of artists and their work from the provinces to the urban centers, making Metropolitan recognition a necessary career path, thus creating problems in the evaluation of career arcs that deviate from this norm. The model provided by this period of participation in the Information Age – with its variety of platforms for practice, production, and curatorship – could potentially displace existing art institutions as arbiters of taste and producers of culture.

This article looks at the career of Gromyko Semper, whose online presence has led to exhibitions and commissions overseas. Through a placeless practice, in which he constantly races against time, Semper's career provides an example for discussing a deterritorialized art world and the accelerationist aesthetics with which to evaluate it.

Keywords

Biocybernetic reproduction. Affective networks. Accelerationism

Introduction

Thousands upon thousands of websites, pages, and platforms have risen among the millions sharing the web. This is further affirmed by the rise of digital natives – a generation of internet users, fluent in the language of Web 2.0 and familiar with the opportunities it creates, wherein web users turn to "centralized services rather than independent websites to share and access content online" (Connor 2013, para. 2). When applied to the art world, Web 2.0 has not only changed the consumption of culture, it has also democratized the public's capacities for creation and commissions as well as collection, curatorship, and even criticism.

Loney Abrams, in *The New Inquiry*, begins her essay "Flatland" by stating that "Far more people see art on screens than in museums. The gallery is no longer the primary exhibition space; the Internet is… The digital image is supplanting the art object… the digital photographic image can be understood as the homogenizing, ubiquitous medium of our era." (2013, para.1) This statement finds itself realized by the online collective, JOGGING, in *An Immaterial Survey of Our Peers*: an ongoing exhibition which conflates the image with the exhibition space. The dozens of digitally composited photographs of otherwise empty walls at the Art Institute of Chicago, linked to a Tumblr blog of the same title, *An Immaterial Survey* was "meant to question the ongoing tendency to believe material interaction with art is mandatory despite living in an age of utter dependency on the digital image as an informational source" (JOGGING n.d., para. 1).

While Filipinos have been named among the most active users of social media ("Social networking in the Philippines", n.d.), there is little critical facility on how Filipino artists have used the internet in general, and digital imaging in particular. Publications and proceedings in Philippine Art History remain limited to the results of traditional gatekeeping, recognizing artists mainly for their work shown in established galleries and museums. These institutions remain dismissive towards work shown online and treat the contributions of the web as incidental. These are typically considered as avenues for commentary, but not criticism, despite the availability of new applications and platforms that have reconfigured the context for distributing and displaying Philippine art. And yet, platforms devoted specifically to the exhibition and marketing of artwork, such as Behance, Deviant Art, and Society 6, have a sizeable

number of Filipino users who have used its international scope to reach markets and influence audiences abroad.

This growing presence of "crowd" generated schemes and systems ubiquitous to Web 2.0 require a framework for looking at Filipino art in this economy of attention, where an artist can post an entire series of work, which – as Abrams points out – becomes archival content the moment it goes online. The combined efforts of creation, selection, and archiving online have already signalled a convergence of content curation with content creation, and this is seen in the career of Gromyko Semper, a visual artist based in Cabanatuan, Nueva Ecija – a town ten hours outside of the Metropolis.

Semper is just one of a handful of artists who have prospered without the linearity of moving from the studio to the exhibition hall, and without the commercial representation and critical feedback that many artists in the metropolis benefit from. This paper looks at Semper's career as a means of applying the following concepts: biocybernetic reproduction, transnational affective networks, and the resulting deterritorialized and accelerationist aesthetics that are beginning to signal shifts in the teaching of art theory, history and historiography.

Who is gromyko semper?

"[W]e recognize in Gromyko Semper an artist who does not play games with his time," wrote John Paul Thornton in his introduction to Semper's self-published portfolio, *Sacrae Particulae ex Nihilo*, which can be ordered online through his account on Blurb.com. In the same essay, Thornton – the Art Education Coordinator for the Los Angeles Department of Cultural Affairs – also called Semper, who is now 28, "a young artist who stands at the crossroads of two realities: One is grounded in a tradition of high cultural metaphor, while the other is a sensual dream world of feverish risk (Thornton 2009, para.1)."

Semper did not graduate from any Fine Arts program and does not lean towards any of the contemporary genres, preferring, as Thornton wrote, "the great religious and historical visual languages of the world". Indeed, much of Semper's work veers away from the conceptual, borrowing instead from what he calls the "pure" aesthetics of past centuries. Writing for GMA *News Online* in 2011, Sylvia Mayuga speaks of the same feverish efforts Semper has devoted to building a career in art, claiming that "He was in a hurry about it, [too]… Pictures in books, TV and comic book cartoon characters flowed from his little fingers (para. 3)."

A graduate of the BS Science program at La Fortuna College in Nueva Ecija, anatomical and botanical influences lent themselves to his finely rendered details. "Metaphysics became my friend in college," quotes Mayuga, who characterizes Semper as the stereotypical bullied introvert who retreated to school libraries where he

"'devour[ed]' a range of subjects way ahead of his peers," becoming what Mayuga calls an "autodidact". Despite these reported exceptional qualities, Semper did not finish college; instead, he began building a career after enrolling in art classes at the only gallery in Cabanatuan, where he began teaching at the age of 16 and was soon promoted to "senior artist" (Mayuga 2012, para. 4).

While conventions require an artist statement and curriculum vitae, the particulars of Semper's career and vision are framed on Deviant Art, a platform and online community of which Semper has been a member and avid user for the past seven years. His works on this platform are posted as "deviations", wherein the deviation with the most views is *A beggar and a cup* (2007). The statistics on his Deviant Art page, as of March 2014, showed that: "gromyko has 115,363 pageviews total and their 1,333 deviations were viewed 727,772 times. gromyko watches 907 people, while 1,603 people watch[es] gromyko." ("Gallery Stats for Gromyko", n.d.). It was also through Deviant Art that Semper met James Koehnline, a Chicago-based artist who headed the group, "The Surreal Arts". Beginning in 2007, Koehnline would serve as Semper's "mentor," discussing surrealist philosophy and teaching him technique online. In 2009, he would leave the online group, making Semper its new leader (Semper, personal communication, November 16, 2013). It is evident that Semper has made better use of Deviant Art for promoting his work and forming a peer group, than he has done with his facebook fan page, *The Art of Gromyko Semper,* where he only has 707 "likes" (the equivalent of fans) as of March 2014.

When it comes to Semper's use of the popular social network for making both personal and professional connections, Semper has 4,744 friends, only 256 people shy of the 5,000 friend limit. It is also on facebook that we find that Semper's work, "has been exhibited in Germany, the United States, Portugal, France, Russia, Austria, Australia, Japan, Singapore and the United Kingdom" – all of which are logged in the "Places" feature of every facebook account.

In 2009, Semper co-edited *Imagine the Imagination – new visions of Surrealism* with Hector Pineda, a Mexican artist. After that, he illustrated a work of fiction for the American writer, M.A. Fink, and continued to accept commissions from artists and writers abroad, with one collector as far as California having amassed over 200 pieces, including 3 collage books at 300 pages each (Semper, personal communication, November 16, 2013). Illustration skills, pen and ink in Semper's case, have been instrumental in building art careers online, due to the flat and easily flattened nature of the media involved, from the tools used to create the art, to the media used to deliver it to the viewer.

By catering to foreign tastes and the demands of a market that is not present in the Philippines, Semper

has been prolific in the display and distribution of the flat media he is known to work with. Bypassing local gatekeepers, he has successfully avoided being co-opted into any national agenda of myth and meaning making that artists working within public and private institutions are typically subjected to. Semper exemplifies a strand in the adoption of neoliberal strategies in the art market: by posting his work on facebook and DeviantArt, he not only makes his own myth, he sells it – effectively stepping over institutional regulators and going directly to outside sources of validation through publishing and exhibition. These establish him as a rare case of provincial isolation thriving in a cosmopolitan milieu, made possible by his connections on the web. Semper is one of the many examples of Abrams' observation that the internet provides a venue, in which, "Artists have the ability to create vast social networks online, promote themselves and their artworks, and use social media platforms like Facebook, Instagram, and Tumblr to share images themselves." Foregoing physical space, art is capitalized upon through mechanisms of self-promotion, as artists develop their skills not only in the production of the work, but by diligently documenting and sharing, thus "encouraging artists to be productive and prolific" (Abrams 2013, para. 4).

Biocybernetics in an age of deterritorialization: A placeless practice

That Semper is able to receive commissions and sell work without his pieces having been seen up front signals a new turn in how objects are interpreted and consumed in the Information Age. It has been emphasized earlier that those who belong to regions where artistic practice is not cultivated are thereby excluded from the spaces of art production. This limits their access to physical exhibition space, commercial representation, and their acceptance among peers in the so-called "creative class". It is through these circumstances that artists such as Gromyko have learned to be more resourceful in their use of digital media.

"Digital media reduces everything to numbers," wrote Lev Manovich in 1995, long before the rise of Web 2.0. "This basic property of digital media has a profound effect on the nature of visual realism. In a digital representation, all dimensions that affect the reality effect – detail, tone, color, shape, movement – are quantified (Manovich 1995, para. 17)."

But Semper, having built both a portfolio and persona through these channels cannot simply be reduced to the dystopian realm of digitization and measurability. Taking Manovich's predictions into the age of Web 2.0 shows how Semper becomes a case study in biocybernetic reproduction: theorized by W.J.T. Mitchell to have "replaced Walter Benjamin's mechanical reproduction as the fundamental technical determinant of our age…

biocybernetic reproduction (high-speed computing, video, digital imaging, virtual reality, the internet, and the industrialization of genetic engineering) dominates the age that we have called 'postmodern'." (2003, p. 483)

In Semper's case, production, display, and distribution become difficult to distinguish, exploiting the "creative possibilities of a networked world in which the biological and material conditions of existence are forever transformed," (Ahn 2014, para. 5). Using attention as a resource in a transnational affective network, it is through the Web's modes of validation (such as likes, views, and hearts) that his work is successfully exhibited and his presence is confirmed. The nature of his craft – illustration—lends itself to this mode of biocybernetic reproduction, where artist, social media account, and online portfolio fold neatly into each other. Social media acknowledgements, aside from being a means to distribute his work, extend Semper's process. His use of the internet illustrates Mitchell's discussions concerning artists who cannot communicate or facilitate the distribution and production of his work without an electronic appendage.

Accelerationism and transnational affective networks: Running out of time

Semper's career has bypassed the more public systems of criticism and art education, turning to art practice and production that depends on forces in the private sector that are speculative, financialized, and derivative. Without traditional gatekeepers, artists must shift their practice to maintain their presence in an environment that thrives on constant change and novelty. When reconfigured for the screen, the production process becomes subjected to the aesthetics of accelerationism.

The shift to accommodate accelerationist aesthetics only adopts the contemporary need for speed, however it also creates a different set of prospects for artists practicing on the periphery, through what Gean Moreno calls "the potential to provoke innovative *cartographic exercises* [emphasis mine] that probe unprecedented social complexity and look for new liberatory programs that live up to it" (2013, para. 6). Given the circumstances in which an artist lacks the advantage of practicing in a particular place, time (or in this case, the timelines of social media) create another space in for artists to race against. The permeation of accelerationism into the art world affects artists in that they must sell, as well as create, not only the work but a self that is both digitized and deterritorialized.

The phenomena surrounding "accelerationist aesthetics" was first tackled by Steven Shaviro in *Post-Cinematic Affect*. Rather than characterize accelerationism as a literal drive towards inevitable meltdown, Shaviro treats it as "a cunning practice through which to capture and redeploy existing energies and platforms in

the service of a re-universalized left politics" (Moreno 2013, para. 4).

Thus, accelerationism depends just as much on the existence of Dean's affective network (2010, p. 91), subverting the institutions, and filtering updates through the community one forms online with the online nature allowing for the transnationalization of these affective networks. Related to Dean's concept is Siegfried Zielenski's "coercive context", wherein "Media are an integral part of the everyday coercive context... As cultural techniques, which need to be learned for social fitness, they are at the greatest possible remove from what whips us into a state of excitement, induces aesthetic exultation, or triggers irritated thoughts" (2013, p. 5–6).

Conclusions

Working within existing frameworks for theorizing and historicizing art, the transnational affective network fostered by social media is clearly not enough to sustain artistic practice. Subjecting artistic production to the forces of the attention economy only oscillates and accelerates these phenomena, in which "[e]verything must be marketed and made subject to competition. Everything must be identified as a 'brand'" (Shaviro 2013, para. 10). Semper's online presence demonstrates these practices of competitive branding, wherein frequent updates are rewarded with precious attention, and it is in the content of the updates that we identify a 'brand'. How both the 'brand' and the act of branding fit in with the art world demand further inquiry; what is certain though is that while 'branding' belongs in the vocabulary of the market, it still occupies a questionable place in the language of the art world.

Speaking of value, when it comes to investments (commercial or otherwise), Abrams points out that "[w]hile online social networking provides the potential for artists to garner attention from collectors and other sources of income, collectors need to be convinced that their purchases will be secure investments. Gallery representation and their contracts offer the artist the credentials necessary to be viewed as a worthwhile investment," (2013, para. 5).

Besides questions of investment and commercial representation, biocybernetic reproduction and dependence on transnational affective networks exploits the absence of an artistic community – one which is integral to the evolution of an aesthetic, a canon, and a coherent identity for contemporary artists to work with. For this, Dean argues that "Affective attachments to media are not in themselves sufficient to produce actual communities – bloggers are blogging but the blogosphere doesn't exist... Affective networks produce feelings of community, or what we might call 'community without community'" (2010, p. 104). Moreover, an absence of community could have profound effects on criticality, subjecting artwork instead to the financial mechanisms of postmodern capitalist production. The creation of communities of Philippine contemporary artists has evidently subsumed these mechanisms in the past, creating collective identities that outweigh the effects of Western or Westernized (read: neo-colonial) intervention. To the advantage of artists like Semper, the absence of communities contains potential for creating new avenues of criticism and validation. Semper himself laments the inherent cliqueishness or "*barka-dahan*" of the Metropolitan art world, which only displaces his practice even further, and sometimes escalates towards questions of "Filipinization" or affirmation of national identity (Semper, personal communication, November 16, 2013). Semper struggles with this added dimension of placelessness which stems from not identifying with any collective. This same struggle could grant an avenue of opportunity (or affect) that is transnational in scope: in his own words, "i love a more syncretic approach in [sic] art" (Semper, personal communication, November 16, 2013).

What is certain is that in Semper's development of a placeless practice, one which constantly races against time (aside from refusing to play games with it), he paints a picture of an art world that is flattened and dependent on a different kind of texture and interaction; yet is idealistically democratized while thriving primarily on attention, and secondarily through sales.

While the exchange of objects is an undeniable fact in the economy of Philippine art, there remain difficulties surmounting problems of audience development which cannot be addressed by sales. These are further complicated by the roots of Philippine art education remaining planted in Western traditions, which construct the chronology of art-making as a move from material to cognitive technologies, wherein aesthetics developed from a Modernist ethos guide the teaching of Art History, criticism, and curatorship. These pedagogies extend their influence across the board: from the academe, to the museum, to the galleries.

A booming blogosphere and widespread use of social media may provide a counterpoint to this existing approach, however it also creates a fragile foundation without the proper platforms – both online and off – to frame it. The Philippines is an especially vulnerable case for these phenomena by feeding the neoliberal impulse to support its most prolific practitioners, ultimately blurring the boundaries between development and production, as seen in the work of Gromyko Semper.

Maria Alicia A. Sarmiento
MA Museum Studies
University of the Philippines
Philippines
alice.a.sarmiento@gmail.com

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Claudia Mourthé & Pierre-Henri Dejean

Aesthetic taste and cultural diversity: The emotional and rational of the individual

Abstract

This article explores the development of an aesthetics framework that aims to provide designers with parameters to understand emotion, taste, and aesthetic judgment under their own cultural influence. This framework will equip designers with tangible criteria for judging cultural influences that have an impact on industrial design while preventing designers from adopting subjective options or being "followers of the current trend." To address the complexity of the topic, a systemic approach is taken so as to be able to capture its several elements. Therefore, the aesthetics framework adopts a systemic approach, which enables its constituents to be compared and the interplay or "links" between these different elements to be identified.

Keywords

Introduction

The diversity of aesthetic taste is a fact recognized by philosophers and, more generally, by anyone who considers the topic. Given such evidence, this paper seeks to go further and to explore in greater depth some of the numerous reflections on the issue of aesthetics in design, and shall endeavor to present the designer with tangible answers by developing tools for analyzing consumers behavior.

From a practical viewpoint, this paper seeks to fill a current gap in terms of knowledge of, and methods and tools for analyzing aesthetic taste. Our ambitious aim is to bring about a more objective and transparent discussion of aesthetics as an interface between the user and the product, while taking the individual's rational and emotional being into consideration.

This paper fits within the field of design with a view to making the individual's perception vis-à-vis various products more tangible.

Problem

If aesthetics is important in the design world, it should be dealt with in a much broader way than in the art world, because in deign it also covers use and its value includes the relationship of the body linked to action and movement.

Norman (2004), Liu (2001), Dehil (2006), Hekkert (2006) are among the authors who stress the importance of aesthetics and culture in design and show the influence of the environment on the taste and judgment of the individual when faced with objects. However, these issues are often left on the subjective plain and subject to random decisions and even arbitrary ones.

The functional aspect of the object cannot be neglected nor can one forego the aesthetic aspect, because the goal of design is to respond to the needs and forms of usability, among other issues. Therefore, the designer should seek to coordinate both aesthetic and functional aspects. We can even speak of an aesthetic function which is aesthetics functioning as an important element of the interface with the user.

Hypothesis

It is believed that it is possible to construct a benchmark in design so as to situate individuals' aesthetic taste with regard to various products, by taking the influence of the cultural context into consideration.

Methods and techniques

The conceptual end-purpose is to understand the individual's behavior vis-à-vis their aesthetic or utilitarian/functional judgment of objects from different cultural sources.

Through the systemic model and its interrelationships of the individual's taste and culture, the conclusion can be drawn that individuals have their own way of feeling and/or judging; culture is always represented in the universe of the individual; the individual´s characteristics that arise from human nature are a bridge of equality among all individuals, because they are hereditary and universal.

Survey of structuring elements for constructing a schematic representation

Let us start by introducing the synthetic representation of two central elements – the rational and the emotional of the individual – regarding taste. This first step enables knowledge of "the individual's emotional taste" and "the individual's rational taste" to be examined in greater depth vis-à-vis the perception of the beauty and the utility of a product.

The individual's emotional taste

David Hume (2000) states that "the objectivity of the beautiful, if it exists, will not be sought outside human nature, it can only consist of a concrete universality of feelings". He also says that "The feelings of men differ constantly in relation to beauty and deformity of every kind, even when the discourse as a whole is the same" (…) "every feeling is just, because the feeling has no reference outside itself; it is always real, whenever a man is conscious of having it". Hume (2000) also says that trying to define a real beauty or deformity real is fruitless because "beauty is not in things, but is in the spirit of whomsoever contemplates them".

Emmanuel Kant (2006) simplifies the issue by writing that "a beautiful object pleases us". The judgment of taste expresses this pleasure which we experience when an object is before us. Any other judgment is a judgment of knowledge: "The judgment on the beautiful reveals the analysis of this thing that makes an impression on us: it is a universality that is not conceptual but rather aesthetic; not objective, but subjective".

In the contemporary references on design, Norman (2004) considers that "attractive things make working better ´ – they produce positive emotions, by prompting a mental process that does not become more creative, but more tolerant given the difficulties.

The rational taste of the individual

Karlsson (2005) wrote that understanding feeling (which comes from reason) is not evident (…) and that a judgment or an opinion may be a desire or an aversion. In other words, the rational side – based on an opinion founded on logic – can generate the desire for or aversion to an object. A rational principle, in particular, a rational objective, can only exist in beings who are endowed with reason. But the question of an emotion which may also have effects on reason should not be neglected.

The influence of the cultural context

Mattelart (2002) says that "cultures are a vision of the spirit. Since the dawn of history, of the changes in the world, the cultural and institutional models peddled by hegemonic powers, have come across people and cultures who have resisted their domination and who have been contaminated or have disappeared. In this cultural crusade, forms of syncretism were born".

Genevieve Vinsonneau (2002) considers culture as a human production, directly dependent on the social actors and their interactions.

Culture, then, is anonymous, the fruit of common efforts, but to the extent that the singular individual separated himself/herself from the group and acquires a certain autonomy of thoughts and feelings, he/she expresses an individual identity.

Hofstede (1994) sees culture as a kind of mental programming and states that each of us carries within ourselves ways of thinking, potential feelings and actions that are the result of continuous learning.

He presents 3 levels of human mental programming:
- Personality – unique to the individual and is hereditary and acquired.
- Culture – that is specific to one group or one category and is always acquired.
- Human nature – which is universal and also hereditary.

We will use only two: "culture" and "human nature". The "personality" will not be considered, because it encompasses the individual psychological question which goes beyond the focus of this study. Therefore the construction of the model allows each individual to locate himself/herself in their culture of origin and the emotional and rational tendencies.

Hofstede's statement about continuous learning – "each of us carries within ourselves a way of thinking
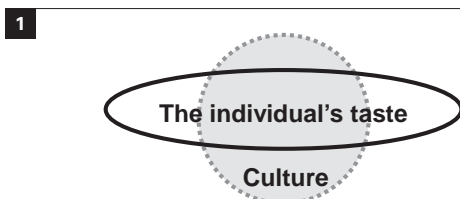
Figure 1 Interrelationships of the individual's taste and culture (2008).

and potential feelings and actions that are the result of continuous learning" – confirms the force of the culture on feeling and consequently on aesthetic taste based on feeling. But the mental programming differs from one group to another and from one category of people to another, in addition to which "every nation is strongly implicated morally in its own dominant mental programming" and the differences between each culture end up being made explicit.

Graphical formalization of the systemic model
The approach to the systemic model aims to compile the different elements in question and to identify the multiple interrelationships between culture, the rational and the emotional of the individual. The study of a graphical representation of this system is both a tool for reflection and seeks a form of communication to facilitate dissemination and understanding in new horizons. The graphical representation is equally a very common form of communication and reflection for designers.

The taste of the individual, the object of reflection of the user of the model is represented by an ellipse that occupies the center of the figure. The extremes on the left and right represent the emotional and the rational. The superimposed circle represents the culture.

Recognition of the value of the 'beautiful' and the 'useful' being attributed to objects
This development considers that a central element is the opposition between the rational and emotional de-

veloped in the analysis model. Given this principle, two aspects were considered in relation to individuals' perceptions about the objects: the first concerns the products that people consider 'beautiful'; the second, those that individuals consider 'useful'. The 'rational' and 'emotional' aspects of individuals are at the base of the structure of the method for analysis that was developed.

To achieve a more thorough and detailed analysis, a method was developed that presents the results graphically in a clear and understandable way. This tool is based on the principle of the semiotic square of opposition put forward by Greimas (1987).

Exploitation of the model
This tool built from the perspective of design addresses the subjects from uncommon angles that belong neither to marketing nor to sociology, nor to philosophy, but have a little of each of these disciplines. For example, we take into account not only the individual's preference, but also the best-selling products (marketing) and the perception of usefulness and beauty.

The method was developed to bring the 'beautiful' and the "useful" face to face, thus enabling the status that the individual gives the product design to be perceived. The objective is to control the relationship between (culturally different) individuals when in the presence of objects / products (from various sources). The purpose of the method is to help designers, ergonomists and even marketing professionals to better understand the individual and what attracts him/her.

Figure 2 Systemic model 'the taste of the individual versus cultural influence.
Figure 3 Semiotic square of opposition by Greimas (1987) and Chandler (2002).
Figure 4 Shaure of the analysis of the beautiful and the useful.

Recognition of the values of "beautiful" and "useful" attributed to the objects

As a central element, this procedure places the opposition between the emotional and the rational model developed in the first model – by applying this principle to the relationship between the individuals and the objects while considering two aspects: the first corresponds to the products that people regard as beautiful; the second corresponds to the products that people regard as useful. The rational and emotional aspects of the individual are at the base of the structure of the method.

To achieve a thorough and detailed analysis, which gives evidence of the nuances between the perception of the object as beautiful and/ or useful and the preference for these objects in a clear and objective way, this tool is based on the principle of the opposition of the semiotic square.

Greimas (1987), Chandler (2002), Klinkenberg (2006) and others claim that the opposition structures the semiotic universe. Thus we work on this aspect of opposition between the 'beautiful' versus the 'useful' and also the 'beautiful and useful' versus 'neither beautiful nor useful'. Using these considerations, we present all the variables that we managed to identify.

Figure 5 Graphs of the 'best-selling product' in the three countries surveyed: Thailand, Tunisia and Brazil.

Analysis square of the principle of the opposition of the beautiful and the useful.

This model is intended for organizing the field work carried out on products by asking respondents to classify from (0) to (3) what they considered beautiful and useful. The answers appear in the corresponding square. Example: utility "two" and beauty "one". So we have a mapping of the perception of the object.

Sometimes the same product can be considered as both beautiful and useful. In this case, take into account the different values are taken into consideration within a scale from 'zero' (nil) to 'three' (maximum) as per the individual´s judgment.

Each internal square illustrates a possibility worthy of note. The colors from pink to blue and violet to white, also illustrate the change of judgment: pink for the 'beautiful', blue for the 'useful', violet for the "beautiful and useful".

Application of the method in surveying handicraft products with a cultural connotation

This is a research field that uses the model to study the perception of handicraft objects sold in stores in three countries with a strong cultural identity which, however, are very different from each other. They are: Thailand, Tunisia and Brazil (with a total of 173 surveys completed).

The procedure adopted in the field research began with the selection of the regions and the stores considered as the most representative ones in cultural terms. The form of data collection occurred similarly in the three countries surveyed, and used the same approach and interview procedures. Those surveyed – small and medium traders and artisans – who served a public of tourists at the international level. Thus, the results led us to reflect on the behavior of the individuals within their own cultural context and having come up against the look and expectations from other countries.

The questions asked for the nomination of the three most beautiful objects, the three most useful objects, and among them the one preferred and most sold in the shop.

The factor of 'preferred' was considered the most important one because the answer comes directly from the individual's opinion who spontaneously classifies the object as 'beautiful' and/ or 'useful' which refer to the emotional and the rational.

As to the cultural influence, it is important to remember that the trader and the product he chooses belong to the same cultural context.

The factor of 'most-sold' can shed light on consumer preference which is based on information relating to the sale of products. In this case we can obtain an estimate of the products most consumed that would represent the preference during purchase.
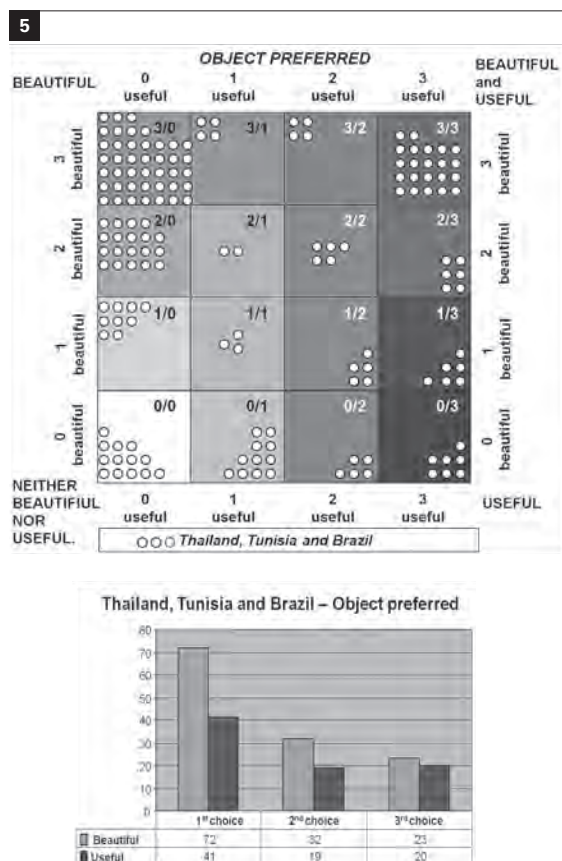
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Aesthetic taste and cultural diversity: The emotional and rational of the individual

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Results

During this study, we found logical and expected answers but also revealing answers of surprising facts. The logical answers are proven in discussions on aesthetics and philosophy. In this case, this study obtained results that confirm both the respective discussions and the validity of the method.

The analysis of the results shows a study at two levels: in the first, it is a question of checking which objects are classified as 'beautiful' and 'useful' by the traders who took part in the survey. Then we will check the preference and the sale as per the classification. The objective is to know if the preference is associated with emotion, through choosing the 'beautiful' or the 'rational', through choosing 'useful'.

In both cases – both in the preference and in the most sold – the products considered the most beautiful are in front. We can then anticipate that the emotional plays an important role in the preference and choice of products.

For the products 'preferred', the preference is expressed more based on beauty than utility but the rational cannot be overlooked.

For the 'best-selling' products, the results confirm that the ones most sold are always the most beautiful ones, but this proportion, the difference between the beautiful and the useful is less representative.

It can also be said that the 'rational' aspect by means of perceiving the utility should also be considered as a non-neglectable factor in the preference and sale of a product.

The analysis square by considering the principle of opposition enables us to visualize all the answers that were classified twice, by also considering the order of choice.

The analysis of the results of each country confirms to us the behavior given the similar judgment in the three cases. That is, the procedure of the individual is universal. Therefore it is associated with the characteristics of human nature, for there is no noteworthy difference between individuals from different cultural contexts.

Claudia Mourthé
Ph.D.
Universidade Federal do
Rio de Janeiro – bav – eba. ufrj
Brazil
claudiamourthe@uol.com.br

Pierre-Henri Dejean
Ph.D
Université de Technologie
de Compiègne,– utc
France

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Track 2

Shifting Education

Bo Gao

Shifting education with customised learning environments: A case study on university Metalware Engineering Center renovation

Abstract

The new Massive Open Online Course (MOOC) has battered the traditional education model and triggers the design professional's impulse on educational innovation. With this new concept in modernization education, It is one of the extensively talked issues in China that how the universities are able to transform to be more sustainable, more interactive for the demands of the students. This paper is discussing around the application and practice of service design in transforming the university learning environment to be more sustainable, and the possibility of implementing service design methodology to current high education course system. As a practical project, the case outcomes are aiming to explain how "Service Design" improved the learning quality through interdisciplinary connections with environmental graphic design, and how it helped to create a customised innovative education field based on the learner's needs that changed the traditional way of teaching in the classroom.

Keywords

Learning environment renovation. Service design. Environmental graphic design. Education field

The background

In 1998, Boyer Commission on Educating Undergraduates in the Research University published a blueprint for America's Research Universities "Reinventing Undergraduate Education". This report presents ten recommendations for the radical reconstruction of undergraduate education at research universities, to establish affective learning relates to values, attitudes and behaviors and involves the learner emotionally (Kerry Shepherd, 2008). Very similarly as Boyer's report, in recent years with development of information technology, sustainable education is regarded as a new high-potential education model experimented by couple of China universities. The sustainable development of universities, according to Mr. Gang Wan who used to be the president of Tongji University and Minister of Science & Technology, is to build up the sustainability in teaching, learning, researching, social servicing and international collaborating. Based on the emerging theories of ecological/systemic thinking, the redesign of education needs to occur in relation to the alternative values of the current society: social/ecological responsibility, cooperation, community engagement and contextual knowing (Sterling, 2005 and Capra, 1994).

The wave of educational reforms in the past decade brought up new requirements not only in education approaches themselves, but also affect in learning environment. MOOC (Massive Open Online Course)provides interactive user forums that help build a community for students, professors, and teaching assistants against traditional course materials such as videos, readings and problem sets. MOOCs have the potential to serve as "educational positioning systems" that precisely navigate students through their curriculum along individual "pathways and routes to maximize student success." (Linda and John, 2012).

We have been adopting Service Design methodology in the education model transformation, to use it as the human-centered design process considering "a deep understanding and respect for human behaviors, attitudes, dreams and capacities as the essential premise for any design action." (Meroni and Sangiorgi, 2011: 203). In the past years Service Design started to play more and more significant roles in the public service sectors including education, medical and mass transportation.

So we are practicing more and more frequently to make the service design and the environmental graphic design work together, not only to change the physical

environment with latest technology but also to built the "inphysical" part of the education to provide new life to the learning and research facilities.

The project we share in this paper is one of the series of "University Facility Innovation Program" in Tongji University, The Metalware Engineering Center. This facility (The Metalware Engineering Center) was built in 1950s and used to be a place of "Excellent Engineer-to-be" for students to practice metal goods production. But now after 50+ years, it has no relation at all with "excellence" because of its aged working environment and outdated equipment. We carried out successful design efforts to renovate this facility and make it with brand new vitality, not only new look but also new functionality. This paper is introducing how we use service design methodology to change this old works to be a modern multimedia learning place, and how we apply service design approaches and processes to change the facility to be part of "sustainable campus", and satisfy the demand of student's potential aspiration of learning. This paper also demonstrated how the environmental graphic design eliminate the cold feeling and rigid sense of the factory, and stimulate the self-learning in an innovation way.

The project overview

Before our projects in Tongji University, there has been already meaningful practice for designed learning environment in the education sector. IDEO, a leading design consultancy, is an industry pilot who has engaged in couple of educational innovation projects. "The Stanford Center for Innovations in Learning" (SCIL) in Stanford University is one of them, where brings together teachers, scholars, and students from around the world to study how to improve formal and informal learning across cultural boundaries. SCIL is located in a century-old building on the Stanford University campus. The value to service design and the case we are talking about in this paper is that SCIL also applied service design approach to rework and renovate its facilities to make them flexible enough to accommodate new tools, new

workspaces, and new methods discovered by the Center's research. In addition to IDEO projects, we also know series of projects of North Carolina State University "Natural Learning Initiative". The initiative includes different topic projects and research programs to explore how design can help improve the teaching and learning experience. They applied multiple environmental scenarios to assist the education, used approaches of action learning and nature play to activate the learning motivation and behavior.

Tongji University is named as one of the universities under "Excellent Engineer Education and Training Programs" by Ministry of Education, so it has initiated a numbers of projects to batch-by-batch renovate the workplaces and facilities built in last century. As part of renovation outputs all the projects need to consider how the environment and facility can be enhanced to meet the new requirements of learning and teaching technology.

These projects can represent the common transformation practice in China universities, may not the exactly same premise but the common guiding principles and innovation objectives. It is realistically valuable when we focalize our interests on the direction of educational environment design. Service design is expected to play more significant role in pushing forward the regeneration of campus facilities, bringing new image and functionalities to the infrastructure, and improve the experience to meet the requirements of technological innovation.

The Project Approach

In this project, the following guiding principles were agreed to develop our design and implementation approach:

• Integrate the 4 effective learning elements into the new university facilities – Learner, Teacher, Knowledge and Environment
• Construct a people-oriented education field
• Encourage active and effective user participation

Figure 1 The Engineering Practice Center in Tongji University built in 1950s used to be a space for students to practice metal goods production.

Figure 2 The core principles for designing effective Learning Environments.

Before and after the design progress, we conducted a question survey from January to May and in September 2013, in the Engineering Practice Center. The questionnaire was developed around the above key principles related to study and work in this particular space, the expectations before and the evaluation after the renovation. The teachers and students involved in the survey come from various engineering related departments in Tongji University, including civil engineering, mechanical engineering, automotive, aerospace, and industrial design. These feedback data and information laid the foundation for the effectively design.

In the communications with the management team of the Engineering Practice Center, the director told us that machinery manufacturing work requires a high degree of concentration; long working hours and high intensity, the nervous tension of the manipulators have remained high. Coupled with the noisy work environment, prolonged fatigue jobs tend to make people tired of negative emotions and can easily lead to accidents. Therefore, we hope the working space to become more lively and interesting through design, so that the students can get relaxed quickly inspired after having break and maintain positive and pleasant working conditions during the practice and achieve good learning results.

Back to the 4 effective learning elements we adopted in this project, the Learner, the Mentor/faculty member, the Knowledge, and the Environment (Boettcher 2003), the center is the "learner". This principle can be captured by envisioning a learning experience featuring the learner "on stage" actively learning under the direction of the mentor/faculty member using a set of resources containing the knowledge/content/skills to be learned within an environment. (Boettcher, J. 2007)

THE LEARNER (the learner, may be an individual student or a group of students)
THE TEACHER (the mentor/faculty member who provides instruction and support to the learner. The mentor/faculty member may be physically present on stage, may remain in the wings directing the learner, or may only be present implicitly by virtue of having designed the instructional event. This element may also be an inanimate learning object such as a text or video component that provides instructions and guidance from the faculty member.)
KNOWLEDGE (the knowledge, the content, or the problem that is the focus of the instructional experience.)
ENVIRONMENT (is determined by answering the question, "When will the event take place, with whom and where and with what resources?")
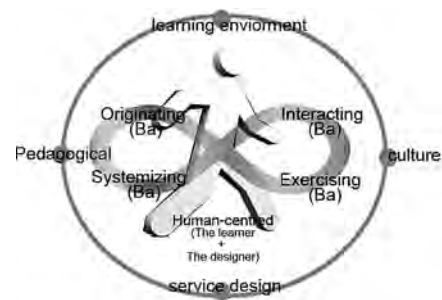
Figure 3 The service design framework we used to construct the learning facilities shows the four "fields" of processes including knowledge development, learning environment, pedagogical, and design with culture.

Creating the touchpoint into the "education field"

Service touchpoints are the tangibles, for example, spaces, objects, people or interactions (Moritz, S. 2005), that make up the total experience of using a service.

The touchpoints refers to an entity or a kind of interactive form, can make the whole experience into a service. A successful interaction contains a plurality of touchpoint and will constitute touch surface. The touchpoint is the key to success of the entire design project. Touchpoints can take many forms, from advertising to personal cards; web-, mobile phone- and PC interfaces; bills; retail shops; call centres and customer representatives. In service design, all touchpoints need to be considered in totality and crafted in order to create a clear, consistent and unified customer experience. (Live| work, 2008) In this case, the touchpoint deepen into the point that how to built the make the "education field" for the different purpose and help the teachers and students get the expected services.

Professor Ikujiro Nonaka has proposed the SECI model, one of the most widely cited theories in knowledge management (Gourlay 2003), to present the spiralling knowledge processes of interaction between explicit knowledge and tacit knowledge. The space for learning between people called "education field", which is a sharing learning space able to create and correlation relation, for further comprehension, This "education field" includes the physical, virtual, spiritual space. Ikujiro Nonaka proposed four "field" corresponds to the four processes of knowledge creation, relevant to knowledge transformation process of four stages, respectively as "founding Originating (Ba), interactive games (Interacting/Dialoguing Ba), systematic field (Cyber/Systemizing Ba), and driving range (Exercising Ba)".

Founding field (Originating Ba) emphasize open organizational design, that makes direct conversation and communication between individuals. Interactive games (Interacting/Dialoguing Ba) stressed that everyone with

an open attitude to communicate with each other suffi-ciently, turning the tacit knowledge into explicit knowl-edge, in order to create new knowledge and value. Sys-tematic field (Cyber/Systemizing Ba) refers to the use of virtual world than real space and time to interact. Within the organization will be the new explicit knowl-edge combined with existing information and knowl-edge, in order to update the explicit knowledge, and make it systematic. Driving range (Exercising Ba) under the guidance of experienced teachers and colleagues, practiced by means of viewing or practical exercise, which can be used in real life or simulation of explicit knowledge, and continue to put these knowledge inter-nalization.

The Excellent base is about 3,600 square meters. Two cross-layer spaces are main space areas in it. The height of the layers is about 6.5 meters and the span is about 50 meters in east-west and 30 meters in north-south. Based on questionnaires and interview and recorded for the walking routes of the students first time into the base, we designed 13 practice space in these two layers and 6 different studying and serving areas, and set up signs, graphic stickers and dynamic displays to estab-lish the service touchpoint of multidimensional stud-ying style interspersed with learning, practicing, dis-cussing and testing.

We used environment graphic design and mascot de-sign as the two core design elements to support each other, complementing each other. To eliminate the cold

4 Photos	Design method	Number of User Participation
	Character Graphics	Teacher: 6
	Mascot Design	Student: 18
	Mascot Design	Teacher: 2
		Student: 10
	Character Graphics	Teacher: 6
	Mascot Design	Student: 18
	Character Graphics	Teacher: 6
		Student: 18

Figure 4 The case of the Engineering Practice Center of Tongji University.

feeling and rigid sense of the "character graphics" and "mascot design" appears alternately in different func-tion space, and design a series of small animation, includ-ing wayfinding system, course inquiry, part of the oper-ating interface and image promotion of metalworking practice. An interactive system and center webpage applied to the space inside the liquid crystal display screen scroll to broadcast, digital signage displays. Us-ing these digital devices and network media, can be more intuitive and convenient for people to provide services and to promote the practice of the center for image better.

Encourage active and effective user participation

Service designers use methods where the user is en-abled and has the power to influence a service design process. Co-design work is carried out on a regular ba-sis, and new innovative methods are developed to al-low inclusion, creativity and engagement (SATU, 2013). User Participation assists to establish the touchpoints and play a role in this practice. We put Chinese char-acters as the original point of the design and add some graphic as the expression of the auxiliary information. We tried to add some fun and some culture elements while keeping the identification of the system, so that foreigners or people without engineering background can find their ways when they first come into the huge space. However, owing to the recognisability of Chinese character, there are some difficulties when combining it with graphics, especially when solving the professional recognition problem of the same character and graph-ic at the first glance.

In the first stage of design, we found the error rates of characters "铸" and "息" were the highest of all the words. "铸" is a refined word of "铸工", which means molding, the work that melting casting objects, also known as "Foundry molder". Therefore, we selected the design intention of casting. Then we invited 6 teachers and 17 students from different major, including civil en-gineering, aerospace, mechanical engineering, indus-trial design, to have a test and conduct an investiga-tion about the recognizable of the visual symbols. We understood the users' acceptance of the symbols and let them participated in the design process. And from their own professional understanding, users suggest-ed the way of combination of characters and graphics that is more in line with the professional orientation.

Research data and analysis

No doubt, you can't change which you don't measure. To support the environment renovation, we applied a continuous measurement approach of user experience at each touch point with the teachers and students so that the further improvement actions can be taken.
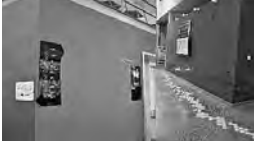
Figure 5 Photographs of the final completed visual design.

The measurement approach, by the way of survey, was developed based on three dimensions of rating questionnaires, which are:

MAKE IT EASY: whether the renovation supports different aspects of easy self-service, from visual comfortability to better functionality.

GET IT RIGHT: sometimes it's the little things that bring the big impact. Getting the basics right will deliver a solid foundation across people, process and technology. It includes critical changes to the ponderous feeling and ineffective spatial layout.

DELIGHT ME: a set of design works to win the "hearts & minds" of students and teachers by delighting them at different occasions throughout their experiment journey. It aligns to the commitment to construct a people-oriented education field. In line with the above approach of understanding the user experience on the design results, we randomly surveyed 78 students at the base. Survey results show that most of the students interviewed will go to the base weekly to learning metalworking practice. Most students feel very satisfied with the overall situation on the base, especially for the spaces, the equipment, the

environmental graphic design as well as the mascot design. These results suggest that users are satisfied with the result of this design.

In the entrance and staircase, there are over 9 different kinds of spaces lie in the base. Among the students surveyed, 51% believe that this is the biggest feature of the base. Meanwhile, 26% of students believe that the spaces of learning areas are diversified, and 38% of students think the discussion areas are very changeable. 35% of the students said, environmental graphic in the base is very interesting, especially on the black well in the second floor and the display wall in the first floor. 60% of students satisfied with the space environmental graphic. 63% of students study in the base via the team than the individual. 62% students willing to teach by the teacher hand by hand. 91% students think the spaces of learning areas satisfied their demanding of the study, and 89% students believe the learning environment make them learning effective and interesting.

The feedback from the students also made a lot of good recommendations, which provide good references on the design process and results. Some students suggest setting up floor plan so that they can find a destination more easily; another part of the students wish to set more partitions between the various regions in order to reduce mutual interference. Students also hope that we can set more rest and activity area, so they are better able to have break at lunch time. Some of the recommendations were valuable, whereas we cannot change temporarily, such as reducing the noise made by facilities, setting more drinking water supplying area, etc.

The survey also reflected some of the deficiencies in the innovation project. In the design, we give more consideration to the feelings of Chinese students and teachers than the foreign visitors. Whether they are able to accept the amount of design as well as ways to present information, we do not have specific in-depth studied. While some of the key points, we should set up

Figure 6 Photographs of the final completed learning environment .

some large signs which can be moved, so visitors can better help themselves finding ways in the base. Because of the limited cost and time, the construction quality did not meet the expectations, which also makes the design effect not that satisfactory.

Conclusions

In an education environment, knowledge will be not only taught, but more importantly, also be delivered by emotion, atmosphere, feeling, memory, and other intangible non-spoken ways. By using an old Chinese saying "行不言之教" (Laozi, 770 BC), which means teacher should use their behavior to influence students, rather than endlessly tell students how to do, and encourage the students to try his best to find learning resources to consciously think through his own proper way, to explore every students are most suited to their methods. Such face-to-face communications and immersion learning help cultivate students' self-awareness, communication skills and team spirit, which currently a virtual online learning or MOOC is not able to offer. From students' feedbacks, we can know that the success of the service design is attributed to satisfy the needs of providing human care and welfare. While we are envisaging huge potential in customising physical education environment for the inspiration of all dimensional learning needs, we can continuously apply service design and environment graphic design methodologies to differentiate and make the traditional education more vibrant.

Acknowledgements

Bo Gao
College of design & innovation
Tongji University
China
gaobotj@163.com

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Katja Thoring & Roland M. Mueller

Spatial knowledge management in design education

Abstract

The main goal of design education is to transfer design knowledge to students, and to foster the creation of new knowledge through design project work. The main facilitators of such knowledge transfer and creation are obviously the teachers, along with the supply of relevant literature. However, the role of the physical environment as a knowledge facilitator in design education has not been extensively analysed, so far. This paper tries to fill this gap. We investigate the role of the "creative space" (architecture, classroom design, and furniture) in a design educational environment in terms of its capability to support design processes, and specifically its capability to facilitate the management of design knowledge. The main contribution of this paper results in the comparison of actual architectural characteristics and spatial elements (such as whiteboards, showcases, classroom furniture, etc.) as identified in two case studies with an epistemological taxonomy of spatial knowledge management. We analyse these elements regarding their capability to store and transfer design knowledge, which we believe will contribute to a better understanding of the role of space for managing design knowledge in design education and practice.

Keywords

Design Education. Creative Space. Learning Environment. Design Knowledge. Spatial Knowledge Management

Introduction

The environment, in which students learn to design, can have a significant impact on the quality and effectiveness of their design work. Architecture, furniture or workshop machinery, and the overall room layout can influence the process of designing, and specifically the process of design learning—which means the storage, the access to, the transfer, and the creation of design knowledge – in a positive or negative way. This paper tries to investigate the role of the "creative space" in a design educational environment in terms of its capability to support design processes, and specifically its capability to facilitate the management of design knowledge.

Related Work

There are numerous papers that focus on the effect of space on various variables, like collaboration (Oseland et al., 2011), performance (De Croon et al., 2005), health (De Croon et al., 2005), innovation (Haner, 2005; Moultrie et al., 2007), creativity (Thoring et al., 2012; Van Der Lugt et al., 2007), class room learning (Harvey and Kenyon, 2013), and student engagement (Jankowska and Atlay, 2008). There is only limited literature about the role of space in knowledge management. Earl (2001) presents a taxonomy, which distinguishes between seven schools of knowledge management; one of them is the "spatial school" that focuses on the facilitation of knowledge exchange by space. Peschl and Fundneider (2012) look at the relationships between space, innovation, and knowledge creation. Razzak et al. (2013) analyse the role of space on knowledge creation and sharing in distributed teams of software developers. To the best of our knowledge, there is no paper that looks at space in the context of design (education) and knowledge management.

Knowledge Management

The Knowledge Management (km) literature distinguishes between two fundamentally different strategies for managing organizational knowledge: Codification and Socialisation (Hansen et al., 1999; Nonaka and Takeuchi, 1995; Nonaka and Von Krogh, 2009; Nonaka, 1994).

Codification

The strategy of knowledge codification focuses on externalized (codified) knowledge, which can be easily stored in digital or printed form (e.g. in libraries or data-

bases), accessed, and reproduced. Codification means that the knowledge is codified in documents, which can be retrieved, copied, and transferred by people (document-to-person knowledge management). This strategy has significant advantages when it comes to knowledge that is independent from its context, that is long lasting, and relevant to a large number of people.

Socialisation

The strategy of socialization (also known as personalization), however, is focusing on knowledge that is mainly implicit (internalized). The knowledge is stored, transferred and reproduced mainly verbally through people (person-to-person knowledge management). Knowledge management systems that focus on this strategy establish expert-portals and consulting hotlines, rather than libraries and databases. This strategy has advantages when the knowledge is highly context-related, short-dated and spontaneous, and relevant to a limited number of people.

Design Knowledge

Design Knowledge has specific characteristics that distinguish it from other disciplines. The main goal of design is to create new and innovative concepts – the knowledge is usually highly contextualized, short-term and needs not or cannot easily be reproduced and trans-

ferred to many people. Part of design knowledge is tacit – an intuition for good form or the ability to create innovative design concepts is sometimes not easy to explain, to externalize, or to reproduce. These qualities of design knowledge require a personal exchange, rather than a codified storage system, which makes it more predestined for the above-mentioned *socialisation* strategy of knowledge management.

Additionally, the act of designing involves working with artefacts, creating and building things, and working with tools and materials. However, the artefact dimension – specifically the capability of artefacts to store and represent knowledge – is rather disregarded in established knowledge management theories.

To better understand design knowledge we refer to a typology of design knowledge by Mueller and Thoring (2010), see Figure 1.

This typology distinguishes between four levels of design knowledge: On the physical level (Level A), design artefacts are able to store information within their physical shape, which means that knowledge about a specific handling, usage or function is "frozen" in the form of an object (example: a bottle opener stores the knowledge of how to open a bottle in its physical shape). The concept of embodied knowledge is also mentioned by Cross (1993). On the neuronal level, knowledge is represented as tacit gut-feeling or design intuition (Level
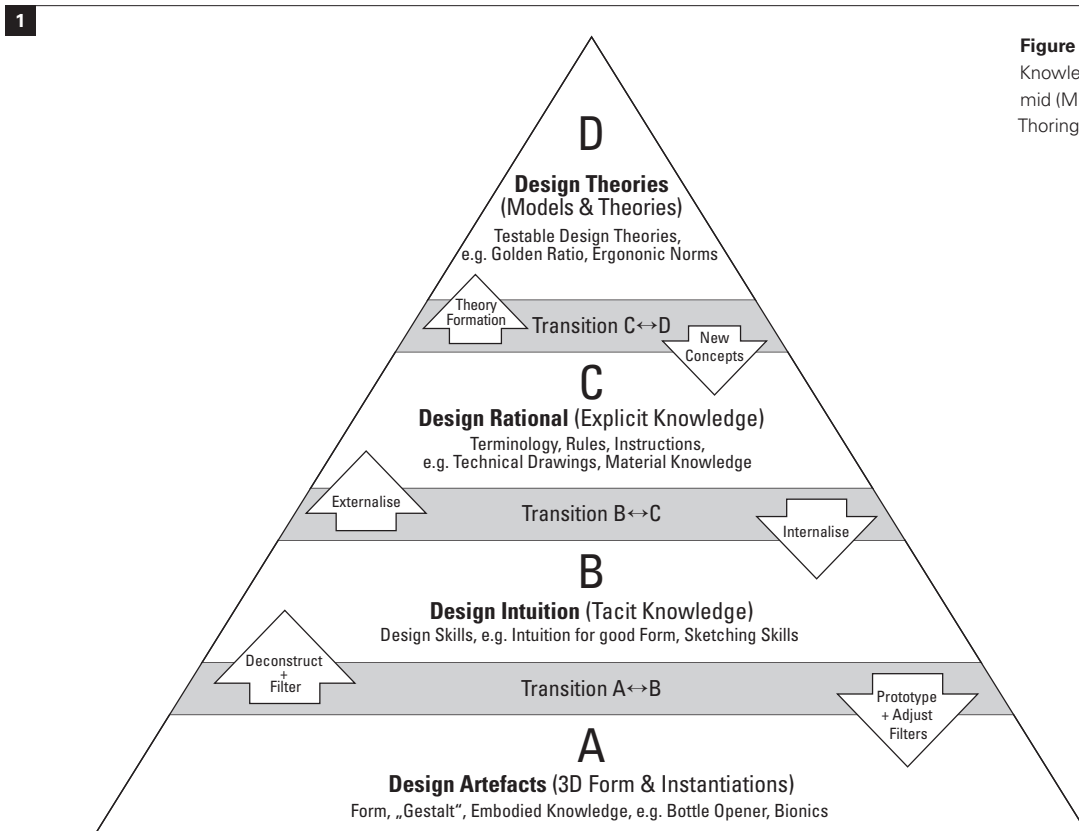
Figure 1 Design Knowledge Pyramid (Mueller and Thoring, 2010)

B). One just 'knows' how to design something, without being able to explain why (similar as the knowledge how to ride a bike). This concept is also mentioned by Polanyi (1966) and Cross (1993), and relates to the above-mentioned *socialisation* strategy of knowledge management. On the symbolic level (Level C), knowledge is represented in codified form – as text, images, rules, and instructions (similar as in e.g. a cooking recipe). This type of knowledge relates to the before-mentioned *codification* strategy of knowledge management. And finally, on the model level (Level D), design knowledge is represented as theories or testable models (such as ergonomic norms).

A specific emphasis is given to the transitions between these levels, in which new knowledge is being generated, by filtering signals from the environment or deconstructing existing artefacts (A>B), by adjusting filters and by prototyping and modelmaking (B>A), by externalizing intuitive knowledge (B>C), by internalizing codified knowledge (C>B), by theory formation (C>D), and by concept development (D>C).

Spatial Design Knowledge Management

This section analyses the physical space on an abstract level regarding its capability to facilitate the management of design knowledge, according to the four levels of the afore-mentioned typology of design knowledge. Management involves the acts of storing, representing, accessing, transferring, and creating design knowledge.

Level A – Artefact Knowledge

The artefact level (Level A), in which design knowledge is stored in the physical shape of an object or in a spatial arrangement, plays an important role in terms of design knowledge facilitation.

Tools and machines in workshops facilitate the working with and the creation of artefacts. The knowledge about a specific production technique is holistically stored in those machines and tools, which can be extracted by working with them. Finished or interim models and prototypes store knowledge about the particular design of themselves. Displaying those artefacts (e.g. in shelves or showcases) facilitates the access to such knowledge by other students. The knowledge management through artefacts is relatively unknown in traditional knowledge management, but seems to be of major relevance for design and design education. We suggest involving this "embodiment" strategy, which makes use of artefacts to facilitate KM, systematically into design education. Figure 2 illustrates an abstracted creative space, which focuses on the suggested artefact-based *embodiment* strategy of knowledge management.
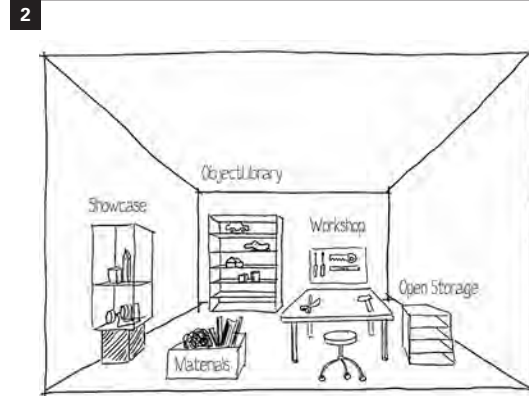
Figure 2 Abstracted creative space facilitating the suggested artefact-based "Embodiment" strategy of Knowledge Management
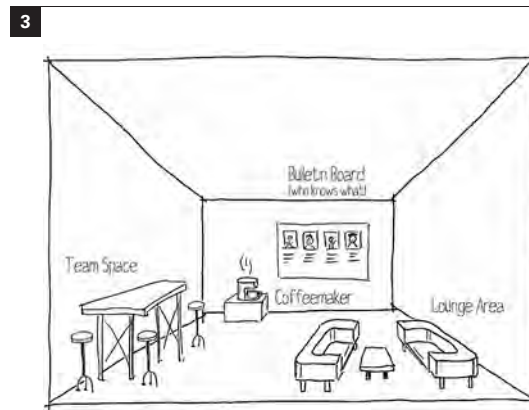
Figure 3 Abstracted creative space facilitating the "Socialisation" strategy of Knowledge Management

Level B – Tacit Knowledge (Design Intuition)

The Design Intuition (Level B) is difficult to transfer and teach, due to its intangible nature. The afore-mentioned *Socialisation* strategy can facilitate the management of tacit knowledge. In design, tacit knowledge can be transferred or generated by (informal) conversations between people and storytelling, through trial-and-error and experimental learning-by-doing, or by a master-apprentice relationship. Feedback from other people or directly from the material (which e.g. breaks at a certain treatment) can facilitate the development of a design intuition. The space can facilitate these aspects, e.g. through designated experimentation areas ("tinker spaces"), furniture for teamwork and social exchange (sofas, group tables, conferencing furniture etc.). Lounge areas and informal meeting points like the coffeemaker or a kitchen also foster the exchange of tacit knowledge. Also, the distances between tables, chairs, or within work areas can be arranged in such a way that communication and socialization are encouraged. Figure 3 illustrates an abstracted creative space, which focuses on the *socialisation* strategy of knowledge management.
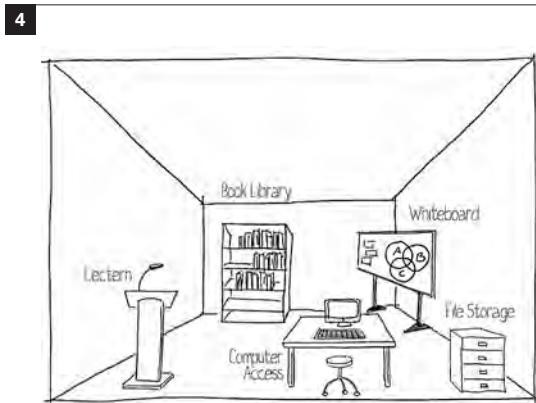
Figure 4 Abstracted creative space facilitating the "Codification" strategy of Knowledge Management

Level C – Explicit Knowledge (Design Rational)

The Design Rational (Level C) is knowledge in externalized, codified form, which can be stored in books, or in digital form, and it can be accessed and transferred by reading or by lecturing. The space can facilitate a *codification* strategy of knowledge management by providing a library, bookshelves with books, and computers with Internet access. Auditoriums with designated lecturing furniture (e.g. lectern) facilitate the transfer of verbalized knowledge through lectures, while whiteboards, chalkboards, or other writeable walls allow for the storing of notes for other team members (like an extended memory). Figure 4 illustrates an abstracted creative space, which focuses on the *codification* strategy of knowledge management.

Level D – Models and Theories

The Model and Theory level (Level D) represents design knowledge in the form of scientific theories and testable models, which means highly compressed and abstracted, codified knowledge. Hence, the role of the physical space in this level is similar as for the Design Rational (Level C): Theories can be stored and accessed through books or digital databases. The creation of new theories requires also writing facilities (e.g. computers or whiteboards for teamwork). However, one spatial concept of particular interest for this type of design knowledge is an explicit testing space (e.g. Usability Lab), in which theories can be tested.

Transitions Level A>B and B>A

As mentioned before, the transitions between the four levels allow for the generation of new knowledge. We focus on the transitions between the Levels A and B (both directions), since these seem to be most relevant for spatial aspects in design education, since design knowledge is often tacit, and it involves the creation of artefacts.

The transition from the Artefact level towards the Design Intuition level facilitates the creation of new design knowledge by filtering signals from the environment, or by deconstructing existing objects. Signals from the spatial environment refer to any stimuli the space can provide, which can have both, a positive (inspiring) or a negative (distracting) effect (e.g. noise from other co-workers or from the outside environment, background music, smells from material work in the workshop, views through windows, etc.). Physically or conceptually deconstructing existing artefacts might help to gain new insights on how these objects were designed. Providing a collection of inspirational objects might be a facilitator for developing such knowledge. The space can support such collections, e.g. through shelves, object (gadget) libraries, or showcases. The transition vice versa, from the Design Intuition level towards the Artefact level involves adjusting filters to focus on only the desired stimuli from the environment (this might involve adding stimulating materials for prototyping, or removing stimuli by installing curtains or acoustic baffles). Also, prototyping and experimenting with materials foster the development of new design knowledge. Materials (provided within the space as a collection in shelves or boxes) can facilitate this process.

More detailed information about the specific characteristics of the four levels of design knowledge and the adjacent transitions can be found in Mueller and Thoring (2011, 2010).

Taxonomy of Spatial Design KM

In the following, we summarize the characteristics of spatial knowledge management for design education in a taxonomy. A particular focus is given to the role of the spatial environment on storing, transferring and generating design knowledge, according to the aforementioned typology of design knowledge. We distinguish between space, spatial elements, and interior design elements. Space includes the architecture itself, such as the characteristics of the building (windows, walls), entire rooms (workshop, library), and the surrounding environment (parks, streets). Spatial elements, however, are referring to elements inside the building or the room, such as furniture (chairs, tables, stools) or working equipment (machinery). Interior design elements refer to the interior design of classrooms (materials, colours, curtains). We believe that all three categories can be utilised to facilitate the management (i.e. the storage, the access to, the transfer, and the creation) of design knowledge within design education. We analyse and compare the characteristics and the knowledge functions of all three categories. The results are summarized in an epistemological taxonomy of spatial knowledge management (Table 1).

Level of Design Knowledge	Example	Category	Knowledge Function
A Artefact Knowledge (Embodiment Strategy)	Tools and machines	Spatial elements	Embodied manufacturing knowledge
	Open storage (shelves)	Spatial elements	Possibility to store interim working models
	Showcase/ cabinet for prototypes	Spatial elements	Prototypes incorporate embodied knowledge
	Locks and doors	Architectural elements	Knowledge protection
	Material collection	Spatial elements	Materials facilitate prototyping
	Object (e.g. gadget) library	Spatial elements	Artefacts embody knowledge
A > B Transition	Windows	Architectural elements	Provide view and stimulation (signals)
	Noise, music	Interior design elements	Provide stimulation (signals)
B > A Transition	Curtains	Interior design elements	Filter signals, prevent stimuli
	Acoustic baffle	Interior design elements	Filter signals, prevent stimuli
	Workshop	Architectural + spatial elements	Facilitates prototyping
B Tacit Knowledge (Socialisation Strategy)	Sofa	Spatial elements	Facilitates exchange of tacit knowledge (storytelling)
	Team space (e.g. group table)	Architectural + spatial elements	Facilitates exchange of tacit knowledge (storytelling)
	Kitchen / Coffee Maker	Spatial elements	Informal meeting point, facilitates exchange of tacit knowledge
	Experimentation / tinker space	Architectural + spatial elements	Facilitates learning-by-doing, trial and error
	Bulletin board (who knows what)	Spatial elements	Facilitates finding the right expert
C Explicit Knowledge (Codification Strategy)	Whiteboard, chalkboard	Spatial elements	Stores explicit knowledge (notes, sketches)
	Writeable wall	Architectural + interior design elements	Notes can be stored directly on the wall to be accessed by other team members
	Library	Architectural elements	Stores explicit knowledge (books)
	Bookshelf	Spatial Elements	Stores explicit knowledge (books)
	Lectern	Spatial elements	Facilitates lectures
	Auditorium	Architectural elements	Facilitates lectures
	File cabinet	Spatial elements	Stores and protects explicit knowledge
D Models & Theories	Usability lab	Architectural elements	Facilitates testing of theories

Table 1 Taxonomy of Spatial Knowledge Management

Case Study

Based on two cases in two design educational institutions in Germany (Dessau Department of Design of Anhalt University of Applied Sciences, and the School of Design Thinking of the Hasso-Plattner-Institute in Potsdam), we provide examples of spatial aspects that facilitate the management of design knowledge as described in the previous section. The Design Department in Dessau is a traditional public design school, while the School of Design Thinking in Potsdam is a private institution for the teaching of Design Thinking. Interestingly, the space designs of both educational institutions are quite different.

The Design school in Dessau offers a combination of different rooms types: some for classes and lectures, some for project work (workshops). On campus there is a library with reading rooms, a student cafeteria and a canteen. However, there is no such thing as a lounge area or even comfortable seats within the main buildings, which might facilitate the exchange of ideas and other forms of tacit knowledge. Codified knowledge is available in the library. The workshops, however, are well equipped and provide space for experimenting and tinkering. Project works (final models and mock-ups alike) are displayed in some glass cabinets in hallways, and in some of the lecture rooms in shelves, as provided by the individual preferences of the teachers. Overall, the focus seems to be on the codified knowledge management strategy (which was identified to be not the best approach for design education), and on artefact-based learning in workshops and with materials. However, the socialisation strategy was not addressed at all, other than through the providing of a canteen.

The School of Design Thinking in Potsdam offers dedicated team spaces, a small library, located directly within the main teaching spaces, but also additional material and gadget collections (some kind of libraries of artefacts and materials). Sofas and lounge furniture are available at several spots, to allow for informal knowledge exchange. Work examples from previous projects (prototypes and mock-ups) are displayed in shelves and on boards, ready for anyone to inspect. But also a lecture space (auditorium style) is provided for presentations and lectures. The socialisation strategy was much more addressed, but not by forgetting about the codified knowledge management as well. Only the workshops were not as good equipped as in Dessau.

Discussion

How should a learning space that facilitates knowledge management in design education look like? Traditional knowledge management strategies suggest either a codification approach, based on libraries and lecture-spaces, or a socialisation strategy, based on communal areas and meeting points. As an extension of these concepts, we suggest a km strategy based on artefacts, to facilitate the utilisation of embodied knowledge. According to our afore-mentioned analysis, the management of design-specific knowledge should focus on the *socialisation* and *embodiment* strategies, since these facilitate the km of design-specific tacit knowledge, as well as the km through artefacts and prototyping. Hence, spatial concepts to facilitate the km within design educational institutions should include the providing of 1) lounge areas (such as sofas), team-furniture, and informal meeting points to support exchange of tacit knowledge, 2) areas for experimenting (workshops or tinker spaces), to facilitate prototyping, 3) material and object/gadget libraries, to facilitate the access to artefact-based knowledge, 4) sufficient supply of prototyping materials, and 5) the display of previous work results.

Obviously, we do not suggest abandoning the codification strategy of km, based on libraries, lecture spaces, access to computers and databases, and writing equipment, such as whiteboards, but these are already available in almost any design educational institution, which is why there is no need to focus on these.

We believe, that the results of this paper might contribute to a better understanding of the role of space for the management of design knowledge, and that it might help design educators to adjust the layouts of their classrooms accordingly.

Future work

Recently, new forms of educational concepts have been developed, for example Massive Open Online Courses (moocs) that focus on distant learning via Web tutorials, videos, and user forums. These new forms of education offer many opportunities, such as the teaching of nearly unlimited numbers of students. However, such learning environments—literally without a physical space—also bear some challenges, especially for design education. Future research will try to answer the question, how these virtual spaces have to be designed in order to facilitate the management of design knowledge in the future.

Another future research approach will focus on investigating the spatial requirements for the management of knowledge on the Model and Theory level (D).

Katja Thoring
Anhalt University of Applied Sciences,
Germany, and Delft University of Technology,
Netherlands
k.thoring@design.hs-anhalt.de

Roland M. Mueller
Berlin School of Economics and Law,
Germany
roland.mueller@hwr-berlin.de

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Mette L'Orange

Approaches to colour in architecture and design: The discourse of Polychromy / Teaching colour today

Abstract

A persistent "Chromophobia" (colour refusal) has for decades characterized contemporary architecture. However, there is now a growing international interest in architectural polychromy through new technology, new materials and coloured lighting. New generations can be expected to be attuned to the current trends. It is however important to ask whether the fascination for new technology leads to any deeper understanding of colour as a phenomenon, including dimensions such as psychology, neurology and sustainability. It is also important to ensure a personal, local, site-specific approach to colour to prevent global trends from leading to fragmentation, superficiality and loss of environmental identity. A renewed debate on architectural colour is overdue. Marginalization of this discourse has led to greatly reduced colour teaching and lack of inspiration among design students. This paper discusses how this inspiration and knowledge can be regained.

Keywords

Colour. Chromophobia. Education. Multidisciplinary. Past/Future. Le Corbusier.

A persistent Chromophobia[1] has for decades characterized architecture and interior design. With the focus on sustainability, natural materials and their inherent colours seem to dominate the arena, allthough the colour green has a strong symbolic value. This position is understandable when it comes to "reduce, reuse, recycle", but why should our responsibility with the Earth's resources leave us with environments in need of red and blue, yellow and orange?

We most certainly need to unite sustainable thinking with a colourful environment. It is therefore most encouraging to see the growing international interest in Polychromy[2] that has been awakened in the younger generation. We see this fascination especially in terms of new technology, new materials and the possibilities of coloured lighting. The question is whether young practitioners know how to handle the possibilities? It is therefore important to ensure a deep understanding of all dimensions of colour to avoid different unexpected impacts. This includes important values such as psychology, neurology and materiality. Knowledge of this may endow design with the potential to changes of perception depending on such circumstances as light, movement and time, or to activate the spectator in space through a greater stimulation of the senses.

Within the frame of ecology and universal design, teaching colour should also ensure a more personal and as far as possible, local, site-specific approach, contradicting international trendforecastings and global attitudes. We far to often see that this leads to fragmentation, superficiality and loss of environmental identity. First and foremost there is the need for a renewed debate about architectural colours in the academic field.

Marginalization of this discourse has not only led to greatly reduced colour courses in a variety of design and art colleges, but also to grave, sensorial deprivation in our surroundings.

Reactions from students

A design student at Oslo National Academy of the Arts (KHiO) in Norway newly dedicated her Master thesis to the subject, so did another student at Oslo and Akershus University College of Applied Sciences, Faculty of Technology, Art and Design. This is great news, and not

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1   Greek: Chromos: Colour, Fobi: Fear
2   Greek: Poly: Many, Chromos: Colour

surprising. The latter student, Hanne Dyrlie Løhre, how-ever conveyed alarming statistics. Her review of the 2008–2012 annuals of the journals "Form" and "Arkitek-tur N"[3] showed no traces of any colour debate. Her in-vestigations in fact revealed that colour is neither es-sential for architects and designers, nor is it discussed in teaching practice. She also claims that new aware-ness for architectural colours should be understood by introducing a number of practical aesthetic exercises in "real time", hands on, Architecture. Theory is not enough, and for too long there has been stagnation in the trans-formation of relevant colour theory to fit contemporary thinking. It is interesting that suggestions of a better teaching program are coming from the students.

I greatly support this, because academising of the institutions must take much of the blame for the loss of innovative colour practice. I believe that an under-mining of this discipline must be fought with the oppo-site force, a knowledge boost and an acknowledgment of colour as a valid subject. In Architecture, colour is one of the most vital elements for organizing, or disor-ganizing, space and volume. We must pick up the vital pieces and continue the discourse.

Colour deprivation

Chromophobia has long traditions and influential dis-ciples.

The famous Norwegian architect and professor (School of architecture in Oslo), Sverre Fehn (1924–2009), said in an interview with a student that he was not a "colour man". The colour for him appeared in the choice of building material, wood concrete, bricks, etc. If he were to work with colours it had to be raw and brutal, not as a "thin film on the surface."

Fehn represented a generation of Norwegian (and international) architects who largely rejected polychro-mia. It was as if the hues violated the volumes. We know this rejection of colour from early Modernism. The archi-tecture should, as Mies van der Rohe had claimed, be a neutral setting for human action and expression. Inte-grated colour schemes where impossible in the light of this ideology. The traditional Japanese house was also a fascination for these architects, where unobtrusive ex-pression highlights and frames the natural colour spec-trum. Fehn was, however, fascinated by Le Corbusier personal approach to colour in Architecture. If he were to paint, he would have liked to work like the French master, with genuine pigments and with the artists ap-proach to volume and space. He expressed a frustration at the fact that we have lost touch with the natural col-our sources, the earth or the surrounding plants, stones and animals. We can understand this frustration. Post-

3 The most important Norwegian journals of Architecture and Design

war future visions of industrialization hit the paint pro-duction and we no longer saw colour as something per-sonal, tangible and material. Consumer-oriented sys-tems like Pantone and ncs (Natural Colour System) were both abstract and unpredictable, too much and too little at a time. We choose among thousands of small colour tags and are often disappointed of the result. The interaction of light, colour and size is not easy to master. In addition, numerous building components are pre-col-oured from the manufacturer and must be coordinated with the in situ colouring. It is not without reason the Swedish researcher Karin Fridell Anter has devoted her doctorate to this issue, published in book form as "What colour is the red house?" Colouring of architec-ture requires knowledge and courage. As long as there is no substantial education of professionals, which can guide people, municipalities etc., there is either colour denial or chaos. Paint manufacturing industries are gov-erning, and if they don´t impose upon us general trends of white and grey scales, its "Sandy Beach", "Rumba", "Carnival" or "Sahara." These trends have lingered for a while inside peoples homes, and maybe one might think this is a private matter, but when the same trends hit the road to public spaces, street-and townscapes, we are faced with a serious loss in identity and tradi-tional holistic colour expressions.

How, and why, has the white colour, which once would assist and enhance polychromy, been given such a sta-tus? This is where we have to gaze back to understand.

The white rhetoric

The cultivating of white can be traced back to Aristotle and Plato, who considered a painter's work for mixing of "drugs" – or PharmAkon. For much of European his-tory, white has been seen as purity, perfection and in-nocence, associated with intellect and reliability. Strong hues on the other hand have been associated with sen-suality, emotions, instincts and instability on the bor-der to mendacity. The artist and author David Bache-lor writes about this in his book Chromophobia, which first appeared in 2000: "Figuratively, colour has always meant the less-than true and the not-quite real." Colour represents", he says," the disobedient, eccentric and subversive." Colour is uncertainty, doubt and change; – it is "the other." He argues that this ambivalence to-wards colour has resulted in attempts to purge Poly-chromia from culture and to devalue and diminish its importance and complexity in education. In architec-ture we recognize the white myth through a simplistic and falsified retelling of history. We can blame the black and white photograph, but more serious is the lack of appreciation of such hand fast traces of colours as those found on the ancient temples in Greece. In the wake of the discovery of Pompeii and Herculaneum (Stuart and Revett 1763), and the subsequent recognition of the vivid

colours of Greek monuments and Architecture, so much idolized by western thinkers, there was a big debate in Europe. In the French journal Jupiter Olympian from 1815 contemporary experts in architecture and art exposed their views, including William Morris in England and Gottfried Semper in Germany.

They urged the disciplines to cooperate in art, craft and architecture, and to acknowledge the colour-reconstructions of the past as "Allkunstwerk"[4]. Towards these idealists stood circuits arguing vehemently for the white, colourless expression, focusing on the sovereignty of form over colour, and white's ability to articulate light and shadow. The artist Auguste Rodin was one of the staunchest representatives of this argument. The debate sent European architects in two directions, causing a rift that still exists. The historical denial of Greek Polychromy, on the border of hallucination, has been cemented by several museum institutions, historical collections and not to forget, the powerful Hollywood film industry.

"Medelhavsmuseet"[5] in Stockholm recently made an important contribution in this field. They released the catalogue "Vita lögner" (White lies") (2010) in connection with a meritorious display of reconstructed antique sculpture. It documented Polychromy on the basis 200 years research. Museum Director Sanne Houby-Nielsen asks in the preface how art, architecture and philosophy had developed in Europe if they had acknowledged this fact rather than reject it?

Attempts to awaken colour awareness. Early twentieth Century movements.

At the Bauhaus School in 1920s, architect Walter Gropius (1883–1969) and his followers rejected historicism with superficial motives in favour of the industrial expression, stripped of ornament and colour. The artists who taught there were however influential painters including Johannes Itten, Josef Albers, Paul Klee and Wassily Kandinsky, whose theories and opinions on colours were deeply grounded in philosophy, physiology and psychology. Despite the debate within the school, teaching of art and design included a colour pedagogy that is still living through voluminous albums and books. The teaching of architecture however was less influenced by these workshops, and more so by ideas on form, material and industrial production. The records we have are those shaped by the black and white photographs: White walls and wide windows, gleaming glass and tubular steel furniture. Most of the architecture influenced by the Bauhaus, as well as the purist villas that Le Corbusier was building in France, were perceived in this way by the following generations. In reality, Mod-

ernist interiors were much more vivid than the photographs suggest. When you go to those famous places, you'll discover that many of them often have glorious splashes of colour to complement the white walls. And one of the most gifted colourists of the era was Le Corbusier himself. He was both an artist and an architect and much influenced by contemporary painters like Ozenfant and Leger. They convinced him that colour was a vital tool for articulating space and the vibrant shades he chose for his paintings developed into beautiful three-dimensional renderings of his architecture. Simultaneously De Stijl manifesto saw art and colour as the liberators of architecture. Geometric abstraction in painting, with the Dutch artists Piet Mondrian and Theo van Doesburg in the lead, influenced architects like Gerrit Rietveld, JJP Oud and Cornelis van Eesteren. Schröder House in Utrecht designed by Rietveld represents the symbol of "modern" and a new attitude towards integrated colour.

Many followed the polemics between Theo van Doesburg and Le Corbusier during this vital period. Plasticism with De Stijl promoted surfaces with bright colours, blue, red and yellow with black and white, grey grout and steel structures, a schema matching Mondrian images. Van Doesburg provoked his contemporary colleagues by disrupting interior walls and ceilings with strong colour forms. Le Corbusier however promoted primary colours as accents, while the walls should be continuous colour-bearing elements in muted shades. Colour should enhance form, not camouflage it. Parallel movements among constructivists in the USSR fostered artists like Mikhail Matiushin (1866–1934) and Kazimir Malevich (1878–1935) who collaborated in the colour classes at GINKhUK. Matiushin developed a colour system based on the after-image effect (successive contrast), used in art and also in architecture in St. Petersburg. The Swedish art historian Margareta Tillberg recently published unknown material on this in connection with her PhD. These and other movements of the time saw colour as a vital design tool.

We have a story of colour diversity throughout history to pick up and convey to students, a story unfortunately lost in the post war educational system. The colour theories that were developed also represent a solid platform for teaching today, but we have to transform the material to fit contemporary thinking on colour.

The role of the artist

Coloured lighting and new transparent media has re-introduced some of the brilliance of the spectral hues, reminding us of the thrill of medieval stained glass. Thermo-sensitive materials and shimmering metals are cladding fancy exteriors. The proverb "Paint is out" has been quickly absorbed. Light makes the design process simple where form and space dominates; a variety

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4   Art+Architecture
5   The Mediterranian Museum

of coloured light is imposed in selected areas. Not much of a colour decision to make really, because with led you can change the atmosphere in a room at any request. This of course might leave us with the dominance of white walls again, as long as daylight prevails. There is also a danger of the designer not being able to control the result in the long term, but maybe this represents a positive "user involvement?"

We live in an age of uncertainty, in that respect this is reflecting time. Instead of imposing order we see that colour confusion or contradictory expectations can be interesting. This is also due to the fact that artists find renewed inspiration in space design, through public art commissions. We are faced with quite bold approaches that can be provocative and conflicting to the architectural concepts. The artist is trying to avoid instrumentalisation and is thereby challenging the architects. The good thing is that it triggers debate. We must bear in mind the importance of the artist in the historical development of colour in architecture. Their knowledge and sensitivity is important, even today, when colour plays a less important role in the neo-conceptual art-world.

Despite of this development, I still see colour as a mediator between the disciplines, and I am convinced that joint work across borders can be the most valuable method to sophisticate Polychromy both in contemporary art and architecture.

Sources of inspiration-gazing back and forth

The complexity and challenge of the trans disciplinary work lies within the often contradictory, parameters and interests of the disciplines and players involved. Should Architecture be mere frames around human activity and not evoke emotions? Is that why colour has been discredited as a design tool?

The colour impact of a painting, however strong, can easily be tolerated because of its size and temporality. The impact of a space is much greater and needs another kind of consideration. Theo Van Doesburg provoked contemporary colleagues with his vivid colour scheme for café Aubette and other interiors in the twenties. Are we just as easily provoked today?

Artists and architects are responding very differently on these issues, the greater tolerance belonging to the artists. Lay peoples reactions to colour in architecture has been tested by several colour researchers, among them Dr. Jan Jansen's at Lund University with the conclusion that they seem to tolerate much brighter hues than designers think. So the main question is:

Who are we designing for? Are architects and designers themselves standing in the way of a more expressive colour approach?

To enhance "the cross over effect", I find that interesting examples from both artistic and architectural work is triggering energy among the students. Especially the controversial examples evoke reactions and discussions. One must realise that the nature and role of colour in architecture is different from that of art, but maybe we have made some artificial barriers, which are important to illuminate and subsequently dissolve?

One example of a personal approach to colour in architecture is the Norwegian functionalist Arne Korsmo, who always co-operated with artists. He developed a spontaneous and eccentric attitude and liked to mix his own paint from the strangest pigments, like ashes from a burnt pear-tree or saliva from tobacco. Another is a video interview with the artist Per Kirkeby who dreams his colour strategies, knowing first thing in the morning exactly which pigment to use in a specific painting. The way he applies colour to architecture is not much different.

The goal is therefore to build motivation in the students for an equivalent personal and fun relationship with colour, and develop an experimental practice, which can end as a portfolio of palettes, and flexible, maybe even conceptual, methods and examples, as a counterweight to the influence of glossy magazines. This idea of storytelling as a base for teaching practice within the colour laboratory exercises is meant as an accompanying strategy to the more traditional theoretic input, which is necessary for a deeper understanding, in order to build professional argumentation for colour choices.

Or, as the great colour pedagogue Joseph Albers always said: "See and experiment – then you can read the theory."

Colour between art and architecture
Research based teaching

My artistic research is aimed at supporting the development of this teaching practice.

Being an architect and an artist I study colour practise within the different fields to gain a better understanding of the colour phenomena, the behaviour of colour, the human responses and the historical traditions. Through this research I also hope be able to develop more complex and original colour projects in my own artistic and architectural practice.

As "interlocutors" in this process I have chosen artists and architects from the past and present who have developed personal palettes, philosophies or methods in their use of colour, or systematized them in interesting ways. These are people who have reflected deeply on the notion of colour across disciplinary boarders and see the vital potential of it in their work.

The current study include already mentioned Russian constructivists / artist Mikhail Matiushin, the Swiss architect and artist Le Corbusier and the Danish artist Per Kirkeby. On the agenda is also the work of the Finnish artist Silja Rantanen, who also has architectural ed-

ucation, as well as the German artist Katharina Grosse and the American architect Steven Holl (usa). Lastly the French design team Alain Bony and Jean Nouvel.

The plan is to penetrate and discuss the colour repertoire of their different oeuvres, vent the different philosophies and transform ideas and systems to inspire my own work and research based teaching and dissemination. A further aim is to build a colour laboratory in Bergen Academy of Art and Design (KHiB) that includes possibilities to work with both the material aspects of colour, including pigments and binders, as well as the digital and light aspects.

To give a better understanding of the different interlocutors, I will touch briefly upon their specific contributions, and finally elaborate slightly more on the colour philosophy of Le Corbusier, who has been the main focus of my research the last two years. He made an "idiot proofing" system of colour choice that is still is appealing today, because the colours are so great and mix so well with each other. Another is the quality in manufacturing and the fact that they win (very topical) eco-points for using nontoxic pigments. My work on this has resulted in a solo show in Bergen 2013 – "Who is afraid of red and blue" and a publication to be released in 2014.

Mikhail Matiushin (1866–1934) worked simultaneously with the Bauhaus and the Russian Constructivists in Russia. During the 1920s a number of institutes for interdisciplinary scientific research in art, design and architecture were founded in the Soviet Union. One of them was the Institute of Artistic Culture in Leningrad – GINKhUK – where Malevich and Tatlin also worked. One goal was to formulate a universal language with mathematics as the ideal science, to be collected into an encyclopaedia for visual culture (art, architecture, design); another goal was to redesign the world for the masses outside the 'dead' museums, and, as the third goal, to produce a new kind of human being. There the artist, musician and theoretician Mikhail Matiushin supervised the Department of Organic Culture with his Laboratory of Colour. His textbook/colour handbook was published in the Soviet Union in 1932 and has been applied to painting as well as architecture. However, the material was not known to the western culture until Margareta Tillberg, a Swedish art historian, published it as part of her doctorate. I find this material very interesting because it has physiognomy as a starting point with focus on how the eye and brain treats colour impressions. He claimed that a colour, it's after image[6] and a third link colour was the ideal colour harmony. The function of the link hue was stabilizing the triad

and makes each colour keep its authenticity. How he produced this link is still a mystery, and this triggers researchers as well as students. Grosse (1961–) and Kirkeby (1938–) has worked with architecture and space in a way that seems provocative to architects, with spray-paint and strong coloured forms that camouflage and break down form and space. Their colour palette is not particularly changed from painting to spatial relationships, or motifs. They have a personal approach, different from Matiushin and Le Corbusier – who developed more general systems. Silja Rantanen (1955–) works between the 2 and 3 dimensional, with transformations of palettes and design from architecture to "white-box" installation and painting. The palette seems to be unchanged and this then becomes a target for studying the nature and behaviour of colour in the respective disciplines. The designer Alain Bony (1956–) works close to the French architect Jean Nouvel (1945–). This team is demonstrating a brave and innovative approach to colour in interiors as well as exteriors, with bold and original palettes.

They use pigments, light as well as new materials, thus showing us the diversity that is possible today. I find them a wonderful example of "art+architecture+design" cooperation for the benefit of colour in all disciplines. Steven Holl (1947–) is concerned with the experiences of the senses and with colour authenticity. The poetry of moving coloured light reflections on walls and water surfaces, or the use of "coloured shadows", shows he has done his homework on Goethe. He is also working along the lines of Matiushin, but in a more direct manner, and only in his own projects, not trying to develop a general system or philosophy.

He has written about his personal relationship with colour in a way that triggers inspiration among students.

Who is afraid of red and blue?
Le Corbusiers Colour Keyboard

In Le Corbusier's (1887–1965) rhetoric order, purity, and truth was inscribed in a dazzling whiteness, so dazzling that history has overlooked the fact that his buildings were coloured. The Australian architect Mark Wigley, who observed that only one, all white house exists in Corb's portfolio, has fortunately managed to break this myth.

Le Corbusier did however express doubts about colour in architecture early in his career, especially in the exteriors. When he wrote for the magazine L'Esprit Nouveau in 1919, he presented himself as the architect Le Corbusier and the less important painter Charles-Edouard Jeanneret. In Towards a New Architecture from 1923 he declared that painting and sculpture should be free and completely separate from architecture. In his purist paintings however colour was highly sophisticated.

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6 Induced by looking intensively at a single colour. The colour that appears next to it is a light colour with complementary hue

Le Corbusier's palette in this period included a strictly limited family of pigments, divided into three categories: 1 "Grand Gamme", so-called structural colours: Yellow and red ochre, terra, white, black, ultramarine, and the colours arising from mixtures of these. 2 "Gamme dynamic", for smaller details and elements: Lemon yellow, orange, red, Veronese green, light Cobalt 3 "Gamme de transition": Alizarin (Krapplack), Emerald green and all lacquers.

Le Corbusier did not follow an objective analysis of harmonic colour relationship to achieve moods, as it was put forward by colour theorists such as Wilhelm Ostwald, but worked with his subjective experiences in painting. He had an artists approach and mixed pigments and binders in the studio or on site, thus building a bridge between craft, art and architecture. The concept of "The elastic rectangle"[7] or "Le plan libre" opened for plastic modelling of walls as a dynamic counterpart to De Stijl "infinite plane". Polychromy lead the eye through complex spaces made possible by reinforced concrete, the coloured walls should cultivate form and space in a play of light and shadow. The polarization of warm/cold and light/dark was highlighted in reds as a recipient of sunlight and blues as "vibrant shadow colours". With his associations of colours to different moods or atmospheric vibrations he added an addition to the wall, the illusion of another world, that of the Greeks. For a residential area in Pessac in Bordeaux, le Corbusier delivered an example of a "chromatic city" (1924–26), where the purist palette played against the surrounding nature, quite different from the white exteriors in his purist villas. By 1931, he had settled on a palette of soft pastels and bright primaries for details to accentuate white, and arranged for them to be reproduced on wallpaper swatches by the Swiss manufacturer Salubra. It was named "Colour Keyboard". During the 1950s, he added a set of brighter hues to complement the raw concrete, wood and lime plaster he had introduced into houses like Maisons Jaoul in Neuilly-sur-Seine. The new colour attitude is also prominent in the polychrome corridors and balconies in his apartment blocks.

(Unité de Habitation) and the Centre Le Corbusier in Zurich, which was to be his last work. The white wall disappeared in many ways, although ivory white is provided as colour in the palette. A pure black colour also appears for the first time. He never mixed it with other hues, but it appeared as a contrast. In order to deepen his hues he instead mixed them with complimentaries or he lightened them with white, showing a painter's sensibility.

"The Keyboard" was organized and systematized as 13 spatial atmospheric palettes. Using a matrix the user could isolate 2–5 colours in each of these chromatic atmospheres. Ever the control freak, he thus specified exactly how people could combine colours without too many "catastrophes." The user could thus buy pre coloured oil paint in a roll, as ready-mades, based on a system for colour preference. The Colour Keyboard was also seen as a testament of purism.

In 1948–49 Le Corbusier's architecture was presented along with his oil paintings and Murals in the book "The new world of space". At the same time, he carried out a large mural for the Swiss Pavilion in Paris. His earlier opposition to breaking up the wall by colour fragments was probably more a product of future avantgarde spirit and not a heartfelt conviction.

In Le Corbusier's own architecture colours were rarely scheduled on the desktop, but rather on site. There is not much sketch material documenting his "prescriptions" – only records from clients and others he communicated with, and of course the houses themselves.

According to sources, he walked through his architecture, from room to room, dealing out the appropriate colours as if it were a three dimensional purist painting. He discussed the possibility that colours could "cover up" or rectify problematic issues in the final architecture, like optical corrections of the space.

There is one house that is particularly well documented by one of Le Corbusier's clients, namely Maison Guiette, designed for René Guiette. The pictures from this house depict why Le Corbusier declared: "La maison blanche entièrement serait un pot à creme."

The Colour Keyboard was published in 1997 by the German publisher Birkhauser. Editor was Arthur Rüegg. A young chemist Katrin Trautwein, co-founder of kt. color in Switzerland, became interested and explored the possibility of producing the colours, originally made for tapestries, as paint. She secured a license from Fondation Le Corbusier and went into production. She states: "I loved the colour combinations of le Corbusier. Even today they are the only palettes I know of, which are designed so that all the colours really harmonize with each other. You pick at random, look at them and feel gratified." This inner harmony is why these colours still are popular today.

Another reason, as mentioned, is that they have particularly beautiful hues and are made with a great sense of quality. Most paint manufacturers today produce their colours from different combinations of about a dozen industrial pigments (ncs), while kt. color renders le Corbusier assortment of more than 120 pigments, mostly mineral pigments. Pigment base makes the shades richer, deeper and more complex. They produce, as in the Gammes, largely from earthy colours, but also well-known, more exclusive pigments are included.

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7   The space should not be painted in a singe colour, but several, on different walls, to ensure a certain dynamic.

The production of the colours by lc-kt.color happens in other words the "old way", often by hand, in order to approach architectural colour the artistic way. It is also possible to customize the colours just the way you want on site. The idea is to connect scientific empirical knowledge to artistic tradition. This integrative approach to colour as a rational science rooted in artistic tradition yields startling answers to modern ecological and aesthetic demands as voiced by architects and conservators.

Is this the way to regain some of the magic of colour?

I now cooperate with Katrin Trautwein in my research where the key question is: "What are the consequences of industrially produced paint where price is ruling over colour quality, leading to a reduction in colour depth and quality, which undermines colour impact upon the human being?" The brilliance of hue disappears with plastics, fillers and the heavy use of titanium white and black; hence also the the inspiration to use them. Production is readily automated and their application does not require highly qualified craftsmen. Colour systems have been instrumental in allowing paint materials to be replaced in the past few generations, since they reduce colour to a question of hue and introduce a nomenclature that neutralizes out material difference. A critical review of the ncs system will be necessary because of the way the system is linked to the industrial production of standardized colors. Such a critical review must however be be followed by a reflection of new ways to approach colour as material.

Paint is out-paint is in

"Paint is out" is the refrain, and we are facing a paradigm shift for architectural colour schemes, with a new industrial tactility, including coloured light. We can also, as mentioned in the introduction, expect a denial where sustainable architecture seeks to identify more strongly with natures colour repertoire. Are we fit to land these different challenges and do we have enough qualified professionals to keep the debate alive? Look to the good examples is my advice, and use coloured light with intelligence. Le Corbusier was an advocate for the colour magic through pigments. For those who do not have multidisciplinary talent of le Corbusier, collaboration across disciplines can be the solution for teaching and practicing Architectural Polychromy. And remember, most of our environment is already history and still need to be painted.

Mette L'Orange
Bergen Academy of Art and Design
Norway
Mette.lorange@khib.no

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Shoshi Bar-Eli & Carmella Jacoby-Volk

Redesigning design education: Project-based learning and spatial design

Abstract

Design "is never a process that begins from scratch, to design is always to redesign" (Latour, 2008). Redesign and spatial counter-practices uniquely position the new field of spatial design as a discipline, thus allowing for the emergence of systems that emphasize fluidity, exchangeability and multiple functionalities – in short, complexity.

Today academia seeks to put complexity to the test by breaking down boundaries between disciplines, en–couraging transdisciplinary approaches and enabling as many actors as possible to participate in the learning and teaching of design.

Unfortunately, education today still remains within its disciplinary domain and is relatively isolated from new experimental and experiential platforms, such as labs, clinics and Research Development Innovation (RDI). The current task in design education is to shift the emphasis and invent new methodologies that interlink the complexity of real life problems with design practice. The paper proposes an innovative educational platform using Project Based Learning (PBL) and Spatial Design to encompass new spatial design content and methodologies. It is demonstrated through a case study of a participatory spatial design project, designing and fabricating small scale project in a community center in Jesse Cohen, a neighborhood of Holon. The neighborhood is marked by extremely low socio-economic status, home to a large Ethiopian community. The Design School in COMAS (College of Management Academic Studies), the Design Designers' Clinic, FablabIL, the Israeli Center for Digital Art and the community in Jesse Cohen neighborhood all participated in this collaborative project. The project consists of participatory design, community participation workshops and fabrication of furniture, objects and re-modeling the space. Analysis of this project reveals the complexity of the entire process, beginning with dialogue between the various stakeholders and the community through the stage of actual manufacturing and building the design.

Real-life projects can serve as an impetus for innovation and can change the perceptions of all involved agents, as well as the overall perceptions, educational content methodologies and outcomes of the design discipline as a whole.

1. Introduction: Spatial Counter-Practices

Design "is never a process that begins from scratch, to design is always to redesign" (Latour, 2008). The notion of redesign uniquely positions the new field of spatial design as a discipline related to the scale of the body and grounded in tactile and sensual experience. Redesign facilitates the assimilation of participatory dynamics that redefines spatial design as a new force for active engagement. It allows for the emergence of systems that emphasize fluidity, exchangeability and multiple functionalities – in short, complexity.

During the summer of 2011 public spaces in several cities around the world turned into new habitats. In Tel Aviv, for example, hundreds of protestors camped along Rothschild Boulevard demanding spatial justice, and specifically affordable housing and an end to the privatized economic system. The tent-filled urban space became home to a charged mélange of "domestic," social and political activities, with ad-hoc open kitchens serving food alongside debates and group discussions. Domesticizing the public space changed our perception of this space, thus facilitating performative acts in which common or private activities construct identity.

Occupy Wall Street (ows) is another example of spatial counter-practices. Activists occupied Zuccotti Park in New York in protest of American financial institutions. When protestors were later forced out of the park, they turned their focus to occupying banks, corporate headquarters, board meetings, and college and university campuses. The protest was structured around anti-authoritarian and non-hierarchical principles of decentralized organizational practices and invited a diversified, bottom-up, directly democratic approach. This col-

lective protest movement spread to 130 cities in the United States and Canada, as well as the Middle East, Mexico, Europe, Asia, and Australia.

We believe that this new form of participatory discourse and activism offers a new framework for reexamining and challenging the prevailing conception of design education, introducing the notion of Spatial Design as a new force field. The emergence of spatial counter-practices forces the redesign of academic educational practice, facilitating the emergence of systems that emphasize fluidity, exchangeability and multiple functionalities.

Spatial design reinvents the ways designers think and act with respect to space, people and their surroundings. It transcends the boundaries of traditional design disciplines such as architecture, interior design, landscape design, urban design as well as public art within the public realm. Such a transdisciplinary approach simultaneously refers to what exists within disciplines crosses different disciplines and transcends all disciplines, thus reflecting the complex spatial problems that designers face today. In *The Production of Space,* Lefebvre argues that space is a social product or a complex social construction. This Marxist-humanist view affects spatial practices and changes perceptions of spatial theory and practice (Lefebvre, 1974). This argument points to a shift in the research perspective, from space as a product to the processes of its production, that is, the multiplicity of spaces that are socially produced. Thus, emphasis is placed on the contradictory, conflictual and ultimately political character of the processes of production of space. The production of space belongs to a wide circle of agents, including designers, artists, social scientists and members of various communities, as well as politicians, builders, entrepreneurs, economists, policymakers and lawyers.

One of the main tasks of academia today is to address the challenges involved in breaking the boundaries between disciplines by encouraging transdisciplinary approaches and allowing as many actors as possible to participate in the process of learning and teaching design. In recent years, new platforms in the form of labs, clinics and RDI (Research & Development & Innovation) have emerged to address these issues and to integrate between academia and practice. Unfortunately, education today still remains within its disciplinary domain and is isolated from these new experimental and experiential platforms.

Part of the problem is that design education is based on traditional canons regarding type of knowledge, teaching methodologies, and the role of design instructors and institutions.

To integrate the transdisciplinary approach with emerging non-academic platforms such as Labs, new methodologies platforms must be invented within academia that combine complex real life problems with design practice. In this paper we propose an innovative educational platform using Project-Based Learning (PBL) platforms and spatial design to encompass new spatial design content and methodologies.

2. PBL as an educational platform – between academia and practice

In recent years, Project-Based Learning (PBL) in academia has developed as an innovative and challenging learning approach. In PBL, students study in multidisciplinary groups that must cope with complex questions, problems and challenges by implementing real-life projects. The projects are based on collaboration between academia and practice and require innovative teaching methods as well as the use of collaborative knowledge. The learning process is based on the development of 21st century skills, among them cooperation, communication and critical thinking, with particular emphasis on the quality of the project outcome and on its presentation. It should be noted that PBL differs significantly from projects, whether theoretical or collaborative, that are implemented within the framework of studios or workshops in architecture and design academia. PBL was researched extensively during the 1990s (Moursund, 1999; Krjcik, Blumenfeld, Marx & Soloway, 1994). Thomas (2000) takes an academically oriented approach and identifies five criteria for PBL: "PBL projects are central, not peripheral to the curriculum; PBL projects are focused on questions or problems that 'drive' students to encounter the central concepts and principles of the discipline; projects involve students in constructive investigation; projects are student-driven to some significant degree; projects are realistic, not school-like" (pp.3–4).

Rather than considering PBL as an academically oriented approach, Ayas and Zeniuk (2001) see it as emerging from PBL practices in industrial R&D projects at companies such as Ford Motors and Fokker. By definition, these problems are highly complex and require a new learning infrastructure and a new means of implementation.

The complexity of real-life projects is clearly an area that academia is only now beginning to consider in terms of opportunity rather than limitations. Ayas and Zeniuk put forward six distinguishing features of PBL for theory and practice: "(1) a sense of purpose and clarity in both long- and short-term objectives; (2) psychological safety and a commitment to telling the truth as part of the project environment; (3) a learning infrastructure and a balance between emerging and formal structures; (4) communities of practice that cross project boundaries; (5) leaders who set the tone for learning and model the reflective behavior; (6) systemic and collective reflection" (Ayas & Zeniuk, 2001).

While Thomas's (2000) academic model refers to a single project framework, the model proposed by Ayas and Zeniuk (2001) suggests that projects comprise communities of practice that allow all individual particpants to belong to multiple communities.

We believe that innovation in spatial design education is created through new platforms that integrate academia and practice by cross-sectioning various design disciplines. These new platform are based on the following three characteristics of PBL.

2.1 Complexity

Spatial designers must cope with complex, authentic and urgent problems on the public agenda, ranging from ecological/environmental issues to problems of new urban metabolism, from issues of reuse and urban resources to problems of spatial orientation and restoring resources to the civilian space. The ability to cope with such complex issues requires relating various parameters through projects.

The concept of complexity has been defined by De Landa and is in line with Deleuze and Guattari. De Landa (2006) challenges the current social analyses paradigm by positing social entities in terms of the complexity that emerges from assemblages.

Assemblages appear to function as a whole, but are actually coherent bits of a system whose components can be "pulled" out of one system, "plugged" into another and still work. Today's design challenges generate the need to deal with complexities that "take into account the diversity of life-world perceptions of the problems" (Pohl & Hadorn, 2008). Therefore, complex problems can no longer be tackled through a single discipline or even multiple disciplines.

Complexity is also related to questions of the identity of the 21st century designer and the way in which academia addresses the new roles of spatial designers. The traditional situation in which the profession students learn in academia resembles their actual future practice no longer exists. Spatial design education can address this issue by offering students a new means of acquiring design knowledge and tools through multidisciplinary projects. These complex projects integrate various fields of design and complex decision-making, thus making a difference within academia.

2.2 Real Life Project

In addressing real-life problems and issues of complexity in higher education, the main question is how to develop innovative integrative educational approaches that can transcend the boundaries between disciplines. Real-life projects based on collaboration with municipalities, industries, non-profit organizations, commercial organizations and more have thus become the focus of spatial design programs. Collaborations through

real life projects force academia to be entrepreneurial by initiating the collaboration and finding the project most suitable to the transdisciplinary approach. In initiating, designing and building real projects, academia embraces a new role of generating social, economic and technological changes in urban, public and business spaces.

2.3 Innovative methodologies

Challenging teaching methods that implement extensive interdisciplinary knowledge in real-life projects are based upon various forms of collaboration. Among these various forms are the client's collaboration in the decision-making process, empathy with the client, the community and the public, identification of issues, development of prototypes and ongoing reflective processes. The PBL perspective involves a non-hierarchical approach in which the lecturer serves as partner and advisor rather than as an instructor who organizes the students' work. This approach, known as the lab approach, is prominent in the world today (e.g., MIT Media Lab). In a report on future design labs, Torjman (2012) indicates that labs in general and media labs in particular offer a neutral space dedicated to problem-solving in a highly experimental environment. Projects initiated by the needs of industries result in prototyping, thus allowing groups of students, instructors and users to learn by doing rather than by thinking. Each project employs a user-centric lens, thus turning the end-user into a critical participant throughout the process. The labs focus on diversity of perspectives and skill sets as well as on the team process, thus representing a convergence of design, ethnography and business to support both theoretical and real-world applications. In a lab, the whole (that is, the solution) is greater than the sum of its parts (the input of individual participants). Proprietary ownership is minimized in favor of objectivity and commitment to a shared vision.

3. New Platforms between Academia and Practice

Two new platforms established and developed at COMAS (College of Management Academic Studies) – Fablab Israel and the Designers' Clinic – can serve as an infrastructure for the development of the new field of spatial design education.

3.1 Fablab Israel

Fablab Israel, a community-based digital manufacturing laboratory, is a collaborative effort between the Design Department at COMAS and the Israeli Center for Digital Art in Holon. The lab offers a setting for realizing dreams in concrete materials using a variety of methods that connect the virtual and the physical, ranging from CNC manufacturing to 3D printing and electronics. As

part of a global network of laboratories founded by the Center of Bits and Atoms at MIT, FablabIL represents a new approach to current technologies and offers a new space for creation, with room for innovation, social entrepreneurship and interdisciplinary creativity. FablabIL calls for a transformation from consumerism to fabrication. In a world of ever-growing consumerism, assuming responsibility for the environment and the community in an active, entrepreneurial and productive manner is essential. An interdisciplinary approach is required to confer and teach the skills necessary for the 21st century in technology, in entrepreneurship and in creativity. FablabIL focuses on education through both formal and informal frameworks in the world of digital fabrication and serves as the foundation for local community work, integrating communities, municipalities and agencies. It also place special emphasis on people with special needs through collaborative projects.

FablabIL serves as a point where artists, designers and creators from difference disciplines can meet for innovative creation and design thinking that is out of the box. Problem solving and brainstorming groups, activity days and projects promote various collaborations with industrial and academic bodies. FablabIL serves as an infrastructure for applicative academic research for students and faculty in the COMAS Design school and is open to all other academic institutions.

3.2 The Designers' Clinic at COMAS

The Designers' Clinic at COMAS serves as an apparatus for applying design activism within spatial design curricula. The Clinic nurtures the weakened community by activating the capability approach as a subversive act toward developing the wellbeing of community members. The actors are faculty members, students, graduates and designers from all fields who wish to use the Clinic's platform as an effective tool for change, initiative and activism. The designers engaged with the Clinic create a model of synergy between design practice and academia. This synergy promotes research. It aims at formulating a critical view of the role of designers and design in and for the community as well as the role of academia and its involvement in the urgent social, urban and environmental issues currently on the agenda.

4. Project-Based Learning: A Case Study

The project was implemented in the Jesse Cohen neighborhood of Holon. The neighborhood is marked by extremely low socioeconomic status and a home to a large Ethiopian community with families who are struggling to survive. As a result, very young children wander around the neighborhood unsupervised. The Community Center serves as an important focus for the unsu-

pervised young children, by offering after-school activities as well as by employing at-risk youth who are not part of any formal educational setting. The FabLab Israel is situated in Jesse Cohen, in line with its vision of becoming a community fabrication laboratory.

Real life projects and PBL methodologies are main objectives of the design school in COMAS College Israel. Part of its curricula is a social design course in which students identified the children's needs for a special space in the community center to spend the afternoons and get help with homework. Currently, the space in is a depressing and uninviting space that does not entice them to spend a lot of time there.

The Designers' Clinic realized the need to cope with the situation at the community center and decided to integrate the project of renovating the community center into an Extreme Make-Over real life project studio.

4.1 Real Life Project Complexity
Multiple stakeholders

Table 1 Taxonomy of Spatial Knowledge Management

- **A set of organizations seeking to promote and develop the community**: The Design School, FabLab Israel and the Israeli Center for Digital Art in Holon. Each organization contributes a different aspect to the joint effort. The Israeli Center has been working in the neighborhood for quite some time and knows how to operate there, but has not taken any action to make the stakeholders understand the added value of working over the long term. The Design School, led by Dean Carmella Jacoby Volk, has a broad set of academic and practical connections as well as the tools to link the needs of the community to those of the place. The Design School invited a pair of Spanish architects, Arch. Patricia Muñiz and Arch. Luciano Alfaya (Studio MMasa), to lead the project. These architects are experts in enlisting the cooperation of the community in design projects of this nature. The FabLab, with its' director Arch. Ohad Meyuhas are an excellent platform for linking the various stakeholders, both due to its physical location and because it is a digital fabrication lab where the various products can be adapted to the place and produced quickly, efficiently and inexpensively.
- **The students**: The participating students come from diverse backgrounds and have varying abilities. Each student has a different understanding of what it means to help and participate in the community. Many of the students come from Israeli communities that have adopted a less collective and more individual approach.
- **The local Ethiopian community:** The problem within this community lies in its lack of faith in the

Figure 1 Jesse Cohen Youth Center.

Figure 2 Jesse Cohen Neigbourhood – the right for housing protest.

Figure 3 The youth center before renovation.

Figure 4 Presentation for the client.

Figure 5 Students building furniture prototypes.

Figure 6 The three instructors during the process.

Figure 7 The final design.

Figure 9 Young children in participatory workshop.

Figure 10 Youth building furniture with the students.

Figure 11 Young children in participatory workshop.

ability of other people and organizations to help them. The prevailing feeling is one of suspicion and lack of faith in the possibility of receiving genuine help. The director of the community center shared this prevailing perception. This was evident in the discussions preceding the project, in which he was extremely aggressive. Many architecture programs had already offered help in the form of schematic design simulations that did not require any commitment on their part.

• **Budget and Format:** The project budget was €2000, and the director of the community center was expected to bring additional funding through sponsorships (which eventually did not happen). The entire project was completed in the short period of seven weeks. The project took the form of a short-term studio: the students got to know the neighborhood, met with all the stakeholders, reached conclusions, formulated designs and presented them to the director of the community center and some of the children (figures 4). After a design was selected, the students were transformed into a group that supported and developed the chosen design and documented the process through a blog and publications. The students and their instructors implemented the entire project, including the making of the actual space as well as the furniture, upholstery and storage items. During the last week, everyone fabricated together – the stakeholders, the students and the instructors (figures 5–8).

4.2 Innovative design and educational methodologies

• Community participation workshops as part of the project: In these workshops the children were taught to use the digital fabrication tools at the FabLab. Not only did this reinforce the ties between the community and the FabLab, it also empowered many of the children who became part of the local landscape (figures 9–11). This technological empowerment also had an added value. The fablab became their comfort zone for aquiring knowledge.

• Broad interdisciplinary knowledge in the project: the project required combining knowledge from the design disciplines, far-reaching questions emerging from political, cultural and social situations, knowledge of project management and adhering to a timetable.

• Real-world knowledge based on collaboration: inclusion of the client in decision-making processes, empathetic approaches to the client, the community and the public.

• Set of tools: Identifying major trends and issues, depth-wise and breadth-wise analyses, developing prototypes and ongoing reflective processes. The PBL perspective involves a non-hierarchical approach in which the teacher serves as partner and advisor rather than as the instructor who organizes the students' work. This approach, known as the lab approach, is prominent in the world today (e.g., MIT Media Lab).

4.3 Discussion

The development of new approaches to teaching and learning by means of real-life complex projects will ultimately change the shape of spatial design education. In addressing real-life problems and issues of complexity in higher education, the main question is how to develop innovative integrative educational approaches to overcome the boundaries between disciplines. This paper has proposed a foundation for new spatial design methodologies based on PBL that incorporates the characteristics of complex real-life problems, real-life projects and innovative methodologies for learning and doing.

One of the big questions in using PBL and innovative spatial design education is how to turn this into a vehicle for community development and improved well-being among people who are less privileged. In the paper we described a real-life project based on collaboration that addresses complex problems and includes all the phases in the design process, from identifying the problem through designing and building the project. Not only can such a project improve the spaces and the experiences of children and the community, it can also change children's approach to technology and to their future.

The students involved in the project completely changed their perception of the role of spatial design practice. Such a change could only be accomplished by learning and acting outside their comfort zones, enabling them to reinvent themselves.

Real-life projects can become the center of academic spatial design programs only by integrating spatial design education with other platforms such as the Designer' Clinic and FablabIL. If treated as partners, such platforms force academia to be entrepreneurial in initiating collaborations and finding the most suitable project to showcase the transdisciplinary approach. In initiating, designing and building real projects, academia assumes a new role of generating social, economic and technological changes in the urban, public and business spaces.

Real-life projects can become a force for innovation and can change the perceptions of all involved agents, as well as the contents and methodologies of spatial design education.

Shoshi Bar-Eli
COMAS (Collage of Management Academic Studies),
Interior Design Department
Israel
shoshi-b@zahav.net.il

Carmella Jacoby-Volk
COMAS (Collage of Management Academic Studies),
Interior Design Department
Israel
jacarmella@colman.ac.il

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Marc Boumeester

The specialized generalist: Art and design and the osmotic oxymoron

Abstract

Against the backdrop of a rapidly changing media-scape and shifting economic balances, designer and artist is being pressured by a briskly growing body of media participants and their role frequently undermined by (internal) discussions on medium-specialisation versus medium-versatility. The position of the school in this turmoil needs to be anticipatory and participatory, both in terms of content and form. Education in design is also about the design of education. Five points to open the discussion.

Keywords

The Netherlands have recently witnessed a revival redefining the position of the autonomous within the autonomous, which resulted in the 'emergence of the hybrid artist'[1]. Despite its century old provenance, the current political and economic climate of the low countries justifies any attempt to scrutinize the practice of "non-essential" practices, such as the arts and design[2]. Now a seemingly integrated and accepted pre-existing economic model of the artistic practice has a new name, which suggests that there was still uncertainty over how the independent artist deals with commissioned or applied work.

This relates to the fact that the micro-economics which actually fed into the practice of the autonomous artist are not necessarily linked to the autonomous practice itself, in other words; the practice of the artist is not a monoculture but a hybrid system of economics tapping into different sources. Whether this recognition is sufficient to break the industry's collective cognitive dissonance towards its own dynamism is not yet clear, at least it gives rise to a renewed discourse on the validity of the distinction between arts and design. More importantly for this argument is the analogy that can be found in the discourse in which (media-) specialisms are essentially placed in an antagonistic symbiotic relationship with generalism. As a result, a specialization in a specialization would automatically exclude a specialization in a generalism. There is very little recognition of the generalist specialism, so this duality manifests itself often in an asymmetrical argument: it is the specialism versus everything else. In other words, if you do not have a recognizable specialty, but you excel in bringing together and conduct a wide range of skills, than you have nothing. It is a dangerous contradiction.

There is absolutely nothing against this type of asymmetrical logic, but I would like to suggest a counterargument. As an alternative to this structuralist antagonism, I propose a third way for ("the third pill" as Slavoj Žižek would put it, including his charismatic enunciation[3]), and go with Deleuze in the proposition to begin in the

1   Gielen, Pascal & Winkel, Camiel van & Zwaan, Koos (2012) De Hybride Kunstenaar. http://lectoraten-akvstjoost.files.wordpress.com/2012/03/eindrapport-hybridiseringnlbe.pdf
2   Žižek, Slavoj (2006) *How to read Lacan?,* London: Granta Books
3   Deleuze, Gilles (2012),Difference and Repetition, London and New York: Continuum.

middle, the theorem of the excluded middle[4]. In principle, any discussion about the antithesis generalism versus specialism is fairly quickly brought to silence by diving into the history; it would be trivial to insert here some examples or to isolate a causal argument that would render such discourse superfluous. Apart from this, it will be necessary to bridge the discussion about the position and role of research in art and design, in order to see how education relates to the meta-discourse on the economic validity thereof, expressed in terms of the post-neoliberal economy. Five points of consideration.

1. Medium Driven Acting

Much impetus for the discussion on the apparent dichotomy between specialism and generalism arrives from a media-driven mental framework. It is not necessary to be particularly informed to be able to notice that the convergence of media ever progresses and the ways in which these media are being used are subject to major changes. As a result, many classic or traditional divisions in media typology have been rendered obsolete[5]. Lemma's such as mixed media, multimedia, interactive media or cyberspace do no longer cover its original content or context, even though the terminology is in some parts of the field still very active. When you look at what happens if the mix is already in the medium, for example on the boundary of moving image and still image or the digital manipulation of 'real' images et cetera, or in 3D printing and when the media get a high degree of autonomy (with autonomous hardware types like Arduino et cetera), than the ambiguity of the classification becomes immediately apparent. A continuous conversions takes place between the analog and the digital domain to such extent that there isn't any clear distinction between them anymore. In a particular degree of minimization of the intervention of the 'author' of the mediation, one could only speak of the design of protocols as finished product; the actualization of a certain concept takes place without any interference or influence of the 'master' of this genesis[6]. All the examples mentioned indicate that traditional taxonomy of media typology is in an increasing number of situation not particularly useful anymore or even works counterproductive[7].

Meta-media thinking is, by definition, neither generalist nor specialist, it refers to the moment that a concept/idea/thought is so intensely concentrated that it is almost tangible, the mental medium reaches a state of over-saturation. Any confrontation with a 'physical' medium (note that physical includes both digital and 'virtual' media) will inevitably lead to a condensation actualized in that particular medium. The meta-medium as a proto-product. In that case; can you still speak of a medium-specialization? Is it not true that the specialization lies not in the media, but in the artist's own proto-product? With a generic appearance? With this I do not mean to suggest that the position of media related research and experimentation with and in media is of secondary importance, however I think it is no longer useful to express this in degrees of specialization. The field of the designer is embedded in stormy techno-social developments.

The ever accelerating developments in electro chromatics make it possible to provide any surface with an expression of (moving) communication, and even incorporate information about the viewer in its choice of topic and means of expression. The (in)famous scene from the film "Minority Report" is very easy to realize, only lack of economic interests and a little bit of ethics impede the implementation[8]. The future designer will

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4   When we talk about a movie, then we are actually talking about video, but more specifically stored as a file and actually specifically compressed in H264 and so forth. Hence the uncertainty about how to deal with this has greatly grown, not least because of the economic implications.

5   Another specific condition under which the taxonomy of media fails to produce a meaningful organization occurs when the media system is more important than the content or the form (for instance when the fact that you respond to a post is more important than how you respond, think of TLDR). The added message serves as an indicative signifier to the original post, any reaction to that reaction provokes a meta-discussion, leaving the actual medium or content out of the equation.

6   Alternative classifications as 'Lens-based' or 'Network-based' media or 'Real time' or 'Arrested time' media, have some advantages over the outdated models and can be found to be remarkable precise.

7   Minority Report is a film by Steven Spielberg from 2002, its main theme is the antagonism of free will versus determinism. The infamous scene portrays the role of media in a futuristic state in which electronic advancements makes their presence ubiquitous.

8   With this in mind, we have set up an experimental Master research studio in the Department of Architecture at TU Delft, where the 'media' architecture and cinema were used in the design on an equal footing. It soon became clear that students respond very natural as they are handed a set of skills from another métier than their own to make a design. Think of the (sometimes literal) conversion of architecture into a movie, then adapting this product to a number of requirements and needs to eventually translate all assembled notions into architecture. This is also closely connected to what an increased intensity of perception (sharpening the senses – seven or more – as part of the heuristics) can mean for the ambient experience-value. As a result, this style seems to develop a phenomenological character but in is fact much more resonating with a psycho-geographical approach. It appeared quite possible to

increasingly be engaged in this discussion, because it is no longer the medium that determines the feasibility and desirability of its own implementation. As with the 'social media', participation is more important than the message itself, making participation almost a political choice. After all, without participants there cannot be any of these media systems, and therefore no multinational media empires controlling these vast amounts of our personal data. To be critically engaged in social change and politically active, we do not need an external theme to address in the media, the media are a social-political theme.

2. From Meta – Media to Assemblage

In autonomous design – if a direct connection is made between the pragmatic realism of design philosophy and practice – it is of enormous importance to involve a field that moves between the affective capacities of media, the 'subliminal perception' and the virtual – as the non-actualized part of reality. The initial starting point for the proposition was that if you would assess media on its capacities (what it can do) as an alternative to a classification on basis of it properties (which it is). Based on a redistribution in the media landscape, it is possible to compare two media, profit from each other's strengths and exchange information without the need for them to be of the same 'material'[9].

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make very concrete statements about the current reality without using traditional cartography (such as vision and dimension) whereby the 'soft' and new instruments offered by the 'other' métier provided a space for a surprisingly fresh code in the design of urban interventions.

[9] With this in mind, we have set up an experimental Master research studio in the Department of Architecture at TU Delft, where the 'media' architecture and cinema were used in the design on an equal footing. It soon became clear that students respond very natural as they are handed a set of skills from another métier than their own to make a design. Think of the (sometimes literal) conversion of architecture into a movie, then adapting this product to a number of requirements and needs to eventually translate all assembled notions into architecture. This is closely connected to what an increased intensity of perception (sharpening the senses – seven or more – as part of the heuristics) can mean for the ambient experience-value. As a result, this style seems to develop a phenomenological character but in is fact much more resonating with a psycho-geographical approach. It appeared quite possible to make very concrete statements about the current reality without using traditional cartography (such as vision and dimension) whereby the 'soft' and new instruments offered by the 'other' métier provided a space for a surprisingly fresh code in the design of urban interventions.
    These heuristics have also been tested in several workshops offered around the globe including sessions in Hong Kong, Nanjing, Budapest, Moscow and

The investigation into materiality, into medium specificity, into the medium specific gravitational pull, is according to this logic also influenced by the material itself, not only as a subject of its effects, but also as an actor. This position casts a new light on the aforementioned material and media research. To entirely reverse the relationship (the material investigates the investigator is perhaps interesting as a psychoanalytic study, but at least there is an argument to speak of a dialogue between the researcher and the researched. After all, the symbiosis does not only provides new insights and knowledge, but also pushes the boundaries of the material itself. For instance; the power of water is meanly visible as a long, flexible process until someone jumps

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New Jersey and its reflection also appeared in publication. The follow-up study focuses on the affective capacities of media, including the subjective, virtual domain as 'hard' value in its appearance; hard in this context means as hard as hard as color, material, dimension, and so forth, thus unlocking it's potential as a comprehensive tool for the designer. In radical empiricism this is called *real virtual*, it is the part of the reality that is not actualized. Of course, the subconscious, sub-narrative supremacy of (moving) images is not new in the arts or in design and there is also a lot of theorization done on this topic, but what we propose goes much further. Again, a research studio was set up in 2012 to work with these affective design principles, which has recently delivered its first MSc graduates. In the words of philosopher and architect Andrej Radman:

Experience is never of something, rather it is something and as such irreducible to what we call lived experience. The main consequence of such a revelation, according to Robin Evans, is that goal-oriented human action (intentionality) cannot in any serious way be used as a design criterion (determinism) because "freedom of action is never a de facto established condition but always a nascent possibility (virtuality/the unconscious/desire)

The position of the New Materialism – and that of political theorist Jane Bennett in particular – claims that it is high time to leave the anthropocentric hegemony in thinking about the relationship humanobject. The internal needs and desires of the *material* deserve an equal position in the human-object force field. Or as Jane Bennett puts it: "the capacity of things – edibles, commodities, storms, metals – not only to impede or block the will and designs of humans but also to act as quasi agents or forces with trajectories, propensities, or tendencies of their own."

"New materialism shows how the mind is always already material (the mind is an idea of the body), how matter is necessarily something of the mind (the mind has the body as its object), and how nature and culture are always already "naturecultures." Uit Dolphijn, Rick & van der Tuin, Iris (2012) New Materialism: Interviews & Cartographies, Ann Arbor: Open Humanities Press, University of Michigan Library.

Bennett, Jane (2010), *Vibrant Matter: A Political Ecology of Things*, Durham and London: Duke University Press.

out of a plane and crashes hitting the surface, then suddenly the force appears to be quite acute. New alliances can be formed which cannot be logically expected from the material itself, but with a little help could rapidly gain in strength (material with memory, self-cleaning material, etcetera). The question is how to describe this research through alliance in the practice of the artist/designer, and probably equally important is the question of how to interpret this relation in art and design education. It is this research after all that is defining what the researcher specializes, and it is the job of the educator to help clarify this.

3. Research as a heuristic tool

The role of research in the learning environment of art and design education is the subject of current debate and this discussion itself indicates the complexity of the issue fairly precisely. In the traditional sense one could say that the artist stretches – by definition – the boundaries of 'what is' constantly and where possible (and if necessary) substantiates the imaginary[10]. In all cases an intrinsic research will directly or indirectly be put into a product and depending on the materiality of the process this research will in greater or lesser degree be medium dependent (material-experiment), sensation-oriented (form study tonality) and/or conceptual (Position-Aussage-Deutung)[11]. The perception of the visual artist/designer is by definition not merely input or output, but 'throughput', although it is also very valid to assume that this would apply to all perception[12]. In the case of the artist/designer however, this process is probably most clearly expressed. For both artists and designers goes that this research is initiated by an internal or external demand, mainly subjective in nature and will manifest itself most likely in an (audio-) visual form of expression. This also articulates the great discord between definitions that can be given of academic research in which terms such as objectivity, methodology and participation to the discourse in which there is a (sometimes arbitrary) distinction between fundamental and applied research. There is a value attributable to the research in the arts and design and the 'soft', imaginative, non-linear and creative subjectively are not perceived as a threat by the academic world, but as a valuable addition to the methodical, partially redundant and generic nature of much scientific research[13].

The question is not; how do we answer the question of how we implement research in our work, but how do we make explicit what is implicit. The transition from extensive modeling, to intensive thinking and acting. It is therefore of secondary importance whether one can express oneself in terms of specialization. One can specialize with a purpose, an end point, research to the point that there is an answer (versus research till 'all' answers are found) to support a process, which in itself can be a part of yet another process. Under which not only an element could belong to the (temporal) specialty of the maker, but also to the process itself.

4. Affordance

Practical study is a part of the design process itself. That is to study individuality, passions, source material, techniques and design methodologies to use in the design process and to obtain a deeper understanding of potential solutions. This type of research returns in all practical subjects, so logic dictates that the content is always bigger than the form.

As mentioned, there is a simultaneous rise of the greatly increased media participation by consumers which cause a lateral flux in the development of the professional creative industry[14]. As a result, the question of what you could and would regard as imperative to teach – art and design – students altogether, seems to be more relevant than ever.

**Education in design is therefore
also about the design of education.**

The rapid development of the means of production should be taken into account properly, since it is a reality that a student at the beginning of the study has a complete set of other instruments available then at the end of the study. And I do not mean the mental tools they are supposed to gain during the study. So the question is how can a curriculum be flexible enough to keep up with and respond to the constant changes while maintaining a sufficient body and structure to speak of a curriculum. Especially when the in- and outflow conditions are not really predictable (social, technological, economically and so forth). If we look at the theory of psychologist Maslow and how to connect his "Four

10 Massumi, Brian (2002), *Parables for the Virtual: Movement, Affect, Sensation*, Durham: Duke University Press
11 Positioning, targeting and signification.
12 Massumi, Brian (2002), *Parables for the Virtual: Movement, Affect, Sensation*, Durham: Duke University Press.
13 The frantic efforts of the industry of art and design education in order to quantify how the research in education is integrated seem therefore to play in the wrong tier. The formal obligations to make this con-

trollable and quantifiable are mercilessly indifferent for this special type of education. In other words, the questions regarding research in a school for arts and design are too generic and contain many phallic components. Rather than formulating a response that addresses these superficial modes of thought, it seems that all efforts are aimed to formulate spasmodic constructs in subservient answers and to exhibit defensive behavior.
14 As mentioned, some fear a 'counter-flow ' but it appears not possible to find much evidence for this

stages of learning" with all the other forces acting on the students works – including these imposed by the desire to optimize the student for professional practice,which is as mentioned most probably very different at the end of the study than at the beginning – than we can make some statements about specialties[15].

Specialization can also be an instrumental part, as a means to a higher end. The role of a specialism can therefore change under the influence of the larger assembly, if we contrast that against a particular skill-set. It could be leading (specialization) or serving (as part of a generalism) depending of what stage of the research is reached. A consequence of this is that any kind of education that is now developing requires that these issues are intrinsically part of the program itself.

5. Economy
If we follow economist Brigitte Borja de Mozota in her study of the relationship between the designer and the manager, the former excels in underdogness and a po-

sitional distrust of the second[16]. The manager acts in this relationship with a fundamental undervaluation of the soft resources and human capital of the first. All this sounds too familiar and in urgent need of revision. But the question is whether the necessary next economic model (as successor to the economy of the structural growth) would still recognize these oppositional positions. After all, the way out of this socio-economic and ecological deadlock will not be found in existing structures. And therefore it is worth – in economic terms – to think outside the structures of specialties.

There are several reasons for not idealizing the Homo Universalis as highest attainable state of human development, but the Homo Connectus (if such a thing exists). The networked human who not only always operates in partnerships, but see himself and his/her role always in the larger framework. The non-egocentric, yet ambitious human who sees self-interest and collective interest as one and recognizes that there are no winners unless all win. Who leaves room for the unspoken, regards the virtual as reel and valuable. Who does not think in terms of more or larger, but in terms of better and more precise. If we see information as the pivot point between the virtual and the actual, and affect as dynamic surplus that arises at this interface, it soon becomes clear what the role of the artist/designer in the new economy can be. First we must push for a growing awareness of the economic validity and value of the design of affect, both autonomous and applied. In addition, the role of the individual will need to be handled in a different way. The position of the individual in the collective sometimes requires a leading role and in another situation a following role, in one situation, the individual is a specialist and in the other he/she is a generalist. Follow and lead[17].

New forms of affective design may arise; part-to-part design (no central design, different blocks complement each other), Rhizomatic Design (no central purpose, design what is needed, when needed), Watershedding (design without predetermined target, defined by the user). Therefore, in the future we will work with non-linear education which knows; group skills, modular-progressive learning and middles research as a prime directive. As expected the process of thinking about this progression runs completely asynchronously on the global scale. Therefore it is of great importance to fully emphasize and embrace the development and implementation of new forms of educational content – especially

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15 As is known, the basic assumption of Maslow's theory is that students go through several stages during their studies; 1.unconsious, incompetence, 2.consious, incompetence, 3.consious, competence, 4. unconscious, competent. Also important is the later addition of 'consciously capable of unconsciously competent '. This stage refers to the reflective ability of the student to consciously become aware of gaps in competences.

A student in the first phase will be fitting a fairly naive certainty because 'all of the unknown' has not yet been established, a student in phase two has become more awareness of his position in the *phase map* and would like to cling on to something that gives a secure grip. Students in phase three a may find themselves a specialist (but are not one yet), in phase four the students will not call themselves a specialist (but are in fact one). The most important phase herein is number five, namely when the realization of one's own position relative to personal competence is powerful enough to distinguish between research in one own's *oeuvre* (which is in fact the driving force for the development of own work) and conditional, pragmatic research (which arises from specific questions that ascend from the first type of research). It is at this junction that a specialization occurs. An example would be to name a befriended painter who specializes in mixing different types of chocolate to get a specific depth in pigment and structure on the canvas. The sad thing is of course that not every student nicely follows this trend, and even if that would be the case, then it is rarely so that all five phases are passed in a chronologic and orderly fashion. Educational programs are mainly modeled on a development up to phase four, which results in the logic that students get the most appreciation when they are specialized in a specific medium, because then they get the diploma. The causality has been mixed up; the appreciation (diploma) is a reward for having come to the end of stage four (unconscious, competence) but as this happened to align with the moment of maximum specialization, it is perceived as if the specialization leads to the reward.

16 Borja de Mozota, Brigitte (2003), Design Management, New York: Allworth Press

17 XXXXXXXX, xxxxx (2010). *Designing Paradigm Shifts; Follow and Lead*. Paper presented at Cumulus Conference in Genk, Belgium. (author made anonymous for the evaluation process)

in art and design – because the current Western lead still can be of great importance for influencing the thinking and actions in other parts of the world. Teaching how to do design learning, is not be seen as a threat but as a huge opportunity to influence the world of design and hence the world as a whole.

Conclusion

At this time we have to make choices that are crucial, more of the same kind of thinking does not make sense. Art is not about politics, art is politics and design is economy. The organization of the design of affect has a high priority, including a clear area of research at the meso-level (the artist himself) and practical research as a heuristic tool. The paralysis of the apparent antagonistic relationship between form and content must be broken, the empire of (post-)structuralism must be overcome. There are forces that soften the distinction between specialism and generalism from the 'inside out' like vanishing medium specificity and the increased participation in production and so forth. At the same time, there are plenty of reasons to maintain interested in materiality and media research. When we incorporate situation-specificity and temporality of our actions, in our actions, the existing antitheses will disappear and we create the conditions for a third way in which art and design claim their political gain and thus prove their economic validity. The specialized generalism appears to be an oxymoron, but of the kind where both terms merge into one another.

Marc Boumeester
Royal Academy of Art
Netherlands
info@marcboumeester.com

Amos Bar-Eli

The initial phase
in the design studio

Abstract

The paper examines the initial phase in the design studio. It begins by providing a theoretical basis for the conditions in the design studio. It then defines and elaborates issues and conditions that exist primarily at the initial phase of the studio. Some of these conditions do not reside predominantly at the beginning yet are uniquely manifested in the initial phase. The paper analyzes these conditions and their possible impact on the future of design education. The research than examines a case-study given in a design studio, and evaluates it in accordance with those conditions. The paper concludes by discussing the contribution and importance of consciously acknowledging the initial phase in the studio for design education, discusses some possible implications, and raises questions for future research.

Keywords

Design Education. Design Studio. Design Process.

Introduction

"I love beginnings. I marvel at beginnings..."
(Kahn, 1991, p.285)

Why does the American architect Louis Kahn points to beginnings? What characteristics of beginnings make them important? What influence, if any, do beginnings have on subsequent outcomes? Kahn's words suggest he is attracted to the purity and mystery that may reside in the point of departure. Implied is the question of how to begin, assuming that the starting point will have a considerable impact on the solution. It represents the belief that the starting point can encompass all possible continuations and outcomes. The beginning paves as well as taints the way forward while at the same time serves as a reference for the resulting progression.

At the outset of a design studio, teacher and students meet and the first exercise, the starting point for a period of learning, research and design is presented. What are the unique conditions of this initial phase? What are the possibilities inherent in it? Can we adjust our teaching methodology to incorporate an understanding of the initial phase? These questions and more have psychological as well as content relevance. Here we contend that the initial phase is of great importance and consequences, a stage that can and should be acknowledged, understood and properly positioned in the educational process. As contemporary trends are constantly shifting it is important to mine deeper into conditions abundant with potential in the design studio educational process, the initial phase is one such condition.

Figure 1 Starting blocks

Theoretical background

The early stages of design education have been the subject of a vast amount of research. This varied body of research in the field of design education is concerned with issues such as curriculum, relationship to the profession, first year and more. There is also abundant material on studio-specific issues, such as methodology, problem-solving, learning styles and more.

Somewhat less research interest has focused on psychological and educational issues (Ochsner, 2000). Questions concerning how to begin a design studio and what is unique about the initial phase in the studio are of interest but remain neglected as a comprehensive field of research.

Examples for the interest in the initial phase are varied. One such example is Johannes Itten's approach. As a teacher at the Bauhaus, Itten was most influential in constructing its basic design course (Wick, 2000). Itten stressed the relationship between physical movement and creativity, the holistic connection between body and mind. Itten acknowledged the importance of the beginning period in the studio: "As a rule, Itten began his course with gymnastics, in order to 'enable the body to express itself, to experience things, to awaken these things in it.'" (Wick, 2000, p. 103).

The early stage of problem-solving process is referred to as "problem structuring" or the "analysis phase" (Restrepo & Christiaans, 2004). This stage and its implications are reflected in varied innovative studio exercises. One such example evolved at the Cooper Union School of Architecture under the guidance of the late John Hedjuck (Henderson & Diller & Hedjuck, 1988).

This approach encompasses ideas such as the analysis problem that takes the end product as the starting point rather than the other way around, or the cube problem, in which the problem is to define a proposal for a given form, a cube, rather than to give form to a design problem (Horn, 2006). Another applicable example was presented by Stefani Ledewitz. She refers to her model of teaching as "beginning backwards". In the first meeting in the studio, students are given 24 hours to solve a complex design problem. After that, the solution is reevaluated and used as a reference point. During the rest of the semester students work backward interpreting their accomplished solution. This method consciously makes use of the initial phase of the semester (Ledewitz, 1985).

A research study by Birer and Yazici provides an example of a multidisciplinary approach to presenting a design problem at the beginning (Birer and Yazici, 2011). The study explores the creative benefit of transforming concepts and methods from other disciplines into the studio, they conclude that introducing students to "fantastic fiction" early in the studio will benefit their creativity: "[It is] safe to assume that starting design process with fantastic fiction and gradually increasing information that would improve visual perception would enhance creativity." (Birer and Yazici, 2011, p.1102).

There are many descriptions of studio work and exercises in which the beginning is crucial and interesting. It cannot be said that the significance of the beginning has gone unnoticed, as this statement by an enthusiastic studio instructor demonstrates: "Our crazy laughter on the first day is one of the most important moments of the project." (Bermann, 2002, p.268). Yet the initial phase in the design studio as a specific and unique situation remains to be further researched.

The initial phase

The initial phase can be defined as the period comprising the first sessions in the studio. Several issues arise during this period that differentiates it from the rest of the semester. Among these are psychological issues of human interaction and the way we process information. This is a tense period marked by anxiety and insecurity that can have considerable impact on the semester. Both the psychological and the content aspects in the initial phase are important to everything that oc-
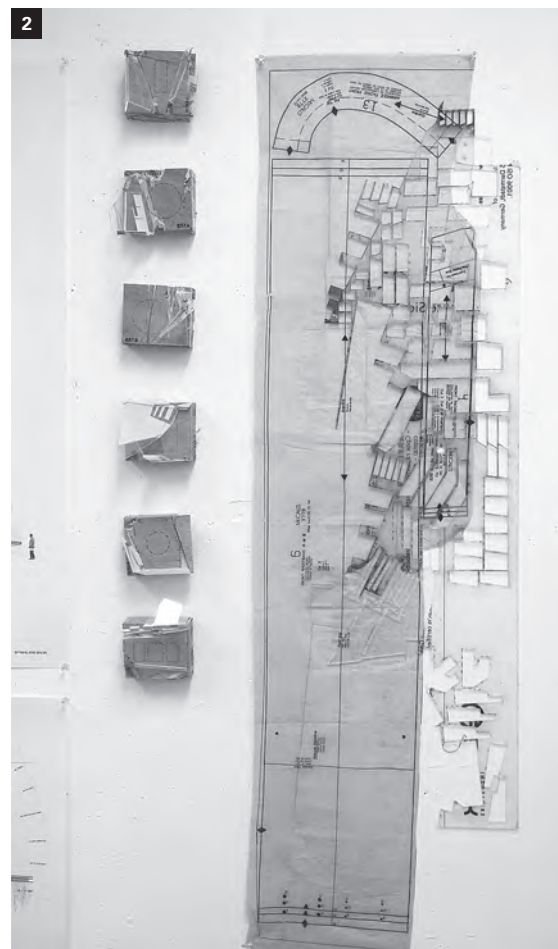
Figure 2 An example of students' creation, uncertainty and creativity.

curs subsequently. This can be compared, metaphorically, to the role of starting blocks used by athletes (Figure 1). Used properly it can became powerful tool to better exploiting advantages toward shifting conditions in the design studio process.

In the course of research regarding the initial phase in the design studio six issues were explored, they have unique importance in the initial phase in the design studio:

- **A.** Preliminary bias
- **B.** Problem definition
- **C.** Creativity
- **D.** Psychological/educational issues
- **E.** Problem structuring
- **F.** Directness and Indirectness

A. PRELIMINARY BIAS

People tend to be biased toward preliminary knowledge. We tend to assign more significance to earlier information, while using later information to confirm what we already know. This is even more so among designers, who tend to jump ahead to possible solutions prior to receiving full knowledge of the problem (Restrepo and Christiaans, 2004). Cognitive and social psychological research points to issues of first impression, bias based on information primacy, and the primacy of information presented first. It offers three major explanations for the so-called primacy effect:

- **1.** Fatigue or boredom leading to decreased attention.
- **2.** The assumption that information received later is of less value.
- **3.** People create first impressions and use later information in a biased way to reinforce it.

We tend to explain reality to confirm to our initial impressions, even to the point of contradiction (Tetlock, 1983). This is also indicated in a study by Rabin and Schrag:

"Psychological research indicates that people have a cognitive bias that leads them to misinterpret new information as supporting previously held hypotheses... [People] may come to believe with near certainty in a false hypothesis despite receiving an infinite amount of information." (Rabin and Schrag, 1999, p.37).

B. PROBLEM DEFINITION – UNCERTAINTY

Design problems are problematic in their formulation and their meaning, even more in the educational format of the design studio (Buchanan, 1992). This is well put by Cross:

"It is also now widely recognized that design problems are ill-defined, ill-structured, or 'wicked' ... They are not problems for which all the necessary information is, or ever can be, available to the problem-solver. They

are therefore not susceptible to exhaustive analysis, and there can never be a guarantee that 'correct' solutions can be found for them." (Cross, 1982, p.224).

According to research in the field of design problem-solving, the state of uncertainty with respect to problems and their definitions is one that designers must learn to live with and even thrive under (Figure 2). Some researchers claim that designers even create uncertainty in situations where it does not exist (Restrepo and Christiaans, 2004). Further, some researchers claim that the ability to overcome the stagnation caused by uncertainty is essential to ensure an efficient design process, as indicated in this statement by Restrepo and Christiaans:

"The less successful students asked for large amounts of information, but for them, "gathering data was sometimes just a substitute for any design work" ... (it is) suggested that the need to gather information, to structure the design problem, is related to the inability of the designer to cope with uncertainty." (Restrepo and Christiaans, 2004, p. 1556).

Hence, the issue of how a problem should be stated and what problem should be defined in the design studio becomes essential.

C. CREATIVITY

One of the main goals of design education is to teach and enhance creativity. The teaching process taking place in the design studio is referred to as "reflection-in-action," a term coined by Schön to explain the unique way designers are educated (Schön, 1984). In the design studio the design problem should be creative, presented in a creative fashion, and encourage creativity. Creativity resides not only in the outcome of student work but also in the actions and definitions provided by design educators in the initial phase. As Wiley states, "Altering the instruments, tools, and the process used during design increases the students' awareness of the influences exerted by their method, and such awareness could further the expression of an idea." (Wiley, 2006, p.350).

D. PSYCHOLOGICAL/EDUCATIONAL ISSUES

Most design teachers are experienced professionals not educated educators. In their teaching they depend more on personal experience and less on theory and knowledge. Ochsner describes this situation:

"Given the relative lack of any developed analysis of design studio instruction or instructor-student interaction within the architectural literature, this essay will look outside architecture to the literature of psychoanalysis for clues to understanding the studio process." (Ochsner, 2000, p.194).

The importance of psychological/educational issues cannot be dismissed. The educational questions in the design studio should be raised not only about content but also about how a problem is presented. The "how" in psychological/educational terms is no less important than the "what" in professional architectural terms. This is most influential and relevant in the initial phase of the design studio.

E. PROBLEM STRUCTURING

Research concerning problem-solving stresses the importance of the early phase during which the problem is structured. Given the nature of design problems it becomes essential to pay attention to this time frame, as Restrepo states:

"Problem structuring occurs mainly in the beginning of design process... early representations have a great influence on how the process continues." (Restrepo and Christiaans, 2004, p. 1556).

The relationship between problem and solution is not a logical one. The incomplete and changing information about the problem and its nature is such that research has defined the early stages of problem analysis as "structuring." This term indicates that not only is the problem evaluated and considered in linear and logical terms, but it also gets reshaped in the mind and it is structured and restructured until a solution is formulated (Figure 3). Some researchers claim that a solution can be formed prior to problem structuring, simultaneous with it or via a fluctuating process. Structuring condenses the essence of the creative process, a mysterious bridging process that transforms a design from an "ill-defined" problem into a solution-ready condition.

F. DIRECTNESS AND INDIRECTNESS

Some issues should be approached indirectly and in a prolonged manner rather than directly. This notion proposed by educator John Dewey is rather philosophical and psychological in nature. The reasons and consequences of such an approach have been discussed by philosophers such as Merleau-Ponty and Walter Benjamin or writers such as Milan Kundera, yet this remains a matter of personal preference.

Case study

In general, the design process is commonly described as a linear process. The design process can be simplified to three main phases: (1) **briefing –** presenting the problem; (2) **analysis –** structuring and ordering the problem; (3) **synthesis –** generating a solution (Johnsey, 1995; Lawson, 2006). The studio environment in design education largely differs from the actual practice environment. According to Schön, education in the studio

Figure 3 An example of students' exploration, an attempt to "structure" a design problem.
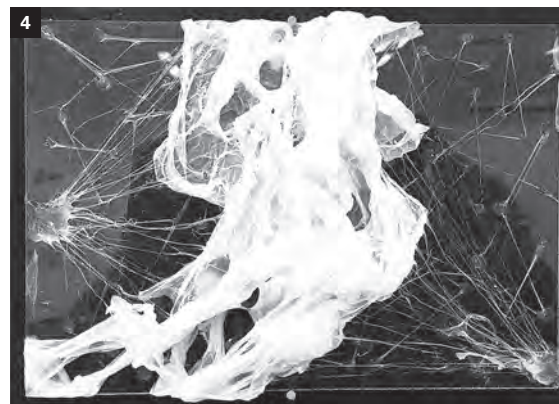
Figure 4 An example of students' reaction.
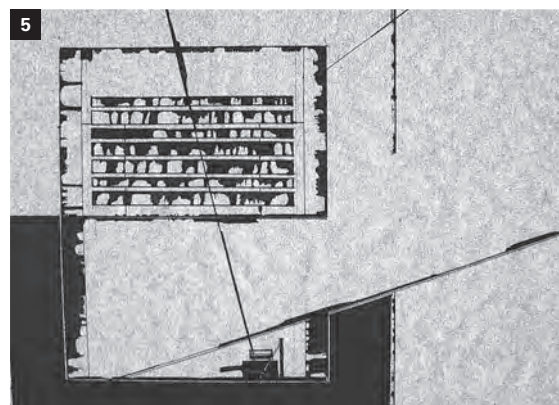
Figure 5 An example of students' reaction.

takes place by means of constant reflection about solutions and processes as they are tested and executed. This offers the possibility of digressing from a mirror image of real-life by proposing that the uniqueness of design education lies in its process of experimentation, not in its ability to mimic existing patterns of operation (Waks, 2001).

In the case-study researched, students were given a starting object to reflect upon, rather than a direct design problem. This starting object can be a short story, a seminal art work, a movie, or a musical piece. After the

Figure 6 An example of students' reaction.

object has been presented, the students are asked to react to it visually. The starting object is defined as a "trigger" or a "starter" which generates a reaction from the students based upon their associations and intuition (Figures 4, 5, 6). The idea is for the students to react rather than to research or to solve or to find any other logical interpretation of the trigger. Thus, right from the start the students are required to create. The concept underlying this methodology is to approach the design problem indirectly and to tackle the uncertainty found in the "ill-defined" nature of design problems. The goal is to generate equilibrium in the choice between logic and intuition during the structuring phase of the design problem.

This starting trigger aims at facilitating non-linear process that will do not yield a solution or a conclusion. This initial reaction aims at generating a personal esthetic design language that students develop further in the process. The starting objects aim to opening up a bottomless ocean of associations and possibilities for the students to react to. It offers an action space in which no answer can be wrong and no creation can be the answer. The triggers given to the students do not constitute a specific design problem. Yet they do encompass enough visual and cultural content to generate a multitude of associations and responses. As a whole, the case study researched is a methodology that attempts to acknowledge all the conditions which were defined in the initial phase of the studio, as noted earlier:

PRELIMINARY BIAS: Presenting non-relevant information in the preliminary stage challenges the importance of all subsequent data. It contests the tendency to be judgmental in a biased way toward prior information.

PROBLEM DEFINITION: The approach attempts to reconcile the difficulties inherent in the definition of design problems. This method does not provide a better definition of design problems but rather places emphasis on its ambiguity and challenges students to respond to it.

CREATIVITY: The approach emphasizes creativity. It requires students to make connections, associations, invent, and respond in creative manner. It does not begin with research or analysis but emphasizes a creativity. It puts the creative before the analytical.

PSYCHOLOGICAL/EDUCATIONAL ISSUES: The approach does not directly tackle psychological and educational issues. Rather, it acknowledges their existence and attempts to clarify them early on in the studio.

PROBLEM STRUCTURING AND DIRECTNESS AND INDIRECTNESS: As Dewey notes, in education some issues should be approached indirectly. Education in design is one of these issues. The method presented proceeds indirectly and postpones direct and known response to design problems.

Discussion

In this paper the initial phase in the design studio, was defined and explored. The specific conditions of this beginning period were evaluated, and the possibilities inherent in them were explored and defined. I proposed that the educational process in the design studio can benefit from placing conscious emphasis on the initial phase. Actually I contend that contemporary design education approach should not neglect opportunities and challenges that in previous decades might have been overlooked. Studio design educators need to define and reconsider their understanding and methodology in accordance with the propositions raised here in relation to the initial phase.

The case study presented is an example which allowed an evaluation in context of the initial phase. We can all benefit and enhance our methods by acknowledging, understanding and responding to the initial phase in the studio. Most studio instructors have, or should, an established method of teaching and design exercises employed in their classes; some of them are inspiring and unique. Yet as we face ever growing complexity and variety of approaches and responses it becomes more and more essential for a better definition of each phase in the process.

Further research on this issue can explore some additional questions, such as: In what other ways can the initial phase be acknowledged and assigned importance? In what ways can we further explore the initial phase? Is there a difference of the importance of the initial phase in the context of different teaching and learning styles? And there are more questions that can be researched in relation to the initial phase. I believe that acknowledging this phase of the studio, understanding its unique position in the course, and responding to it in whatever way relevant to the teacher's individual teaching style will benefit us as educators and our students as future designers. As reality, which the design studio attempts to respond to, becomes ever more conflicting and ambiguous, an understanding of the initial phase in the design studio can offer the means to reconcile realities' ever shifting conflicts.

Amos Bar-Eli
Architect
HIT – Holon Institute of Technology
Israel
Amos2667@gmail.com

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Ren Lisha & Tu Yulin

'Excellent engineers': Design of teaching aid under the creative curriculum and education mode

Abstract
Under the plan "Excellent Engineers ", lots of schools of civil engineering try hard to foster students with the abilities of innovation and practice, but many of them are facing a problem of combining practice with theory in undergraduate education. Aiming at undergraduates majoring in civil engineering, through the research of existing teaching aids, 3D models, prototype making and mechanics experiment, a new kind of modularized teaching aid based on bridge construction was designed and developed. Combining theoretical analysis and calculation with structure models assembly, the teaching aid hopefully helps to nurturing creativity, practice ability and the ability to comprehend and apply engineering theoretical knowledge to solve practical problems.

Keywords
Teaching aid. Engineering education. Practice. Modularization

Background
The Excellent Engineers Training Program is an influential plan about education revolution, aiming to train a generation of high-quality engineering talents who are innovative and adaptive to the economic and social development. It helps achieve the goal of embarking on a new industrialized road, building an innovative country and implementing the talents strategy for powerful nation (Dong et al, 2012). A new education system which encourages students to explore and create by combining the theory with practice in the innovative education mode is the effective way to fulfill the tasks brought by the plan and to keep providing high-quality talents for the country (Wang et al. 2007).

As a subject of use and application, Civil Engineering highly requires that students in this field be equipped with basic knowledge and practical ability. Therefore, apart from improving the education system, it is also crucial to explore how to take full advantage of teaching tools to improve education quality. It has great guiding significance in promoting education system reform. On the other hand, it is of huge social value considering that students will be more qualified for their future work.

The characteristic of teaching aids under the creative curriculum and education mode
The objective of Excellent Engineers Training Program requires that the teaching tools should play a role in combining theoretical teaching with practical teaching. From the view of teaching, it is of much importance to develop students' practical operation ability as well as the ability to comprehend and apply engineering concepts i.e. the ability to think deeply in a practical engineering way. Therefore, the teaching tools are required to help users make what they have learnt into practice and develop their ability to deal with problems.

In addition, we should not only focus on assisting teachers in teaching theories especially some abstract concepts, but also emphasize the development of students' self-learning ability and practical ability under the innovative teaching mode as well, for a key difference between traditional and innovative teaching is the change that the teaching emphasis transfers from students' being taught to learning by themselves. What's more, invention of teaching tool should also allow for the openness that there is no limit to the users' creative thinking and offers them the chance to explore and be inspired.

Current situation of teaching aided products of engineering education

The majority of professional teaching tools among the present market are those that serve the traditional teaching mode, mainly aiming to aid teaching. There is a newer trend in the users of the real teaching tools involving independent exploration in the present market, most of which are baby's brain development tools, children's educational toys and primary and secondary schools teaching aids. It is hardly to find such a set of professional tools designed for engineering students. There are some selected products which meet requires of innovative teaching mode in a way and then did the case study.

K'nex teaching system

The K'nex system is a relatively ideal toy to encourage children to learn and explore while playing. Its building system consists of interlocking plastic rods and connectors, which can be connected at different angles and directions to form all kinds of models. There are many other pieces, such as Wheels, Gears, and Pulleys, which allow the users create more models they want. In addition, its modular design makes it suitable for mass product. The system provides a good way to nurture users' creativity, but it can hardly meet the requirements of professional engineering education, because it could merely simulate the form of the structure, but couldn't demonstrate the real force state to be theoretically calculated.

Lego

Lego is a typical and popular kids' toy which can be assembled and dissembled. And its modularization makes it easy for mass production. It consists of colorful interlocking plastic bricks, which can be connected to make all kinds of models. Its interesting design arouses the users' enthusiasms to explore, but for it is not particularly designed for professional engineering education, its shape, connection method would bring troubles when it is used in simulating structure model, let alone in the professional level. Besides it couldn't demonstrate the real force state and simulate the real function of structure, it couldn't be theoretically calculated or test the users' ability to apply engineering theoretical knowledge.

Design process of the teaching aid

Different departments in civil engineering have different research fields. Because the structures in bridge engineering is relatively clearer compared with building engineering in which there is more requirements for the material of other parts such as External Walls, we chose bridge structure as the start-point of our research. Inspired by the existing teaching products which can
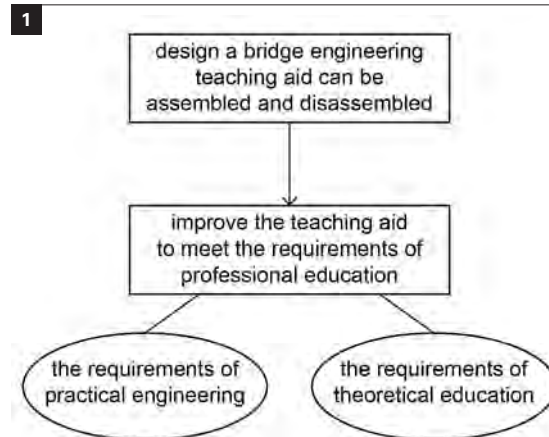
be assembled and disassembled, with the aim of combining practice with theory education, we make a basic mind map of how to design the teaching aid as the figure 1 shows.

Tentative exploration by making bridge models

The first step is to design a bridge engineering teaching aid can be assembled and disassembled. Because of the diversity of bridge structures, three typical bridges (Ancheng Bridge, Qiantangjiang Bridge and Zhangzhen Bridge, China), respectively selected from three basic types of bridge forms (arch bridge, beam bridge and cable-stayed bridge), are simplified in order to guide the next step as the figure 2 shows. Then with the method of 3d model and real model making, we explored and developed the shape of beams and decks, and tried to using a kind of universal connector to connect beams with beams, beams with decks, and decks with decks as the figure 3 shows. The developed model can basically meet the requirement of assembly and disassembly.

Redesign based on practical engineering

This step is to meet the requirements of practical engineering. Because the ability of force conduction of the existing connector is quite limited, the whole model made by the teaching aid couldn't simulate the force state of the structure or conduct a real load test. And then it cannot be further designed professionally without the foothold. On the other hand, because of the ignorance of the beams' function and that its size is similar with the decks, the current beams cannot play the role of which in the real bridge. Besides, the simplex shape of beams results in the simplex section of the structure it could simulate, which limits the diversity and possibility of the models the users could build based on engineering construction.

However, among the existing connectors, the strengthen parts of the deck-deck connectors, shown in the fig-

2

Ancheng Bridge	
Arch Bridge	span: 65 m, width:7m

Qiantangjiang Bridge	
Beam Bridge	span: 1453 m, width:9.1m

Zhangzhen Bridge	
Cable-stayed Bridge	span: 126 m, width:12.8m tower height:30.31m

3 making simlified bridge models

making models for details

3D models for further details

4

strengthen part

5
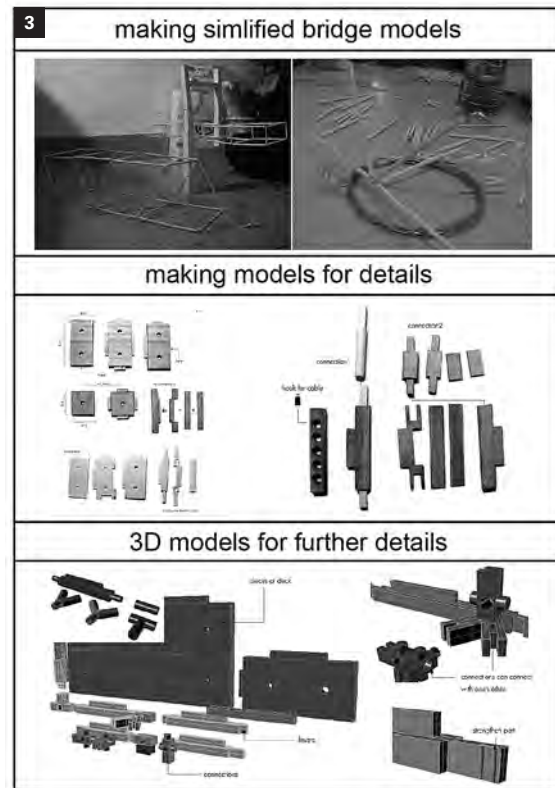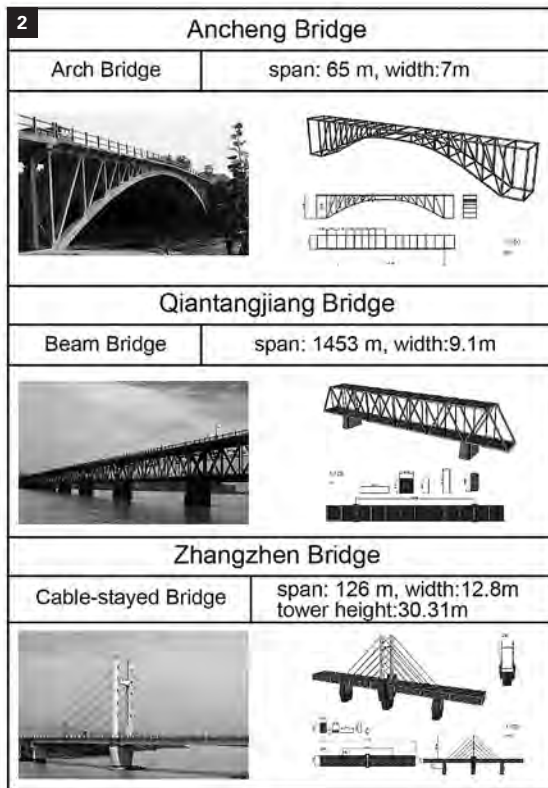
Figure 1 the mind map of how to design the teaching aid
Figure 2 the simplified models of the three typical bridges
Figure 3 the methods of developing beams, decks,and connectors
Figure 4 the strengthen parts of the deck-deck connectors
Figure 5 the schematic plot of splitting sections of bridges

ure 4, conduct the force well, moreover it is quite similar with the one used in the real engineering project. Inspired by the strengthen parts, therefore, the connectors which consists of slices and studs are designed, and the corresponding beams are redesigned. By simplifying the sections of common bridges and splitting them into basic possible ones, rectangle and H-shaped sections became the prototypes of the model set. This not only much more conforms to the sections of steel structure, but also provides more possibilities of the structures they could simulate. Then the H-shaped sections are split into T-shaped and L-shaped sections, plus a kind of universal added cross sections which could achieve the goal of simulating box girders with variable cross sections, to meet more complicated requirements of practical engineering. The schematic plot is shown in the figure 5.

Redesign based on theoretical education

In order to fulfill the ultimate goal of combining the theoretical education with practical education professionally, besides construction of the bridge model, it is necessary to take analysis, calculation and even load test into consideration. The whole set of procedures are integrated into sino to make students apply what they have learnt into practice.
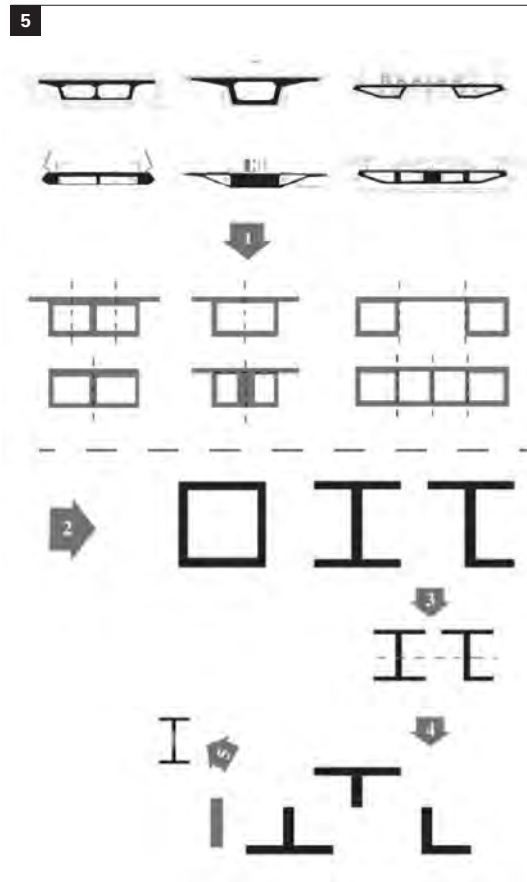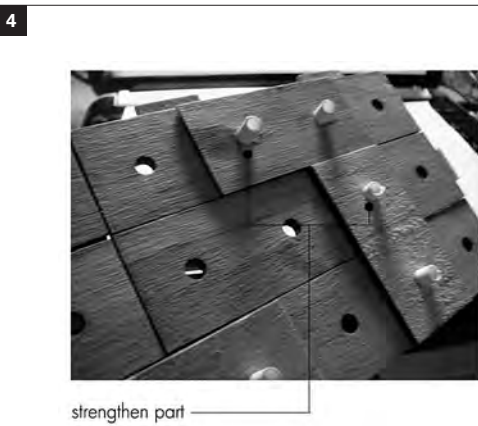
The theoretical calculation depends on the precise data about size and mechanical parameters, so we determine some representative sizes of cross section (the cross section in rectangle, H-shape, T-shape, I-shape and added cross section) and lengths of components (the lengths for connectors with direction of 30, 45, 60 and 90 degree). Moreover, the consistent size between connectors and rods together with the sizes and intervals of the stud holes on them are also decided, assuring they could be used compatibly.

It is noted that the numbers and positions of the studs distinctly influence the bearing capacity. To make use of this skillfully could offer different bearing capacity for the connectors. By thinking about where to put the studs and the number of them, users are trained to check whether they have analyzed and calculated in a correct way, as shown in figure 6. In order to provide the real data for the users, we performed the experiments about studs in the favor of students in Bridge Engineering. The data is the evidence for teachers to examine whether students have the right calculated results, as shown in figure 7.

The quantitative computation requires other parameters containing the weights of components needed, elasticity modulus and ultimate strength of the material. Obviously, the areas of the cross sections are included as well.

Considering the costing and volumes of teaching tools, studs were marked into different colors, each color re-

presenting a kind of force state so as to examine whether students have correctly analyzed the force.

It is known that force is the key to study structures in teaching and learning. Invisible and colorless, it is hard for students to understand force which actually exists in the structures. If teaching aids can help convert abstract into concrete, it will make a big progress in the recognition about force. Then we find the photoelastic phenomenon[1] can show the force in the structure, so the photoelastic components is designed to make force 'visible' (see details below).

SINO-Structure Input and Output

sino, the name of the teaching aid, is short for structure input and output. There are two types of basic rods with fixed cross sections, rectangle and H-shaped respectively. The rods with variable cross sections are T-shaped, L-shaped and I-shaped, which could be put together to simulate box girders with variable cross sections in order to offer more opportunities to reproduce the structure of bridges. Components for analysis based on the photoelastic experiments are made of epoxy resin, the same size with the basic pieces. Therefore users could replace the normal ones with those used for photoelastic analysis if necessary to understand the existence and change of force directly. Connectors are in the form of slices and studs, making it easy to conducting force. Connecting slices could connect two rods in the directions of 30, 45, 90 and 180 degree. And all studs are in yellow, blue, green and semitransparent. The appearances and sizes of the components are shown in the figure 8.

According to the process of teaching and learning, sino could combine the theory with practice in four levels.

Level 1: the knowledge of the components

A variety of structures could be built by sino, including truss bridge, cable-stayed bridge and bridges with different cross sections, as shown in the figure 9, during which students can have a full knowledge about the designation and function of all the components and teachers can demonstrate and explain in a more direct way.

Level 2: perceptual cognition about force

The design of photoelastic components is based on the photoelastic experiment that the molecular arrangement in epoxy resin as well as the interference pattern varies when the force applied to the material changes, as shown in the figure 10, Users could randomly replace normal components with photoelastic ones, for they are similar in size. Thus, force can be sensed directly and understood better.

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[1]   Photoelasticity is an experimental method to determine the stress distribution in a material.

6

7

	single row	double rows	three rows
shear capacity	210N	350N	490N
bending moment capacity	3500N*mm	4500N*mm	6000N*mm

Reduction factor is approximately equal to 350/ (210*2)-0.83

8

Rectangle Beam

25*25mm   20*20mm

Length: 200mm, 175mm, 140mm, 100mm

H-shaped Beam

25*25mm   20*20mm

Length: 200mm, 175mm, 140mm, 100mm

L/T/I-shaped Beam

Photoelastic Component

Furcation Connector

General Connector

slice

stud

9

simulate different structure models

simulate different cross sections	simulate box girders with variable cross sections

Figure 6 the schematic plot of how the connectors work
Figure 7 the data of the studs experiments
Figure 8 the components of SINO
Figure 9 the samples that SINO could simulate

10
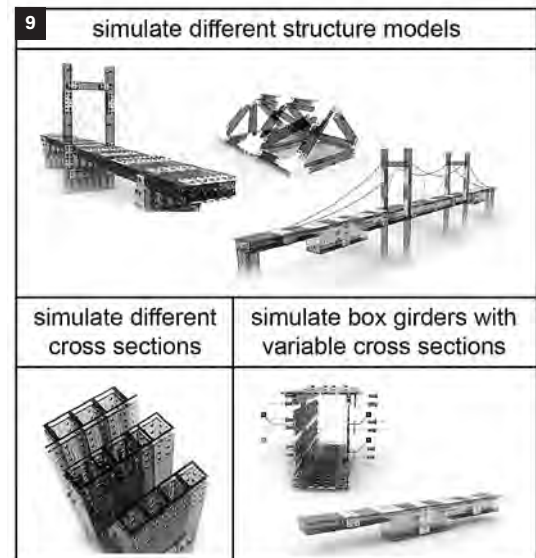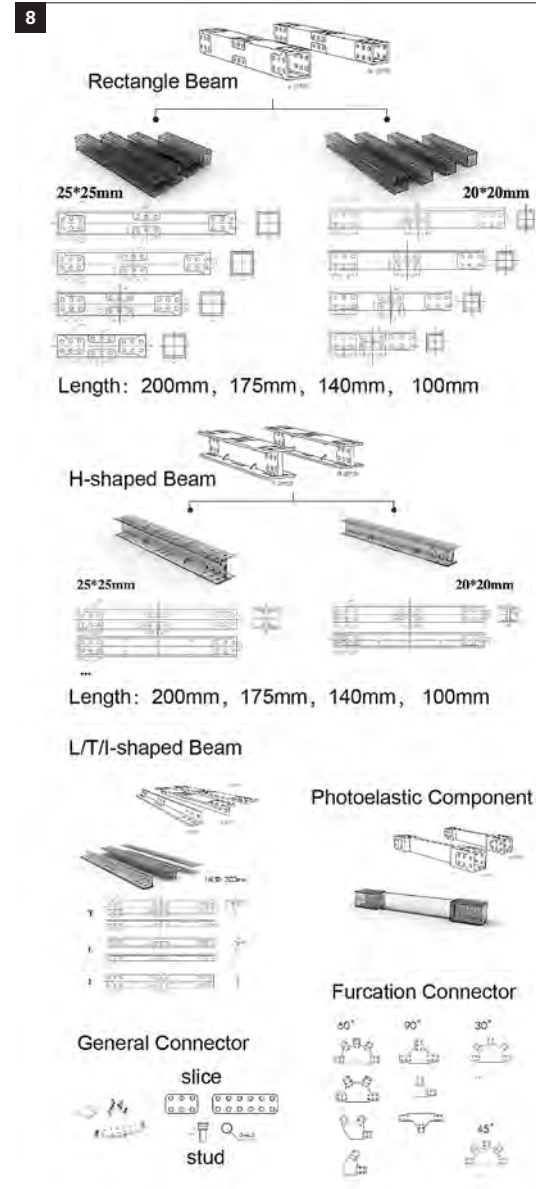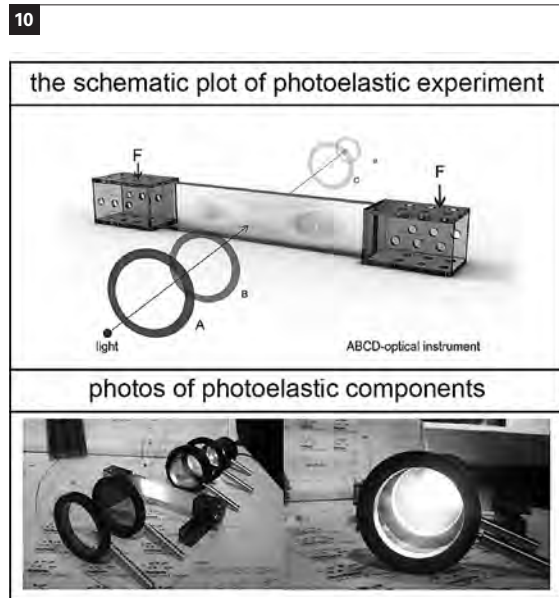
Figure 10 photoelastic components

Level 3: comprehend and analyze the force state

It is important for training engineers to comprehend the force state. The studs were marked into three colors. Yellow represent that the studs used here are exerted pressure, blue tension and green axial force. After analysis and calculation, students are asked to put the studs in the correct position with correct color, which later can be examined and judged by teachers.

Level 4: quantitative analysis of the structures

The possibility of quantitative analysis distinguishes the SINO from the tools only copying the form of the structures. Given the components and the parameters needed for calculation, including elasticity modulus (3.19E9) and ultimate strength(50MPa) of the material and the weight and size of the components, users could calculate the flexural moments of inertia, areas, tensions, bending degree etc.

In addition, through checking the number and positions of the studs put by students, teachers could tell whether they have fully understood the structure and whether they calculated correctly. Moreover, a plenty of combinations of the studs encourage students to explore and experiment independently, leading to a better teaching effect.

Discussion

1. Because the lengths of rods and the angles of the connectors are constant, it could hardly satisfy the requests of some special lengths and angles, which restricts the types of models from SINO. It would be better if rods and connectors with variable length and angle are designed.

2. Given existing components, models of more complex structures turn out to be overlarge. If manufacturing technique permit, rods and connectors of smaller size will be designed and made to put complex structures into reality.

3. The studs experiments also prove the realizability of the idea of offering different bearing capacities for users to choose, but the data of these experiments applies to the same material and size of components with those used this time only. And because the results of the studs experiments are related to material and quality of manufacturing, when it is involved with mass produce, studs experiments will be needed. What's more, considering the change of materials, components should be adjusted and optimized to get better results.

Potential and expectation

The SINO shown here is just at a preliminary stage, yet lots of teaching aids like SINO are promising for the their contributions to the promotion of innovative education system. Developing and exploring SINO's potential and possibility in function and combination as well as mass production is worth discussing and studying. Anyway, it could be even better and we expect its development in the future.

Ren Lisha
Tongji University
China
renlisha@gmail.com

Tu Yulin
Tongji University
China
tylinyyy@gmail.com

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Track 3

Social Engagement

Michael Pape & Lorenzo Imbesi

Crowdsourcing and crowdfunding in design: When the user is the stakeholder

Abstract

The 'Crowd' refers to large and dispersed individuals who act as stakeholders with small donations for projects. Crowdfunding is becoming a new occurrence for financing entrepreneurial projects while incentivizing contribution by offering non-pecuniary rewards in exchange for financial support, usually in the form of product preorders. Crowdsourcing refers to the mobilization of members of the general public to voluntarily perform tasks such as problem solving, evaluation, or creative thinking.

This paper investigates the convergence of crowdsourcing with collaborative and co-design processes between designers and crowds. The research focuses on how self-selected user-stakeholders are enabled to participate in the development of projects by leveraging both their finances and collective intelligence. Here crowdfunding is considered in the context of the contemporary post-industrial phase, where the centralized organization of mass-production is leaving space to new multi-level and networked forms of management. In the post-industrial society, the creative labor is key for the generation of value and innovation in the global competition, but also to democratize production and generate knowledge transfer for collective intelligence extended to the entire society.

The paper discusses the current state of participatory practice in crowdfunding via examples of design projects that have integrated participatory elements into their fundraising campaigns. The results provide a basis of current standards in participatory crowdfunding and point towards future work in understanding, evaluating, and implementing systems that facilitate crowd collaboration.

Keywords

Introduction

This paper aims to investigate crowd participation in designcentered crowdfunding projects that were successfully funded through Kickstarter, a reward-based crowdfunding platform. This phenomenon intersects with established scholarly literature on the subjects of co-design, crowdsourcing, crowdfunding, collective intelligence, post-industrial design, and participatory cultures. The following review aims to identify and summarize relevant findings from the aforementioned literature in order to inform and contextualize this research.

Crowdfunding is emerging as a way to finance projects through platforms such as Indiegogo or Kickstarter (Kuppuswamy & Bayus, 2013; Mollick, 2013a). After the traditional sources of funding such as venture capital or bank loans, the 'crowd' can become an alternative and the designers are quickly learning to develop project proposals through such platforms (Agrawal et al., 2011; Giudici et al., 2012; Kim & Hann, 2013; Kim & Viswanathan, 2013; Mollick, 2013a).

Crowdfunding platforms like Kickstarter support projects by offering non-pecuniary rewards in exchange for financial support, usually in the form of product preorders (Belleflamme et al., 2013a; Kuppuswamy & Bayus, 2013). It happens that project supporters are paying special attention in the fruition of the concept, and often in the future become users of the proposed product or service, so developing a connection between financing and consumption (Belleflamme et al., 2013a). Crowdfunding platforms have the power to enhance the consumption experience and increase the product's quality (Belleflamme et al., 2013a).

Post-industrial design & participatory cultures

According to Sanders and Stappers (2008), the development of participatory and co-design approaches has taken decades partially due to opposition from professionals and academics, which the authors assert is due to a widespread belief that most individuals lack creative or innovative potential. While this attitude has been shifting towards "egalitarian idea sharing" due to the internet, the authors claim that participatory thinking is still many years away from having a significant impact on mainstream, professional design and development (Sanders & Stappers, 2008).

Conversely, peer-to-peer information sharing has surged with the increase in internet usage, reinforcing a non-hierarchical global community that actively nur-

tures collective knowledge and solves diffused problems (Kleemann et al., 2008). According to Manzini (2013), people can and should be seen as assets whose expertise and collaborative potential can be harnessed to contribute solutions to complex problems via co-design and co-production, as evidenced through the evolving role of designers as facilitators in the post-industrial era.

Post-industrialism emerged in the 1970's as the beginning of a shift from top-down mass production of material goods to the multi-level production and management of immaterial resources, such as networking, coordination, and the production or transfer of knowledge (Imbesi, 2011).

This shift was tied to a dramatic reduction in manufacturing costs (Imbesi, 2011), as well as the transformative effects of globalization, open markets, technological advances, and cultural factors (Imbesi, 2012). Importantly, post-industrialism does not purport to replace or nullify industry, and works in tandem with industrial methods of production, albeit towards different goals (Imbesi, 2011).

In the post-industrial context, innovation and creativity are of critical importance to success in the competitive global marketplace, and creative labor is able to generate significant value in the place of material goods (Imbesi, 2011). Contrary to the mass-production of rigid and singular responses to complex problems, creativity can be leveraged to facilitate the ideation and design of localized solutions to specific situations (Imbesi, 2012).

This has shifted the role of the design profession, away from simply creating or styling products and towards formulating strategic services, systems, and processes through which value can be produced and evaluated in terms of human experiences rather than market success (Imbesi, 2011). To that end, designers no longer need to be rigidly focused on the final aesthetic results of production, instead flexibly working in an interdisciplinary manner to affect the entire process of conceiving and developing designed solutions to complex human problems (Imbesi, 2011 & 2012).

The dispersion of the means of production through technological advances and the internet has democratized design and production processes on a massive scale, as evidenced by open source and peer-to-peer models (Imbesi, 2011). In this context, designers can act to guide and direct the creative resources of society through networking, participatory practices, and design tools (Imbesi, 2008 & 2011). These developments relate to the notion of design for social innovation and participatory cultures, in which groups of people collaborate to design localized solutions via open sharing of both material and immaterial resources. 2.5.2 Co-Creation & Co-ProductionSurowiecki suggests that "[crowds] are all different, but they have in common the ability to

act collectively to make decisions and solve problems – even if the people in the groups aren't always aware that's what they're doing" (2005). Lévy discusses this potential with almost utopian optimism, suggesting that the internet "could become the most perfectly integrated medium within a community for problem analysis, group discussion, the development of an awareness of complex processes, collective decision-making, and evaluation" (1997, p. 59). He further clarifies that the goal ofsuch communities would be "to create a fully transparent market for ideas, arguments, projects, initiatives, expertise, and resources, one in which pertinent connections are established as quickly and cheaply as possible" (Lévy 1997, p. 75). This relates to the ideas of empowerment participation and 'co-creation', which focus on collective ideation to explore and address open-ended questions, rather than collaboration to simply realize a predetermined solution (Sanders & Simons, 2009; Tufte & Mefalopulos, 2009). Such practices have greater impact on the design process the earlier they are implemented, and are most effective when informing the entirety of a design solution (Imbesi, 2011; Sanders & Simons, 2009). Within these contexts, designers and generative design tools can and should operate as facilitators, applying established design principles and specialized knowledge to enable stakeholders to effectively co-create and co-produce solutions to complex problems (Imbesi, 2011 & 2012; Sanders & Stappers, 2008).

Collective intelligence and
the wisdom of the crowds

Collective intelligence refers "to the cognitive capacities of a society, a community or a collection of individuals" (Lévy, 2012). Individuals in the modern world are constantly creating, sharing, and interacting with tremendous volumes of knowledge. This process is characterized by the speed, quantity, and availability of the information involved, and is enabled by information communication technology and tools for filtering this mass ofnew knowledge (Lévy, 1997).

The average result of a large number of individual assessments tends to have a high degree of accuracy; "[t]he idea of the wisdom of the crowds is not that a group will always give you the right answer but that on average it will consistently come up with a better answer than any individual could provide" (Surowiecki, 2005). While collective or collaborative intelligence does not guarantee perfect results, it has shown through democracy, the scientificcommunity, and free markets to improve upon methods that depend on individual or hierarchical decision-makers, in terms of satisfying the greatest number of people (Lévy, 2012). An average group that meets the criteria for collective intelligence will consistently outperform an average expert (Suro-

wiecki, 2005). While we can observe that a few outstanding individuals are capable of outperforming large and diverse groups, such individuals cannot be easily identified or verifie (Surowiecki, 2005). Individual experts have a narrow focus and tend to be overconfident in their own predictions, though no evidence suggests that anything beyond a minimum level of expertise contributes to an expert's ability to forecast (Surowiecki, 2005). This relates to the previously discussed notion of user innovation in crowdsourcing, where users tended to outperform design professionals in terms of creativity (Poetz & Schreier, 2012), as well as to the idea that crowds' investment behaviour is comparable to professional investors (Burtch et al., 2012; Kim & Viswanathan, 2013; Kuppuswamy & Bayus, 2013).

Surowiecki (2005) posits that groups are able to be collectively intelligent through four key conditions: diversity of opinions, individual independence, decentralization, and a method of aggregating the group's output. Lévy (2012) similarly asserts that collective intelligence depends on individuals' creativity and critical thinking skills, in order to avoid standardization and mob mentalities. Fostering diversity is most important for small groups, as large groups are less reliant on individual group members for information (Surowiecki, 2005). Groups that aim to be collectively intelligent should not explicitly seek consensus, "which encourages tepid, lowest-common-denominator solutions which offend no one rather than exciting everyone" (Surowiecki, 2005). When groups are too reliant on a few sources of information or are unduly influenced by vocal individuals such as experts, the group begins to display herding behaviour. Surowiecki refers to this as 'social proof', stating that "[people] assume that if lots of people are doing or believe something, there must be a good reason why" (2005). This is readily apparent in the case of information cascades, in which the effect of prior decisions, made in sequence, influence present and future decisions (Surowiecki, 2005). Fortunately, the more important a decision is to an individual, the less likely such a cascade will have a significant impact on that individual's decision, lessening the effect if has on the group as a whole (Surowiecki, 2005).

Participatory design practice

Co-design refers broadly to "the creativity of designers and people not trained in design working together in the design development process", and is based in the tradition of participatory design (Sanders & Stappers, 2008). Participatory design practice has been growing and evolving over the past four decades, and while it originally centered on the development of information technology, it has since seeped into other fields of design and development (Sanders, Brandt, & Binder, 2010; Sanders & Stappers, 2008). There has been a similar-

ly gradual shift towards 'participatory development', which utilizes varying degrees of input from users or 'primary stakeholders' to inform the goals and implementation of development projects (Tufte & Mefalopulos, 2009).

Participatory design practice often revolves around the use of in-person workshops, pre-established toolkits, and direct oversight by designers in order to enable and guide participants in contributing to design processes (Sanders et al., 2010; Sanders & Simons, 2009). Ideally, this relationship between participants and designers is ongoing rather than a singular event, taking the form of iterative meetings that rely on a diversity of perspectives and opinions in order to provide useful output (Sanders et al., 2010). Early research on user participation combined the design expertise of professional designers with the localized expertise of users, enabling users to assist in defining the problem and suggesting potential avenues of design and development (Bødker, 1996). While this broadly resembles the aims and approach of user crowdsourcing, participatory design methods generally involve a much smaller number of participants and rely on in-person workshops and toolkits rather than digital communication technologies (Sanders et al., 2010).

In defining participatory development and participatory communication, Tufte and Mefalopulos (2009) classify four major levels of participatory action, distinguished by the degree of creative control afforded to primary stakeholders:

Passive participation: Primary stakeholders are informed about but not actively involved in the design and development process, which is handled by external experts.

Participation by consultation: Primary stakeholders provide feedback to specific queries from external experts in order to inform particular aspects of the design and development process, though such feedback does not necessarily have to be implemented into final outcomes

Participation by collaboration: Primary stakeholders are involved in exploratory discussion of solutions to problems that have been pre-established by external experts. This requires the active mobilization and involvement of primary stakeholders' creative capacities. *Empowerment participation:* Primary stakeholders are able to actively engage in problem definition, initiate action, and contribute towards collective and creative decision-making. This method integrates external experts as facilitators and equal partners in the process.

The authors go on to state that while participation "does not always mean everybody is engaged in every step of the way", more comprehensive participatory methods lead to progressively better project outcomes (Tufte & Mefalopulos, 2009). They assert that empower-

ment participation is the most optimal method of stakeholder integration, and that in order to be "genuinely participatory and truly effective, communication should occur among all parties affected, ensuring that all have similar opportunities to influence theoutcome of the initiative" (Tufte & Mefalopulos, 2009).

The digital crowds

Crowdsourcing, crowdfunding, and collective intelligence have been functionally enabled by the development and rapid dispersion of information communication technologies and the internet (Agrawal et al., 2011; Brabham, 2012; Kleemann et al., 2008). The notion of 'Web 2.0' is characterized by an increasingly mobilized and animated user base, and has been facilitated by huge rises in user count and user-generated content (Kleemann et al., 2008; Sanders & Simons, 2009). Social media enables connection with and mobilization of the public, attracting and engaging large and predominantly young audiences (Saxton & Wang, 2013). Additionally, it allows crowdsourcing and crowdfunding initiatives to effectively reach communities outside their geographic area, dramatically increasing their potential number of contributors (Agrawal et al., 2011; Kim & Hann, 2013; Mollick, 2013a & 2013b; Saxton & Wang, 2013). According to Mortati and Villari (2012), the crowdfunding platform Kickstarter is a successful community platform because it provides easy access to willing participants, encourages interdependence between founders and backers, is adaptable with no clear community hierarchy, and creates resiliency by fostering trust, networks, and norms. Distributed design and production are creating an environment of diffused collaboration amongst huge numbers of individuals, fostering the development of crowds that are representative of their collective intelligence (Mortati & Villari, 2012).

'Connectivity' between people, contexts, and artifacts is critical to the success and resiliency of these communities, and is achieved via common objectives, collaboration, design participation, and collective creativity (Mortati & Villari, 2012). In contrast with crowdsourcing initiatives, these communities are not managed or directed towards specific tasks by a centralized entity, and can operate on a peer-to-peer basis as is the case in open source development or open encyclopedias (Brabham, 2012). It is worth noting that while these communities are often seen as grassroots initiatives, participatory communication can be implemented at local, national, or international levels, regardless of the diversity or number of people involved (Tufte & Mefalopulos, 2009).

Case studies

This section looks at case studies of select crowdfunded projects in order to broadly identify the potential of combining crowdsourcing and crowdfunding. The pur-

pose is to highlight a broad range of levels and types of crowd involvement, and as such these projects each display unique participatory elements.

In particular, three successfully crowdfunded Kickstarter projects from the platform's Design, Technology, and Video Game categories, are considered as examples of crowdsourcing and crowd participation in a design context. Each of these campaigns followed a reward-based model, in which backers provided financial support in exchange for specific rewards, as determined by the size of their individual monetary contribution. In addition to these standard reward dynamics, each of these cases includes multiple forms of structured and solicited collaboration between project founders and backers.

Pebble Smartwatch

The Pebble is a watch that was developed by Pebble Technologies and crowdfunded through Kickstarter ("Pebble," 2014). The Pebble's campaign ran from April 11 to May 18 2012 with a combined total of $10,266,845 USD towards its $100,000 goal, and is currently the most funded Design project of all time on the platform ("Kickstarter.com," 2014). Financing the project reward-based, incentivizing contributions of $115 or more with preorders of the Pebble hardware. Two distinct types of non-pecuniary participation were encouraged and utilized by the Pebble's designers. Firstly, while the designers planned to produce the watch in three different colour options, they stated that all backers who had contributed $125 or more would be able to vote on a fourth colour to be released alongside the others. Secondly, they publicly released a software development kit (SDK), and offered backers the option to purchase early access prototypes of the hardware.

The distribution of voting rights allowed backers who had contributed at least $125 to select one of twelve colours decided by the Pebble's design team. These colour selections were partially crowdsourced through public suggestions via the website Pinterest, which the developers used to aggregate a list of popular color choices ("Pebble: Update #15," 2012). Voting then took place after the funding period was complete, from July 6 to July 21, and was carried out online via a specific website utilizing backers' personal information for verification ("Pebble: Update #16," 2012). The poll's result was announced on July 24 ("Pebble: Update #17," 2012), and after continued input from backers, a fifth colour was announced in September ("Pebble: Update #19," 2012), this time without a vote.

The option to purchase early access to Pebble prototypes presented a different and more exclusive opportunity for crowd participation. The prototype required a larger donation of $235 USD and was limited to 100 backers, and both it and the open SDK were aimed very

specifically to developers rather than casual consumers ("Pebble" 2014). The purpose of distributing developmental materials in this fashion was to crowdsource the development of software to work with Pebble's hardware ("Pebble: Update #4," 2012), enabling and encouraging independent developers to start working prior to the product's release. Prior to the end of the funding period, developers of applications such as RunKeeper ("Pebble: Update #8," 2012) and Twine ("Pebble: Update #11," 2012) were already announcing that they would work to support the Pebble, indicating that developers were interested in working with the SDK right away. Pebble's developers have since followed this by announcing the Pebble appstore ("Pebble: Update #49," 2014), a platform that will allow independent developers to share and sell software applications to Pebble users.

Oculus Rift

The Oculus Rift is a virtual reality headset developed by Oculus, and financed both independently and through Kickstarter ("Oculus Rift," 2014). The crowdfunding campaign, which ran from August 1 to September 1 2013, offered Rift hardware prototypes and SDKs in exchange for contributions of at least $275, and raised $2,437,429 USD towards its goal of $250,000. The initial campaign arranged to distribute a total of 7,388 prototypes and began shipping in March 2013 ("Oculus Rift: Update #28," 2013).

The main purpose of the Rift campaign was to crowdsource the testing of hardware and the creation or adaptation of software to interface with the device (Oculus Rift," 2014). Each prototype and developer kit gave backers access to centralized technical support and an official Oculus development forum, the purpose of which was to aggregate information related to the project. By providing and testing these development tools well in advance of the Rift's consumer release, Oculus could gather feedback from enthusiasts and professional developers alike in order to optimize the hardware for both consumer and developer purposes.

While developers could work on new software to suit the Rift's innovative hardware, Oculus' crowdfunding campaign emphasized the opportunities afforded for adapting existing software applications ("Oculus Rift," 2014). Given the tremendous volume of applications that could be compatible with the Rift, the developers chose to use crowdfunding to externalize both the labor and financial costs of software development and testing. In doing so, Oculus had no direct control over the content or quality of supported software, similar to open-source development, but could focus their resources on integrating developer feedback into the Rift's design. As of January 2014, the consumer version of the Rift remains in development and Oculus provides detailed updates ("Oculus Rift: Updates," 2014), technical

and SDK support, and an online community to foster ongoing developer input on the project.

Mighty No. 9

Mighty No. 9 is a video game project designed by Comcept USA and funded via Kickstarter from August 31 to October 1 2013, raising $3,845,170 USD towards its goal of $900,000 ("Mighty No. 9," 2014). The project was reward-based, and backers who pledged at least $20 reserved a digital preorder of the game, with larger individual contributions granting access to additional products or exclusive content within the game. The Kickstarter campaign included a number of ways in which backers could contribute towards the design of the final game. Firstly, backers could pledge large financial contributions in exchange for limited opportunities to collaborate with the game's developers on portions of its content. In addition to these limited and financially exclusive rewards, the developers asked the community to decide between nine internally generated designs for a supporting character to be included in the final release of the game.

The project offered 4 distinct and limited collaborative opportunities to backers, all of which were in addition to standard preorders of the game ("Mighty No. 9," 2014). The first option, which required an individual contribution of at least $500 and was limited to 50 slots, allowed backers to collaborate with Comcept's designers "to come up with a challenge for our own internal in-game achievement system." Comcept stated that "[t]he team will work with you over email to come up with a challenge based on your idea (within reason!) to implement into the final game." The second option, which required a contribution of at least $1,000 and was limited to 50 slots, would allow the backer to record "a word, phrase or sound effect … to be used in the ending theme as the credits roll," and Comcept specified that they would contact such backers "via email with detailed instructions on what to record and send back to us." The third option, which required a contribution of at least $2,500 and was limited to 50 slots, allowed backers to send Comcept a photo of themselves, which would be "pixelized into a 2D representation by the game's artists," and placed "somewhere it will fit naturally into the game." The fourth option, which required a contribution of at least $5,000 and was limited to 5 slots, allowed backers to collaborate with Comcept's design team via video conferences to design an enemy character within the game. During the first meeting, the backer would propose an idea or design to the game's design team, who would then refine that idea over an unspecified period of time. After this stage there would be a second meeting, during which the design team would show the backer their work, and the backer could respond by suggesting feedback.

In addition to exclusive collaborative opportunities, *Mighty No. 9*'s design team created and assembled concept sketches for the community to vote on ("Mighty No. 9: Update #24," 2013). The initial round of voting took place between September 29 and October 4, and allowed members of the public to vote for one of 9 designs. This initial vote received input from approximately 82,000 members of the community ("Mighty No. 9: Update #29," 2013). A secondary round of exclusive backer-only voting ran from December 19 to December 29 ("Mighty No. 9: Update #36," 2013), from which backer could choose between the top 3 results from the public poll ("Mighty No. 9: Update #35," 2013). Following the large public response to the poll, Comcept has since announced that they plan to crowdsource design work from the community to design an additional supporting character for the game, though as of January 2014 the developers have not officially begun this process ("Mighty No. 9," 2014).

Discussion

This section is analysing the participatory mechanisms as well as potential problems with combining crowdsourcing and reward-based crowdfunding. Through these case studies, project founders explicitly engage the crowd through one of several distinct mechanisms for feedback. The level and type of contribution afforded by the project, as well as the types of participants who are able to engage in the process, distinguish these mechanisms from one another.

The most basic type of participation is a broad appraisal of public or backer opinion, generally via open solicitation for project feedback from product consumers. This refers specifically to feedback gathered during the design and development phase of a project, and is a form of crowdsourcing utilized commonly outside of the crowdfunding context (Kleemann & Voß, 2008). The beta component of the Oculus Rift project is a clear example of this, as Oculus has created and maintained a website and forum for their backers to discuss and provide feedback on the project, with the stated goal of improving the hardware for the product's eventual release. In this case, project founders maintain full control over the design and development of their project, as backers lack any sort of equity or voting power in the company.

A slightly more active method of crowd participation is the organization of public or exclusive voting on one or more elements of a project. These votes allow backers to decide from a set of options determined by the project founder, as in the case of the Pebble Smartwatch and *Mighty No. 9*'s supporting character. In these cases, the developers determined the range of possible outcomes, granting voters a limited capacity to decide on aesthetic qualities of the products while keeping the vast majority of design decisions within the founders' control. However, while *Mighty No. 9*'s design team internally decided on the options that would be available to voters, the Pebble's developers utilized crowdsourcing in order to inform their voting options.

Projects such as the Pebble Smartwatch and Oculus Rift provide evidence of a more collaborative and crowdsourced approach to crowdfunding by focusing on the distribution of developer tools. By creating and distributing sdks through Kickstarter, these projects sought to crowdsource the development of software applications for their hardware, simultaneously testing the hardware and providing feedback for the projects' founders. Pebble's appstore furthers this collaborative relationship by combining the notions of profit sharing and crowdsourcing, incentivizing contribution to the mutual benefit of all involved (Kleemann & Voß, 2008).

The most robust forms of collaboration, as represented by *Mighty No. 9*'s collaborative rewards, also appear to be the most exclusive. Of the project's 67,226 backers, only 81 backers pledged towards its collaborative rewards, accounting for 0.12% of the total backer community. However, these 81 backers contributed an average of 19.43 times as much as the average backer, accounting for at least 2.34% of the project's total funds. As of January 2014, the results of these collaborative opportunities have not yet been released to the public, and it is yet unclear how such opportunities will impact the development process or project outcomes.

Centralization vs decentralization in crowdfunding

Projects in crowdfunding platforms such as Kickstarter are run by founders, which are individuals, teams, or companies responsible for delivering the project. This method of organization centralizes decision-making power in projects (Mollick, 2013b), as opposed to the decentralized approach of open-source projects (Belleflamme et al., 2013a). In their respective works on collective intelligence, Lévy (1997, 2012) and Surowiecki (2005) put significant emphasis on the necessity of decentralization, diversity and independence of individuals within a theoretically intelligent crowd. Without diversity, critical thought is ostensibly stymied by crowd members' reliance upon one another for information (Surowiecki, 2005), which would limit the usefulness of a crowd's creative input.

Importantly, reward-based crowdfunding projects involve very specific proposals, and are less conducive to major changes than conventionally financed projects (Belleflamme et al., 2013a). In addition to the content of project proposals, crowdfunding backers make purchasing decisions based on trust in founders (Belleflamme et al., 2013a; Kim & Viswanathan, 2013; Lehner, 2012; Mollick, 2013a) and the ability to withdraw funds

from a project at any point (Burtch et al., 2012), meaning that changes to the content or direction of a project's proposal could be problematic to financing. While crowdsourcing ideas and feedback may be of value to founders, we hypothesize that alterations to a project's originally stated aims could be harmful to backers' trust in founders, and would potentially put project funding at risk. As such, though it conflicts with the ideal conditions proposed by literature on collective intelligence, we assert that there is practical value in centralized leadership and direction for crowdfunding projects when funding is a primary goal.

Conclusions and future study

This section is meant to conclude with a review of the findings and recommendations for further, more comprehensive research on the topic.

This paper attempts to address a significant gap in design and crowdfunding literature through a limited sample of case studies, all of which used Kickstarter as a platform and are ongoing as of the time of writing. It describes a variety of participatory mechanisms for crowdsourcing in a crowdfunding context and attempts to loosely classify such mechanisms. It is yet unclear if participatory mechanisms or the emergence of crowds of user-stakeholders provide any concrete benefits to the outcomes of reward-based crowdfunding projects, whether for founders, collaborators, or end users.

Reward-based crowdfunding is increasingly gaining validity as an avenue for financing design projects, and scholarly attention is needed to determine the disparities between conventional stakeholders and user-stakeholders. Further research should aim to quantify and classify existing methods of crowd mobilization in design projects, with emphasis on collaborative outcomes, the emerging relationship and between crowds and project founders, and the role of crowdfunding platforms in facilitating collaboration.

Michael Pape
MDes Graduate
Carleton University
Canada
MichaelPape@cmail.carleton.ca

Lorenzo Imbesi
Associate Professor, PhD, Architect
Sapienza University of Rome
Italy
lorenzo.imbesi@uniroma1.it

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Paulo Fernando de Almeida Souza &
Vânia Sueli Santos Silva

Development of a toolkit for children with cognitive deficits of learning: Example of changing perspectives for design students

Abstract

This paper aims in reflecting on perspectives for design students, interested in subjects related to social innovation, particularly during the development of their Final Undergraduate Works (FUW) and at the beginning of their careers. Difficulties and gains achieved during the development of FUWs are pointed out, trying to find evidences of the relevance of working beyond marketing needs as differential to enhance design students' opportunities on the market. In this sense, one final undergraduate work is shown as example of topic and development of ideas in search for a better quality of life, particularly related to the field of design for health throughout the development of tools for children with cognitive deficits of learning. This paper is based on the case study method, trying to establish some starting points for the understanding of the role of social engagement in the background of designers during the first stages of their careers as professionals. The main contribution of this paper is to work as reference for design students, highlighting the relevance of some social engagement together with social responsibility during their formation, in a way that better present a theoretical and practical discourse for a change of perspective for designers and practitioners.

Keywords

Design for health. Final Undergraduate Work in design. Social innovation. Social responsibility. Cognitive deficit of learning.

1. Introduction

As relevant part of the majority of undergraduate programs in Brazil, design students must develop a Final Undergraduate Work (FUW) following the standards set by Brazilian Federal Ministry of Education, considering on of three models of work, as follows: a) monographic text on a limited field of inquiry; b) supervised scientific introductory research; c) design project or interdisciplinary applied activity covering both praxis and theory of design. This learning experience aims in using the knowledge acquired during the undergraduate program, giving the student an opportunity to develop a high quality work in a professional basis, under supervision of specialists and highly skilled workers or university professors, using design techniques and methods in order to achieve a mature sense of criticism, involving entrepreneurship, innovation and scientific rigors. At the end, the students present their work facing an external jury of design specialists and/or business staff. This strongly means that the FUW is seemed as a self presentation of each student to the real professional market.

Despite the fact that there is no consensus on the basis of design, particularly in terms of methods, the use of research techniques since the very beginning of design formation as well as the immersion of design students in different contexts of work play an essential role in generating innovative answers to social problems, considering design beyond the market demands, making students to experience and act under the social and ecological responsibility spheres. In this sense, uncommon topics have been proposed as Final Undergraduate Work in Brazilian universities, such as design for inclusivity, design for social care, design and solidary economy etc. As commented by Margolin (2003), the possibility to work beyond the demands of manufacturers can elevate the work of designers to the world of entrepreneurs, giving them the chance to change markets and create new product and service sectors of interest of large companies.

This paper discuss the relevance of one FUW developed in the field of design for health, showing how designers can be an essential part on interdisciplinary projects, mediating dialogues with other professionals and helping to set a more responsible and humanized solution. As pointed out by Szenasy (2003, p. 24), we should understand that "good design is responsible design […] a noble and necessary human activity".

The main contribution of this paper is work as motivation for design students to look for fields of study beyond the traditional market orientation. Moreover, the discussions point out a dashboard for a curriculum proposal in design at undergraduate level, which approximates the praxis of design to some social engagement together with social responsibility, that better present a theoretical and practical discourse for a change of perspective for designers.

2. The final undergraduate work at Federal University of Bahia

In the particular context of the undergraduate design program at Federal University of Bahia, School of Fine Arts (ufba/eba), in Brazil, the design students perform an applied activity covering both praxis and theory of design, facing complex problems under supervision of professors or design practitioners developing an experimental design project, trying to connect all knowledge acquired during their formation as a designer as well as working in interdisciplinary scenarios. The main goal of this activity is to let students work with design demands in a professional perspective, taking into consideration the need of presenting design solutions that actually give the audience the sense of responsibility and quality expected from a mature designer.

The fuw in design at ufba/eba, also called experimental design project, is performed as a discipline in one semester, on-site or with online mentorship[1]. Contents and activities cover problem definition, developing of project steps and priorities, briefing, data collection and analyses, restrictions and limits, generation of alternatives, visualization of ideas in 2d and 3d, election of best solutions and final oral and written presentation.

Contents of fuw are divided into two main parts, involving two evaluation processes, as follows: 1) pre-jury, involving the validation of the project and development of ideas; 2) final jury, involving all the development of ideas together with the results and main contributions of the project as well as project presentation.

The first part is organized into steps that cover project definition and activities flow, briefing, data collection and analyses, prototyping, visualization of ideas, self-organization and presentation to a jury, in a private session. The role of this initial jury is to identify strengths and weaknesses of the project and as well as its development. At this point, the jury can indicate the continuation of the development or its inviability as a design project in regard of quality, fulfillment or complexity.

Once the project is validated by the initial jury, it can continue to be further developed and presented with

high quality standards. This second and final part of the fuw is dedicated to the finishing of proposals in a way that untechnical personnel can understand the design solution together with documenting the proposal with detailing and execution steps at a professional level. At the end, the results of the design project are presented to a jury, in a public session, when students communicate their design solutions to general audience.

Some reflections and learning from the past fuws reveal that, despite difficulties with time and self organization, together with restrictions of technology and materials for a better quality of proposals, students tend to achieve results that give relevant responses to daily problems in all fields of design (Souza, 2012). Recently, topics more related to quality of life have been progressively taking part of the thematic palette of the students, particularly environmental and social problems. In this sense, we present as follows one example of project in the perspective of changing of course for a more responsible way of working in design, particularly in the field of design for health.

3. Development of a toolkit for children with cognitive deficits of learning

The project called "Making history" (Silva, 2010), was developed as a Final Undergraduate Work at Federal University of Bahia, by design student Vania Silva, under supervision of professor doctor Paulo Souza and professor doctor Aline Alvarenga. The main goal of the project was to develop ludic tools that could help therapeutical sessions to children with deficits of learning.

The technical literature on the topic deficit of learning is diverse and mostly controversial (Ciasca, 1994). In this study, it is considered as a heterogeneous group of disorders, manifested by difficulties in speech' acquisition together with difficulties in writing and developing logical and mathematical thinking. Others may seem children with deficits of learning as lazy and slow at school resulting in prejudices, and consequently lose of self-esteem. According to Manhani et al. (2006), therapeutical treatment can be performed to enhance children's abilities throughout the use of mnemonic strategies, writing and reading strategies as well as the focus on activities addressed to the development of mathematical and logical skills.

Despite the fact that children with cognitive deficits of learning have difficulties of perceiving and retaining information they usually have a regular level of intelligence. This means they can achieve adequate learning experiences as much as children that do not have these particular deficits (Manhani et al., 2006). In this sense, the learning process addressed to children with cognitive deficits of learning should be focused on motivation and different ways of teaching/learning mediation during classes and learning activities. In order to iden-

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tify which means and processes fit best on therapeutical sessions, the project called "Making History" was proposed within a multidisciplinary group of physicians, psychologists, therapists, social assistants and a designer, in a search for developing specific materials that could be used in a way that enhance children's mathematical skills, writing and reading, together with mnemonic abilities.

The study was performed during 8 (eight) therapeutical sessions involving children with diagnostic of deficit of learning, aged 7 to 12, when they were invited to create and interact with art and design activities, drawing materials, artistically displayed typography etc.

Besides the observation and production of graphic materials during therapeutical sessions, the data collection was built from visual references and semantic panels with previously released books and other support materials used by physicians and psychologists specifically designed for children with deficits of learning. Some relevant aspects identified as mainstream for the design of the toolkit were related to the way typography is displayed and presented in a search for a better understanding for the children as well as the need of enhancing perceptions of shapes and contrast of colors in printed materials set as patterns for the graphic design. Figure 1 presents differences of pace during reading experiences with alternate use of roman and bold types.

The typographic family adopted at the book was the "Sarakanda" type, designed by Alejandro Sanabria, in Paraguai, aimed in adjusting physiological aspects of reading to attend needs of perception and recognition of certain letters in children with dyslexia (Sanabria, 2009). The main focus of this typography is to better connect characters that usually create difficulties of perception, such as the letters "p", "b", "q", "d", "n" and "m" due to theirs shapes. The type design takes into account the rhythm and sense of reading, particularly by readers in occidental cultures, i.e. from left to right, to-

gether with visual blocks of letters that may enhance the perception of words. The figure 2 presents samples of Sakaranda' type family.

According to Nodelman (1988), the size and styles in typography such as alternate use of bold and roman, might enhance perception of the whole message in a graphic page. In this sense, the pace of reading can be managed in a way children can better understand the contents and follow narratives more easily. Moreover, the shape of the page its own can generate a more decisive influence on children's perception and understanding.

The square format, for instance, can be of great simplicity for the reading process, despite the fact that it imposes restrictions for illustration and graphic design planning. Figure 3 shows some visual references of design books for children.

The project adopted simplicity of elements and focus on drawing and use of typography as mainstream for communication and motivation for children. Drawings and graphic materials produced during therapeutical sessions worked as basis for images and stories in a book, specially designed to be used as motivation for the development of learning abilities as well as the enhance of perception skills. Some examples are shown in figures 4 to 7.

Besides the book with drawing and stories developed by children at therapeutical sessions, other materials were designed to help with mathematical and logical skills, such as memory games, which aims in associating the sounds of words and recognition of meanings, and the bingo game, which is focused on the development of mnemonic skills.

The project was further tested during therapeutical sessions and considered adequate to support teaching/learning activities especially design for children with cognitive deficits of learning. Nowadays we are looking for public and private investors that might be interested in publishing the project in large scales.

Figure 8 toolkit box (Silva, 2010).

Figure 9 contents in toolkit box (Silva, 2010).

4. Final considerations

The experience achieved from the development of a Final Undergraduate Work takes into account the consolidation of theoretical and practical knowledge acquired during the academic formation of a designer, involving different skills and abilities necessary at professional levels of work. A recognizable worry that often appears during this process is related to the development of a modus operandi and a particular way of thinking when searching for design solutions and proposals focused on human needs in a perspective of social responsibility and ethics overall. In this sense, the development of criticism and adequate professional praxis, according to values such as sustainability, ethics, and social responsibility should play a relevant role in the work of designers and practitioners. As pointed out by Cardoso (2012), the formation of a designer as a thinker, particularly covering the field of social responsibility, is still a goal to be seriously pursuit by anyone who is interested in design education as a way of changing positively life.

We strongly believe that these discussions on the choose of topics and new demands of projects beyond market needs can elevate the work of designers to a more comprehensive way of thinking that effectively may change quality of life in a broad sense.

Paulo Fernando de Almeida Souza
Professor Doctor & Designer
Federal University of Bahia
School of Fine Arts
Brazil
paulosouza@ufba.br

Vânia Sueli Santos Silva
Design Practitioner
Brazil
vaniadesigner@gmail.com

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Sara Radice

Community engagement within museums: Designing participatory experience of heritage

Abstract

The paper is drawn upon the results of the author's doctoral research that investigates the emerging role of cultural institutions, which are increasingly shifting from being provider of content and designer of experience to becoming facilitator of experiences around content. The research regards these issues from the perspective of the design discipline, and, without excluding the technical competencies typical of the exhibit design, underpins a more comprehensive notion of heritage valorization design oriented, in which the designer assumes the strategic role of mediation among the actors involved in the design process.

In its first section, the paper aims at defining the notion of 'participation' within heritage, by presenting diverse participatory models as defined by different authors, and discussing differences and possible synergies between the approaches of design for participation and Participatory Design.

In the following section, the main operative insights drawn upon the study of cases conducted within the research are presented, highlighting the tension between institutional authority and public voices in diverse institutional contexts, and stressing how community engagement, empowerment and development may be pursued through projects of co-creative work within museums.

Keywords

Museum. Design. Participation. Community engagement

Defining 'participation' within museums

Within the contemporary socio-cultural context, in which – also thanks to the current development of the participatory web, with its fundamental characteristics of interactivity, sharing, and common authorship – the traditional portrait of the public as a passive spectator is inapplicable to the contemporary user, and the changing relation between audiences and cultural institutions increasingly needs to be reconsidered. The paper relies upon the main hypothesis that, although through diverse participatory modalities and design approaches, visitors' active engagement in cultural programs and exhibitions might enhance the experience of heritage and respond to the emerging expectations of contemporary audiences. In fact, the nature of expertise within cultural institutions in recent years has been called into question and museums have been challenged to reflect on their role, consider themselves more as "*contributors*" (Verboom & Arora, 2013), than gatekeeper in the production, preservation and distribution of knowledge.

It is noteworthy not the novelty of the notions of public participation within museums – which is rooted in the last century – rather the fact it is not yet structurally integrated in the contemporary approaches of design practices in museums, although an extensive bibliography is available and several best practices have been developed in recent years.

In order to outline a definition of 'participation' in the heritage domain, may be useful to consider that this notion is much more common referred to practices of citizens' participation in other disciplinary domains, such as architecture, urban planning, and in projects of environmental sustainability, in which the term refer to the concept of informed citizenship and public consultation or imply the involvement of a group of stakeholders in the decision-making process. In his 1969 much-quoted article, which remains a useful analysis of power relations, Arnstein described a ladder of participation composed of eight rungs (Arnstein, 1969): "*Manipulation*" and "*Therapy*" corresponding to levels of non-participation; "*Informing*" and "*Consultation*" in which citizens have a passive role as a recipient of information; "*Placation*" in which citizens can advise opinions and ideas; "*Partnership*" in which citizens can negotiate with traditional power holders; and "*Delegated Power*" and "*Citizen Control*" in which citizens have majority or full authority to make decisions. The LITMUS project

(InterAct, 2001, p. 6) devised another version of Arnstein's ladder, identifying five levels of participations related to the evaluation of community projects, and, similarly, Harder et al. (2013, p. 45) defined a *"Participation Framework"* composed of six categories in a scale from non-participation to full partnership. All these levels of citizens' participation could actually be generalized for multi-disciplinary use, and may constitute a theoretical basis for outlining the approaches of cultural institutions in respect to audience participation.

Within museums, in strongly multicultural contexts participation often is meant to establish a relationship between the museum and the community from which it originated a collection (with an approaches that is close to *"Consultation"* or *"Placation"*). In other cases, especially in Anglo-Saxon contexts, the term refers to the social role of the museum (with an approaches that is close to *"Partnership"* or *"Citizen control"*).

Understanding the types of participatory engagement is the first step in designing participatory projects that best support institutional mission-related goals. Adopting Simon's definition (2010, p. ii), a participatory cultural institution is *"a place where visitors can create, share, and connect with each other around content."* The verbs 'create,' 'share,' and 'connect' clearly describe the main possible visitors' behaviors enabled by participatory experiences of heritage.

Dalsgaard, Dindler, and Eriksson (2008) define three modalities of participation on the basis of the activities performed by visitors: *"(co-)exploration, (co-)construction and (co)contribution"*. Simon's (2010) categorization is instead based upon visitors' involvement in the design process and distinguishes between *"contributory"*, *"collaborative"*, and *"co-creative"* projects. It is to be noted that Simon's contributory projects encompass all the categories proposed by Dalsgaard and al. because they refer to experiences that ask visitors for limited actions in an institutionally controlled context where audience-generated contents are displayed. In collaborative and co-creative projects visitors are instead involved in the co-construction and collection of heritage and in the design process of the cultural program. Since both in collaborative and co-creative models, participation occurs in the design phase, the adoption of these models produces outcomes that may also be non-participatory.

The diverse approaches to participation reflect the level of creative control on contents that the cultural institution assign to participants, ranging from *"curatorial,"* to *"interpretive,"* to *"inventive"* (Brown, Novak-Leonard, & Gilbride, 2011).

'Watching', 'sharing', 'commenting', 'producing', and 'curating' are the main actions that visitors may perform during their experience of heritage, and broadly reflect the six social technographics groups defined by the Forrester Research (Li, 2007, pp. 4–6): creators/producing, critics/commenting, collectors/curating, joiners/sharing, spectators/watching, inactives/no actions. The diverse roles that participants assume during a participatory experience may thus be defined as a subset of Forrester's categorization, in a ladder that includes collectors, critics, and creators.

Design *for* participation vs. participatory design

In opposition to the traditional institutional curatorship, all the modalities by means of which audience is collaboratively involved in shaping museum products and experience, can be described using the expression *"public curation"* (Satwicz & Morrissey, 2011) that encompasses both those practices in which participation occurs during the experience of heritage and those approaches based on methods of participatory design.

While design *for* participation means innovating the 'product' (program or exhibition), using participatory design methods means innovating the 'process', without necessarily presupposing a participatory experience of heritage. Both approaches are exemplifies of participatory museum practices, but it is needed to reflect upon the question if a participatory design approach is needed in order to design participatory experiences of heritage. In Simon's view[1] a participatory process is not always needed to produce a platform for participation, even if cultural institutions need to consider how to negotiate the relationship with their participant audiences.

The design discipline has historically dealt with user participation as one of the possible ways to reach a design goal, through the separate traditions of Participatory Design (PD) and User-Centered Design (UCD), and through various schools of Human-Centered Design and Co-Design (Harder et al., 2013, p. 41). At the core of PD is a systematic reflection on how to involve users as full partners in design by means of diverse of principles and practices (e.g. making, telling and enacting, probing, priming, understanding or generating). While traditional UCD research methods were focused primarily on observational research, and traditional market research methods have been focused on what people think (e.g. focus groups, interviews, and questionnaires), the *"say-do-make"* model proposed by Sanders and Dandavate (1999) is focused on what people make.[2]

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1 http://museumtwo.blogspot.it/2009/04/participatory-design-vs-design-for.html

2 Sanders proposes the use of "MakeTools" (Sanders & Dandavate, 1999) as a common ground for connecting the thoughts and ideas of people from different disciplines and perspectives. There are different types of "MakeTools" that facilitate the creation of a wide range of artifacts user-generated, and because they are projective, they are particularly good in the generative phase of the design development process.

While in a classical UCD process the researcher served as a translator between the users and the designer, in a Co-Design process the researcher/designer takes on the role of a facilitator, by providing tools for ideation and expression (Rizzo, 2009).

Even if not specifically developed for their use within museum audiences, some tools and techniques for Co-design activities have been successfully applied in participatory museum practices both in the preliminary problem exploration and in the subsequent phases of concept generation.

The tension between institutional authority and public voices in diverse contexts

This paragraph presents some of the results of the study of cases[3] conducted in the context of the author's doctoral research on which the paper is mainly based, highlighting the tension between institutional authority and public voices. It is to specify that the diverse contexts here described, have been identified with the aim of giving a meaningful sample of the diverse attitudes and approach to public participation of cultural institutions, and without the claim of covering the entire spectrum of possible contexts in which participatory projects may be developed.

The selection of cases has been conducted through secondary research and refers to a period of time between the beginning of 2000s and today, considering those participatory projects in which explicit and original users' contributions are recognizable in the collection and experience of cultural contents that must be generally recognized as cultural heritage according to the definition given by the International Council of Museums (2006).

Art museums

Data drawn from the study of cases highlight that an approach that is open to visitor contributions is seldom found in the contexts of "*systematic*" or "*orderly*" museums (Hein, 1999) such as traditional artistic galleries in which the authoritativeness of the source is considered essential for validating the interpretation of the contents. In fact, the mission of these museums tends traditionally to pursue self-generated, internal, and academic goals (Skramstad, 1999), as they are more focused on the collection and conservation, than on being responsive of audience expectations. Moreover, many art

museums, in pursuing the idea of aesthetic communication, avoid any interpretation of the object beyond the simple identification label (Alexander & Alexander, 2008, p. 189).

Although the study of cases has not taken into consideration the specific realm of participatory art (because they represent a distinct phenomenon of artistic co-creation aimed at the production, rather than at the experience of heritage), those cases in which individuals act as artists in the institutional interpretive framework of an existing institutional collection have been mapped. In fact, because of issues related to authorship, rather than hosting projects aimed at promoting shared learning, art museums may use their collections as the basis for projects that promote social inclusion through creative expression, like the *Center for Creative Connections*[4] at the Dallas Museum of Art.

Art museums appear to be best suited also for the development of projects aimed at the involvement of the community in the co-design of programs and exhibitions, like for example in the projects *Museomix*,[5] *Shh! It's a Secret!*,[6] and *Hack the Museum Camp*.[7] In this kind of approach, participants' voices are discussed and negotiated thanks to continued and sustained in person mediation.

Social media and onsite interactives installations are instead effectively used for enabling participation when participants are requested to express their opinion through discrete actions for which institutional mediation is not needed, such as voting for their favorite artwork to be included in a particular exhibition (e.g. *Top 40*,[8] *Yorkshire's Favourite Paintings*,[9] *Brangulí was here*,[10] and *Click! A Crowd-Curated Exhibition*[11]).

Ecomuseums, city museums, and urban spaces

A participatory approach is often adopted in those museums in which the multiple voices of user-created contents can add value to the collections, such as in ecomuseums and city museums. In fact, these institutions, being traditionally acknowledged to have the goal to develop and strengthen a sense of community, need to carefully consider and question the ways by which the community is represented through the museum's collections.

Many projects among the mapped cases in these contexts are developed with the goal of promoting shared

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3 About ninety participatory cultural projects have been mapped with the main goals of identifying tools and methods currently employed by diverse typologies of cultural institutions in order to enable participatory experience of heritage and understanding how a participatory approach to heritage may affect the visitor experience in terms of creative controls on contents and social engagement.

4 http://www.dm-art.org/CenterforCreativeConnections
5 http://www.museomix.org
6 http://www.wallacecollection.org/collections/exhibition/82
7 http://www.santacruzmah.org/museumcamp2013
8 http://www.worcestercitymuseums.org.uk/mag/magpex/top40/top40.htm
9 http://www.yorkshiresfavourites.org
10 http://www.brangulivaseraqui.com
11 http://www.brooklynmuseum.org/exhibitions/click

learning, both through visitors' contribution of objects or stories (e.g. *Coney Island History*,[12] *Foresta nascosta*,[13] *MappaMi*,[14] and *Mare Memoria Viva*[15]), and through their interpretation of museum's collections (e.g. *Public-view*[16]). Ecomuseums and city museums are well suited also for the development of participatory projects aimed at promoting co-creative work among participants in activities of participatory design (e.g. *Storie Plurali*[17]).

The analyzed cases of participative urban storytelling often reflect the conceptual architecture of the "*urban database documentary*" (Shapins, 2011), and, in this sense, community maps, while being successful visual tools for the representation of multiple citizens' voices, may also constitute an effective metaphor of an inclusive approach that enables people to construct their own representations of reality.

History museums and memorials
The study of cases reveals that history museums and memorials are best suited for participatory projects that involve the critical interpretation of objects through storytelling (e.g. *New York Divided*[18]), and the crowd-sourced collecting of objects and stories for co-constructing the institutional collections (e.g. *Open house*,[19] *Sweet & Sour*,[20] and *Children Lodz Ghetto*[21]).

Because of their social content, history museums and memorials are also good places for community dialogue through the use of the institutional collections as educational tools rather than protected repositories of objects. However, while promoting multiple perspectives, history museums should have an approach strongly concerned about accuracy and authenticity in order to avoid visitors' perspectives that reflect offensive views toward other people's backgrounds (Simon, 2010). Consequently, validating and moderating visitors' contributions is often the major concern in the context of history museums in order to balance multi-vocal content with a comprehensive narrative.

Science and technology museums and centers
Although their long history of interactive exhibitions would suggest science and technology museums as naturally suited for participatory projects, in this contexts,

educational experiences are mostly pursued through interactive activities rather than participatory engagement,[22] as scientific and technological knowledge is not open to visitor reinterpretation, but need to be validated. Among the analyzed cases, the exhibition *The great fat debate*[23] and the prototype *Hydroscope* (Dindler et al. 2007; Dalsgaard, Dindler, and Eriksson 2008) constitute two exception: the first because promotes the discussion of a controversial theme through an interactive installation, and the latter because promotes shared learning through an activity that requires visitors to high engage with each other in order to understand the proposed concepts.

The changing relationship between the museum and its communities

The opportunity for audience to actively participate in the co-creation of heritage experiences entails a rearrangement of the relationship between the museums and its communities. Community engagement, as well as being a necessary component of the development participatory activities, may also be a strategy for developing sustainable partnerships with community groups and further embedding the cultural institution in the community. In fact, the sharing of experience, knowledge, and expertise, on the one hand may support the community, and on the other hand may renew the relevance of the heritage organization. Through different types of activities that reflect diverse levels of participation, cultural institutions can help to develop important social attitudes in community groups, like empowerment, ownership, involvement, and citizenship. At the same time, through these activities, cultural institutions can convey audiences' voices in helping the development of "*audience-responsive*" (May, 2002, p. 33) programs and exhibitions.

In fact, by incorporating what is learned from audience research, museums' professionals can go beyond the dichotomy "*research-based*" and "*market-driven,*" and rather create activities that link the curatorial research and the institutional collection with the visitors' interests and expectation (May, 2002, p. 33). When the partnership with communities reaches this goal, the di-

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12 http://www.coneyislandhistory.org

13 http://www.forestanascosta.net

14 http://mappa-mi.eumm-nord.it

15 http://www.progettomemoriaviva.net

16 http://www.publicview.org.uk

17 http://bit.ly/1aMBLso

18 http://www.nydivided.org/AboutExhibit

19 http://www.mnhs.org/exhibits/openhouse/exhibit.htm

20 http://americanhistory.si.edu/exhibitions/artifact-walls-sweet-sour

21 http://www.ushmm.org/online/lodzchildren

22 The terms participation and interaction are often used interchangeably within museums even though they have different implications on the visitor's experience. Interaction implies reciprocity: the user performs an action and something happens in reply to the visitor's action, mechanically, digitally, or kinesthetically. An exhibition is instead participatory if visitors are invited to interact adding personally generated contents that may even become part of the exhibition itself (McLean, 1993, p. 93).

23 http://www.chemforlife.org/virtual_gallery/fat_debate/default.htm

chotomy user-created and curated content tends to dissolve around the "*community-generated content*" (Salgado, Saad-Sulonen, & Díaz, 2009) produced collectively by visitors, staff and external researchers. For example, the *Creative Community Committee*[24] may be regarded as a model for museums that need practical tools to identifying the needs of their communities and better understand who is and is not represented in the museum.

Participatory approaches to collecting and programming with diverse communities, and initiatives targeted at audience development of under-represented communities are among the strategies for meeting the goal of social inclusion (Sandell, 2003, p. 57) through projects both focused on interpretation, and on the co-creation of an institutional program.

There are also examples of project of community engagement in which mediated communication supplements face-to-face interaction thanks to online social platforms, like the museum blog *Dulwich on View*,[25] run by volunteers of the local community that seems effectively reflect some of the *"Seven Principles for Cultivating Communities of Practice"* defined by Wenger, McDermott, and Snyder (2002).

Conclusion

Summarizing the common patterns that can be drawn upon the examples presented in the diverse context, it can be said that when dealing with participation, museums professionals should question and negotiate the presentation of highly individualized perspectives with collective identities, acting more and more as enabler and facilitators rather than figures of authority (Hooper-Greenhill, 2000, p. 139; Witcomb, 2007, p. 35).

It is thus to avoid the misconception that encouraging public participation may be destructive to the museum's role as a reliable source of information (Spock, 2009, p. 10), and rather focusing on the modes by which interpretation in museums is constructed through conversation between mediators and participants.

Moreover, interviews to curators and designers – made with the goal of gaining operative insights into the modalities by which the design discipline may contribute to the plan and implementation of participatory experience of heritage – highlight that when dealing with participatory programs, the role of the design discipline become crucial in effectively communicating the exhibition content to the museum visitors who, often not knowing, are part of the exhibition medium. Both projects designed for participation – foreseeing audi-

ence active engagement as the final outcome of the program or exhibition – and projects bases on participatory design practices – which have the goal to involve participants throughout the design processes – might be effectively supported by the design discipline intended in its more strategic role that underlies the notion of heritage valorization design oriented (Lupo, 2009), in which the designer acts as a mediator among the actors involved, by focalizing heritage interpretation through its legitimation by the community.

A user-centered design methodology – widely explored within the discipline of interaction design – is thus an effective design strategy also if applied to museum's exhibitions designed for participation, in which the design process must include key phases of prototyping with visitors.

Relying on these findings, the research proposes a general design framework that considers recursive stages of evaluation with visitors as the essential components of the design process in order to manage participation over the long term. A pilot temporary exhibit was designed in the summer 2012 at the MAH-Santa Cruz Museum of Art and History, under the direction of Museums' executive director Nina Simon, with the goal of verifying if evaluation proved to be effective in supporting the design process of a participatory exhibit, while achieving the specific institutional project's goals set by the institution.

Research limit concerns the application of the proposed framework to the development of participatory projects in those institutional contexts not so committed to participation as the MAH. Future works foresee thus the application of participatory models of heritage experience in those institutional contexts that are apparently less suitable for promoting programs of audience engagement – as for example those museums that, mostly due to their history and to the nature of their collections, still adopt a linear model of transmission of knowledge – but which, as secondary research suggested, could more benefit from a participatory approach.

Sara Radice
Politecnico di Milano
Italy
sara.radice@gmail.com

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24 http://museumtwo.blogspot.com/2012/03/community-driven-approach-to-program.html

25 http://dulwichonview.org.uk

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Peter Troxler

On the conditions for a collaborative practice in design – open design

Abstract

Open design appears as one in a row of similar expressions of 'open X' – open access, open data, open knowledge, open hardware – most of which were coined in the early years of this century and modelled after 'open source' in software. They denote a departure from presumably 'closed' practices of dealing with academic publications, data, knowledge, hardware, innovation, and indeed: design; all key areas of the knowledge economy.

What are the principal drivers for this development? Is it merely 'the digital turn' – the shift from material to digital media, which has reduced the copying of design artefacts to a few mouse clicks, while bringing media production to everybody's and anybody's desktop? Or is there a broader underlying current at the core of a societal change that questions the fundamentals which our (Western, industrialised) society is built upon?

This paper traces these questions and relates them to open design. A preliminary conclusion is that open design has not yet achieved the level of maturity needed to develop its full potential in dealing with an increasingly complex and ambiguous social environment that is evolving beyond its industrial past – a contribution that particularly (open) design would be predisposed to make.

Keywords

Industrial Revolution. Open Design. Collaborative Practice.

Open Design between sharing and protecting

Open design has been described as a participative method that invites users to modify a design; the design process then becomes dynamic and iterative. As a social process, open design evolves from a self-reflective to a collective-reflective practice, which makes use of social artistic practices "focused on enhancing the quality of life of individuals or groups within society, by raising their awareness, educating them, or contributing to their sense of identity. In other words: helping people to improve themselves in their relationship with their surroundings" (Chabot, 2013).

Open design purports to be to design what open source is to software (Abel et al., 2011). Accordingly open design, like free and open source software, has two important facets. On the one hand it is – often primarily and reductionist – discussed in terms of licensing: how can a by default protection of rights be overturned to allow use, study, sharing, and 'forking' of designs? On the other hand, more importantly, open design also denotes a strand of practice in the field of design: how can the design process become more collaborative?

The legacy of industrial revolutions

The backdrop for the development of open design is on the one hand the 'digital turn' – the computerisation and increasing use of the Internet in so many aspects of daily life, from communication to entertainment, from retail to banking, from relationships to education – which has so profoundly impacted on how people engage in everyday activities. It has created new qualities of interaction, for example by replacing slow but immediate face-to-face relations with instant but mediated transactions, facilitated through a variety of intermediate digital systems.

On the other hand it is a collection of reactions to the industrial revolutions of the 19th and 20th century and critiques of their thrust towards centralization and their rational determinism in business and economics voiced in such varied disciplines as history of technology, sociology, social psychology, economics, law, management – and indeed also: the arts and design.

The term 'industrial heritage' usually brings to mind images of red brick factory buildings, factory owners' villas, and workers' housing, characteristic of the industrial revolution of the late 18th and early 19th centuries – and perhaps also the machines, particularly the coal-

powered engines and locomotives which were the work-horses of that period. But of course the first industrial revolution was more than just a collection of architectural features: it brought mechanisation, centralised factories, and industrial capitalists; its iconic machine was the steam engine, its social effect was the division between labour and capital.

A second industrial revolution brought automation and later computerisation of manufacturing, as well as scientific management and management consultants; it can also be seen as what James R. Beniger (1986) called a "control revolution". Its iconic machine was the conveyor belt as a tool for rationalising and controlling assembly. Its social effect was the division between white-collar and blue-collar work, and the struggle by managers to gain control over workers, based on a "military thrust toward total control [that] indulged technical enthusiasms while it ratified managerial propensities" (Noble, 1984, 192).

While the technical means of automation and information technology create new options for the design of industrial and working conditions, they do not determine which options are chosen and to what end; technology is always an option. Moreover, technology creates intrinsically new qualities of experience, but also contingent possibilities as to how the often conflicting demands of social, political and economic interests engage with technology to produce a 'choice' (Zuboff, 1988, 389).

Several authors argue that the paradigm of central control has become obsolete and individually and socially undesirable – individuals insist on self-expression (Zuboff & Maxmin, 2002), capitalism has to become constructive (Haque, 2011), and that what the customer considers 'value,' is decisive (Drucker, 1954). Benkler (2002; Benkler & Nissenbaum, 2006) theorised the peer-production model and collected evidence from science, industry and other fields to demonstrate that there are collective action practices that are decentralized but do not rely on either the price system or a managerial structure for coordination (Benkler, 2006; Benkler, 2011). Economists have also found that people indeed exhibit social preferences beyond their own material self-interest, a finding at odds with mainstream economists' belief in the hypothesis of self-interest that rules out heterogeneity in the realm of social preferences (Fehr & Fischbacher, 2002, C1). Rifkin's analysis (2011) summarizes these arguments in the prognosis of a shift from hierarchical to lateral power.

All these narratives have a few points in common. They all name the Internet as a driving enabler for people to connect laterally, as peers. They all leave behind technological determinism, understanding that technology in fact offers more choices than those presented by the incumbent powers of past and current industrial

societies. And they all paint a picture of a future industrial society different from what we know today – better aligned with individual needs as well as the greater benefit of society at large, more cooperative and less focused on competition, and more laterally structured.

Free and open-source software: a model for freedoms & practices

One model of the successful realization of such a development is to be found in free and open-source software (FOSS) which by now is a given fact as a thriving industry. Almost two thirds of web servers run on Linux, while three quarters of web servers use open-source Apache to respond to browser requests. 70 percent of web browsers are either completely open-source (Firefox) or share large parts of their codebase with open-source products (Google Chrome), and use an open-source layout engine for rendering HTML – Gecko in the case of Firefox, WebKit in the case of Google Chrome and Apple's Safari. Other notable examples include server-side programming languages (such as PHP) and content management systems (Drupal, Joomla, Word-Press). Contributors to FOSS are not just loony coders; Benkler notes that "just under 40 percent of firms engaged in software development report spending development time on developing and contributing to FOSS." (Benkler, 2013, 221; cf. Lerner & Schankerman, 2010; W3Techs 2011; Schweik & English, 2012).

Free and open-source software is built on two propositions; a legal proposition which obliterates legal defaults of 'intellectual property' protection; and a social proposition which creates a practice for peer-to-peer collaboration.

The legal proposition of FOSS

The 'four freedoms' described for free and open-source software (Stallmann, 1985; 1992) form a radical counterpoint to the software industry's narrow end-user license agreements (EULAS). EULAS are based on the assumption – readily confirmed by legislators and judges – that software code is a form of artistic expression, and stipulate that users may only use a copy of the software for defined purposes; they don't own it and are not allowed to share or copy it, often not even to re-sell it. Free software licenses on the other hand allow users to use the software for any purpose, to study it, copy and spread it (gratis or paid), and also to 'fork' it, i.e. to build new derivative software on top of it.

In this sense, free software fundamentally breaks with the scarcity-based business model, effectively separating the code – as the part that is easy to copy, and hence hard to protect – from the whole product of a software package, which also includes packaging, installation, maintenance, documentation, training, configuration and customisation. Similar approaches have

been developed in the field of cultural production, with the set of Creative Commons licenses which reverse the content scarcity created artificially by copyright. Yet not all Creative Commons licenses actually make the content freely available according to the spirit of free culture (which would mirror the software freedoms); particularly clauses prohibiting commercial use or derivative works make the corresponding Creative Commons-licensed work actually 'non-free'.

The social proposition of FOSS
A portrait of open-source software which discussed only copyright issues would of course be utterly incomplete. Open-source projects are built on often voluntary contributions and design decisions are debated within the community. However, there is typically a very small core of maintainers – in small projects, only one – granting access to the community and making final decisions regarding design and the inclusion or rejection of patches, fixes and new features. The 'four freedoms' of open-source software are a necessary vehicle for enabling this social practice. If the maintainer would have to negotiate a contract with all other contributors in order to use their contributions, releasing new versions of the software would be extremely problematic.[1] Thus open-source development is more than just a matter of sharing end results; it is a fundamental practice of co-creation and as such well researched[2]. Contrary to common beliefs this practice does not normally include large numbers of people[3], as the "FLOSS – Free/Libre Open Source Software: Survey and Study project" showed, and in many projects a large part of the development is done by one single contributor (Ghosh et al. 2002). Consequently, gate-keeping and decision-making it is not a democratic endeavour but a process characterized by the "benevolent dictator[s]" – a few contributors who serve as 'gate keepers' for accepting code written by others (von Krogh et al. 2003).

Open design – the legal proposition
The legal proposition of open design is not the focus of this paper, as the legal provisions for protecting "intellectual property" in design are much more complex than in software – they include amongst others authors rights, design rights, patents, brands, and trade secrets – and the practices of employing various possible routes of protection are even more diverse, particularly as most

often "IP rights" are held not by creative individuals but by producers of design goods or brand owners.

Interestingly, there are branches in design, such as fashion, hairstyles, perfume, magic tricks and fireworks displays that can be considered as "low IP" branches (Raustiala & Sprigman, 2006) – much to the disdain of policy makers as well as the intellectual property lobby (cf. Dutch Ministry of Economic Affairs, 2000g, 40; European Commission, 2009). In fashion design, for example, copying a design (or cut) appears to promote rather than deter innovation; as fashion design is subject to rather quick changes (the biannual catwalk season) the industry's preferred unit of protection is the brand rather than the individual design.[4] This approach appears to be maintained in many approaches to opening up design (e.g. NikeID offering mass customization of shoes).

Open design as collaborative practice
Much more relevant to the discussion in open design (as in open source software) is the actual practice of designing and hence situating the designer in the creative design system and/or process.

Collaboration in design, particularly between designers and laypeople, is in itself nothing new. Participatory design started in Scandinavia in the 1970s under the name 'collective resource approach', in the context of industrial democracy (Emery et al., 1969; Ehn, 1990). Gradually, the concept (now known as co-creation (Miyake, 2002)) gained acceptance in the fields of human-machine interaction, mass customisation (Berger & Piller, 2003) – and eventually mainstream business, when Prahalad and Ramaswamy (2004) popularised the term. Co-creation has also been applied in the field of design, where it is aptly termed co-design. Co-design as a design practice means "collective creativity as it is applied across the whole span of a design process from beginning to end" (Sanders & Stappers, 2008, 6). With co-design design is supposed to move "from the design of categories of 'products' to designing for people's purposes" (p. 10). Professional designers will increasingly design systems, which will provide end users with the tools they need in order to be creative (Atkinson, 2011, 30).

There is a growing interest in open design which manifests itself in student theses and educational programmes at art and design academies (e.g. at Aalto in Helsinki, Finland, WdKA in Rotterdam, The Netherlands, SUPSI in Lugano, Switzerland) and in academic and business conferences (notably the conference on open design held as part of the Barcelona design festival (FadFest) and the Open Knowledge conferences and festivals).

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1   In the traditional software industry, this problem is covered by employment contracts that transfer the rights to any code an employee writes to the employer.

2   cf. the special issue on Open Source Software of Management Science (Volume 52, Issue 7, July 2006)

3   Only in large projects of more than 500,000 bytes (about 500 pages) of software source code are 20 and more developers involved.

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4   Consequently, knock-off (fake, counterfeit) designer products are subject to policing and prosecution.

There are a few interesting experimental projects such as the (Un)limited Design Contest[5] and Droog's curated Design for Download project for the Salone del Mobile in Milan (2011). However, publicly accessible evidence of widespread reuse or even remix of open designs is to date scarce if not absent. In fringe (or emerging) areas of design, such as FabLabs and the Maker Movement, open source approaches are quite popular – publishing one's designs under an "open license" – while even on this smallest scale there is very little collaborative practice to be found (Wolf et al., forthcoming).

As Hummels (2011, 165) aptly remarks, "open design is based on a libertarian relationship between designers and potential users, and not on a rational one in which the designer is seen as superior." That means that design is destined eventually to move even beyond a model of designer-led participatory co-creation, in which final decisions remain the privilege of the designer – and in doing so also moving beyond practices that were established in open source software. Just as society is expected to become better aligned to individual needs, more laterally structured, so will design – at least, open design – eventually do away with the designer as the guardian of the holy grail of design. As businesses are expected to focus increasingly on the greater benefit of society at large, becoming more cooperative and less fixed on competition, so also design will have to develop new practices which eschew individual perfection but rather foster the achievement of common outcomes – which rise above the lowest common denominators as well as individual limitations. Open design is thus a process for enabling design literacy (strategic vision, tactical competence, operational skills) in everyone (Rijken, 2011, 157).

Conclusion

In this essay, I have outlined the legacy of earlier industrial revolutions, and reviewed how observers from various disciplines interpret current signs of change in society as leading to a new industrial revolution. This revolution is supposed to generate lateral rather than hierarchical power relations, as well as businesses that truly serve individual needs as well as the needs of society at large. I have used the example of free and open-source software to illustrate how legal instruments can be used to foster lateral structures – even though the default assumptions of intellectual property, on which legislation is based, are often adversary to the freedoms of open source – and, more importantly, how a

complex collaborative practice has evolved in free and open-source software (FOSS).

I examined the roots and the current state of the 'open' paradigm in design, and concluded that the discipline is experimenting – if only very cautiously – with this new paradigm.

Design and designers still have a long way to go to, if open design is really to move into the arena of collaborative production as exemplified by free and open-source software development. There are many lessons that can be learned from the early fundamentalist practitioners of FOSS. Developing software is in many respects quite similar to developing a design – there are strategic directions to be set, tactical choices to be made, operational skills required for fine-tuning. Problems must be identified, solutions must be found, decisions must be made – all of which requires negotiation in a collaborative setting. Experts and novices will have to work together: if people can be taught (and can learn) how to develop software and how to write code, there is no reason why they can't also learn to develop and execute a design.

However, it would be a mistake to blindly mimic the developments in software. There are also important differences: for example, argumentation in software development is mainly informed by logic, while argumentation in design is mainly informed by artistry. A logical discourse is not the same as an artistic discourse; still, there is room within design to develop this artistic discourse, so that it takes place in a peer-to-peer setting rather than a master-disciple setting. The evolution of this artistic discourse is at the core of open design: it must develop into a collective-reflective practice which empowers people, especially when designers lose their privileged position of automatically being the sole experts in a crowd of novices.

If open design as a practice is indeed still far from mature, then the question arises: is open design actually desirable? Is it worth the effort? Wouldn't it be more sensible to leave open design to a few eccentrics, or maybe just go on using the 'open' label for a while, as long as it provides an advantage of coolness?

I strongly believe that the changes observed by Zuboff & Maxmin (2002), Haque (2011), Benkler (2006; 2011), Fehr & Fischbacher (2002), and Rifkin (2011) will have a strong impact on society in the 21st century. While I do not expect these changes to supersede all incumbent industrial practices, they will certainly add substantial new paradigms (such as collaborative peer production with lateral relations) to an increasingly complex and ambiguous society. Design as a discipline is particularly well positioned to deal with more 'fuzzy' circumstances; it could and should play an important role in helping society and individuals get to grips with this fuzziness.

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5   The contest was held in the Netherlands, nationally in 2009 and open to international submissions in 2010. It was replicated in France in 2011, and in Austria in 2012–13.

However, as these new paradigms become increasingly influential, neither an expert-led nor a purely participatory approach will suffice. 'Ordinary' people will expect (and demand) to be accepted as peers, as they follow the categorical imperative of the 21st century – "consume less, create more". In this respect, open design has the potential to grow bigger – and more relevant – than what FLOSS managed to achieve: to include in the design processes that shape the ingredients of everyday society all citizens who care for these developments, not only consenting nerds.

It is a noble duty for design and designers, to fully develop this new field of open design into a mature discipline; and I strongly feel that it would be a loss to us all if society were to miss out on the contribution which design can make toward a more cooperative future, for the benefit of individuals as well as for society at large.

Peter Troxler
Research Professor
Rotterdam University
of Applied Sciences
The Netherlands
p.troxler@hr.nl

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Daniela Selloni

New service models and new service places in times of crisis: How citizens' activism is changing the way we design services

Abstract

In this paper we discuss how citizens' activism is changing the way we design services, introducing new *service models and places,* and therefore, a new role for service designers.

The reference framework is *'the bright side of the crisis'*, a scenario characterized by a significant wave of bottom-up activism, in which citizens are starting to design and produce a new generation of collaborative services, in order to respond to the deficit of services in our cities.

As service designers we are particularly interested in such phenomena and in the transformation of bottom-up activities in actual services, using co-design and community centred design. In this scenario, one significant example is "Creative Citizens", a project generated within the design doctoral programme of Politecnico di Milano. Building upon this applied-research activity, we wish to better define the new *service models* arising in this scenario and, consequently, the related *service places* emerging as points of connection among citizens, designers, stakeholders and institutions.

Finally, looking attentively at Creative Citizens' results, we wish to focus more on the role of designers in shaping this social learning process: they are more than facilitators because they are able to inspire and lead a community.

Keywords

Service design. Service models. Service places. Social innovation. Design activism.

1. The context: 'the bright side of crisis'.

The crisis that has unfolded since 2008 is not merely economic, it is structural and multidimensional (Castells, Caraça & Cardoso, 2012).

Looking attentively at the complexity of the current crisis we can detect the emergence of alternative practices exploring new and sustainable ways of living.

This is the 'the bright side of the crisis': a renewed activism on the part of citizens, a variety of Creative Communities involved in sustainable social innovation, "people who cooperatively invent, enhance and manage innovative solutions for new ways of living" (Meroni, 2007, p.30).

In these times of crisis, confronted with a lack of services inside our cities, what is happening is that local communities are seeking to solve the problem from the bottom up, changing what is already there without waiting for the arrival of a bigger, top-down intervention.

Phenomena such as Sharing Economy or Collaborative Consumption (Botsman & Rogers, 2011) are connected to this kind of activism and they are growing extremely rapidly. They have taken a more definite shape in recent years, showing how crisis can also be a driver of behavioural change, just because many people have found less costly solutions to their problems through new forms of sharing and self-production.

Creative Communities represent also a response to the crisis of governments and their loss of connection with citizens.

Confronted with the crisis of the welfare state and of the public sector, many citizens have started engaging in participation movements, in order to change the power dynamics and to be more involved in the decision making process. The Tepsie research (2012) is currently exploring this phenomenon and has identified two kinds of engagement: public participation, meaning a form of individual engagement within the institutions of democracy, and social participation, which is more related to civic engagement in local communities and associations.

Hence, we can describe the 'bright side of the crisis' as a scenario in which desires meet needs and problems become opportunities for doing things in unprecedented ways, generating original cases of social innovation.

We don't know if these cases are only temporary solutions, but, trying to envision possible developments, they can lay the foundations for new socio-economic models, and this represents a call for research.

As service designers focusing on social innovation we are particularly interested in exploring the development of these transitory and informal solutions in actual services. We are also interested in understanding what kind of role designers can play in this emerging area.

Currently, within service design research, and looking at the work of our group Polimi DESIS Lab, there are several projects exploring this field, especially working with the most active social communities.

By using a set of participatory design techniques and an approach known as community centred design (Meroni & Manzini, 2012), service designers are now researching this area, collaborating with citizens for developing prototypes of new and sustainable ways of living.

2. The experimentation of creative citizens

In this paper we particularly wish to focus on a specific case of applied research in the field of service design and social innovation, "Creative Citizens" (Cittadini Creativi). This is a project generated within the design doctoral programme of Daniela Selloni at Politecnico di Milano, under the auspices of the Polimi DESIS Lab group.

The Creative Citizens experiment occurred in Milan, within a community of residents located in a particular neighbourhood (Zone 4).

It took place in a local farmhouse, the Cascina Cuccagna, which represents a symbol of Milanese activism. Thanks to a bottom-up initiative, the Cascina has been revived: now it is a green oasis in the centre of the city and a real piece of countryside in an urban area.

Cascina Cuccagna aims to become a permanent laboratory for civic participation and a new public space that will welcome and support the creativity of individuals, groups and associations by offering spaces, equipment and opportunities for collaboration. Currently, the farmhouse is undergoing a transformation and is organising residency opportunities for original projects with the same mission.

Creative Citizens responded to the call for the assignment of temporary spaces in the Cascina, presenting a programme focusing on participatory design between designers and local communities by using the tools of service design research. The project is endorsed by the Zone 4 Unit of Local Government, in direct association with the Municipality of Milan.

An ongoing experiment involving a community of thirty citizens with weekly meetings began in February 2013 and continued until the end of June 2013.

Creative Citizens brought the expertise of researchers to the service of ordinary people, creating a laboratory of solutions for daily life, improving existing services and designing new ones, acting as a semi-public office for service design and connecting citizens with designers, stakeholders and institutions. In other words, creating a good environment for co-designing social innovation.

The project consisted of a series of co-design sessions dealing with four different service areas: sharing networks, bureaucratic advice, food systems and cultural activities, all of which were connected to simple daily tasks and to existing services and places, such as time banks, purchasing groups, local shops, museums, markets and fairs.

In each session, there was a temporary set design to simulate service situations: it was a simple path of creative participation, precisely because everyone was able to become a designer of their daily life, at least for a few months, while having fun at the same time.

The four service areas were organized in four cycles, each of them consisting of three creative sessions, which can be seen as the three steps of a progressive path.

The initial meeting was a *warm up session*, to familiarize participants with the topic by presenting good practices from all over the world. It aimed to inspire people and bring visions of a possible daily life. Participants selected the most promising elements of the presented cases, to be combined in the second session, in order to create as advanced a service concept as possible. This second meeting was a *generative session,* a sort of collective brainstorming bringing together citizens' desires and good practice insights. In the third session, the objective was to move from an ideal service to a real one, identifying the resources that could be involved in the development of the service. It was a real *prototyping session,* using physical mock-ups to shape a service truly suitable for the area in question i.e. Zone 4.

In this last session, strategic players were invited: local associations and committees, representatives of institutions, and professional advisors… all already active in the neighbourhood, in order to join forces and produce synergy, receive encouragement and draw inspiration from existing activities.

This support is provided not only on the 'professional' side but also on the emotional side, because establishing connections between initiatives is the easiest way to activate a mutual process of teaching and learning; sharing skills, platforms and places.

The following table offers an overview of the different co-design experiments within the four thematic cycles framework and briefly presents the results. The methodology used within the experiments is a set of combined participatory techniques, including co-design and community-centred design as already discussed. The research context is informal and thus quite different from the academic one. It requires a specific adap-

1 Creative Citizens, presentation kit
2 Creative Citizens, generative session
3 Creative Citizens, generative session
4 Creative Citizens, warm-up session
5 Creative Citizens, warm-up session
6 Creative Citizens, public exhibition
7 Creative Citizens, public exhibition
8 Creative Citizens, exhibition to the Municipality
9 Collection of co-design tools
10 Suggestion Cards

Thematic Cycle 1	Services for exchanging goods and skills
1.Warm-up session	Exploration of existing micro-economies created by local communities in the field of exchange, rental and sale of goods, tasks and skills.
2.Generative session	Combination of previous insights and concept definitions, setting up service elements: services offered, technologies and tools, interactions, transaction typologies.
3.Prototyping session	Two different services are defined by using two kinds of prototypes: a "fake" bookcase to exchange objects and a sort of bulletin board to exchange tasks and skills.
Results:	**Augmented Time Bank:** a system to exchange skills and small tasks, within both condominium blocks and the neighbourhood, starting from Cuccagna Time Bank. **Objects Library:** a physical and digital space for bartering, borrowing, gifting, and renting goods in the neighbourhood.
Thematic Cycle 2	Legal and bureaucratic services
1.Warm-up session	Conversation with Rossella Mileo lawyer, founder of a Milanese Legal Desk. Investigation of existing systems of bureaucratic advice, both digital and face-to-face.
2.Generative session	Combination of previous insights and concept definitions, setting up service elements: services offered, technologies and tools, interactions, transaction typologies.
3.Prototyping session	A multi-service advice desk is defined by using two main prototypes: a "fake" front office showing the offering; a scale model of the physical office and its service areas.
Results:	**Citizen's Desk:** a service for orientation and assistance with bureaucracy, in various domains: legal, fiscal and architectural/building advice.
Thematic cycle 3	Food services
1.Warm-up session	Overview on food-related services and events, presentation of the case studies in two main clusters: shopping and eating.
2.Generative session	Combination of previous insights and concept definitions, setting up service elements: services offered, technologies and tools, interactions, transaction typologies.
3.Prototyping session	Two different food networks are defined by using these prototypes: a paper-cut laptop for testing a digital platform and a map of Milan to discuss possible logistic paths.
Results:	**Facecook:** a neighbourhood food network connecting restaurants, markets, shops and local residents. **Local Distribution System:** an alternative distribution network to connect Zone 4 with the Agricultural Park South Milan area, based on the principles of disintermediation and participated logistics.
Thematic cycle 4	Cultural services
1.Warm-up session	Investigation of good practices from the cultural field, divided into three main clusters: zero mile tourism, public art, local initiatives.
2.Generative session	Combination of previous insights and concept definitions, setting up service elements: services offered, technologies and tools, interactions, transaction typologies.
3.Prototyping session	A service of zero mile tourism is defined by using two prototypes: a travel agency board mock up, offering unconventional urban tours, and an interactive Zone 4 map.
Results:	**Zona 4 Ciceros:** places in Zone 4 adopted and explained by a citizen-guide, organizing unconventional tours to discover hidden or forgotten places.

Table 1 Brief overview of Creative Citizens' co-design experiments and results

tation of methods and tools, making them more attractive and easily understandable.

For each session we designed tools with three main purposes:

- *inspiring tools*, to spark off or reveal unexpected ways of doing things (good practices boards, suggestion cards, video-stories);
- *framing tools,* to elaborate a shared way of doing a specific thing (system maps, customer journey maps, front office and back office displays);
- *implementing tools,* to introduce a model into a local context, involving real players (service mock ups, localization maps, role games and stakeholders maps).

The final result of Creative Citizens is a collection of six everyday services co-designed with the active participation of local people. Each service is now at a different stage of development, depending on the opportunities found in the neighbourhood and in the network of institutions and stakeholders.

In summary, it is possible to identify three possible progressions for the generated services:

- to envisage an intersection with the public sector (this is the case of the Citizens' Desk);
- to foster the birth of original service start-ups (this is the case of the Object Library);
- to join existing services provided within the Cascina Cuccagna (this is the case of the Augmented Time Bank).

3. New service models: collaborative and networked services

The services originated within Creative Citizens call for a new kind of service model, building upon the definition of collaborative services: "services where the end-users are actively involved and assume the role of service co-designers and co-producers" (Manzini & Jégou, 2008, p.32). The end-users are the same citizens who are participating in this new wave of bottom-up activism. Their contribution may cross all stages of the service, from the generation of ideas to actual realization, that's why they are real "service thinkers and makers" (Selloni, 2013).

A new service model is emerging, in which the distinction between the traditional provider and the user is blurred.

This model goes beyond the one-to-one framework to a new one including wider and multiple interactions, and so, from a dualistic model to a plural and networked one, strictly connected to communities and places.

Our intention is to outline an explorative definition of this new service model, starting from the IHIP scheme proposed by Meroni and Sangiorgi (2011), in which they analyze the four service characteristics: intangibility, inseparability, heterogeneity, perishability.

By intangibility, we mean that services are not physical goods: they are immaterial and for this reason it is necessary to design touch points and concrete evidence. This is even more important if we deal with the activities of 'service thinking and making' developed by citizens: to use interfaces, visualizations and prototypes is crucial to empathize with the community and create an 'object' for conversation at the co-design table. This new service model indeed requires more representation and materialization than the traditional one.

By inseparability we mean that services generally need the user to be present during the activity. Starting from the assumption that "design for services conceive users as a resource rather than a burden or a problem" (Meroni & Sangiorgi, 2011, p. 19), the users' presence is crucial not only in the delivery phase but also before, in the design phase. In Creative Citizens' project we noticed how co-design was transforming radically the resulting service model, and how the hyper localism of the experimentation influenced the co-production phase. Similarly to the co-creation model suggested by Cottam and Leadbeater (2004) this new service model presupposes the participation of the users in every stage, and the use of distributed resources, both physical and virtual, connected to a specific community in a specific place.

Speaking of heterogeneity, we mean that services are variable, depending on several factors such as time, space and the people involved. Every service situation is different from another, which is why Maffei and Sangiorgi (2006) talk about "situated actions", influenced by the socio-cultural and organizational context. This was even more evident in the experience of Creative Citizens: the context is crucial and it is not possible to divide it from its related service interactions.

The scheme about the service encounter, conceived by Klaus (1985) shows on one side the service provider and its organizational environment, and on the other the user and his/her socio-cultural context. In between there is the service area. This is not applicable to the described activities of 'service thinking and making', in which the two contexts almost coincide: a group of citizens/users covers many roles at the same time, they are service-provider, manager, launcher, advisor, beneficiary... there is a dense network of relations, roles can be exchanged, and new bottom-up expert systems are arising.

Finally, perishability deals with the impossibility for services to be stored and with the difficulty of managing supply and demand. This is also connected with the issues of scaling up and replicating: for achieving these two objectives "service solutions need to consider the interactive nature of services and their local dimensions" (Meroni and Sangiorgi, 2011). The service context represents again a key-factor: looking at the ex-

Scheme 1
Traditional service interaction – based on the service encounter scheme (Klaus, 1985)

provider / agent
user /citizen
organizational environment
service situation
socio-cultural context
place + tools
people + information
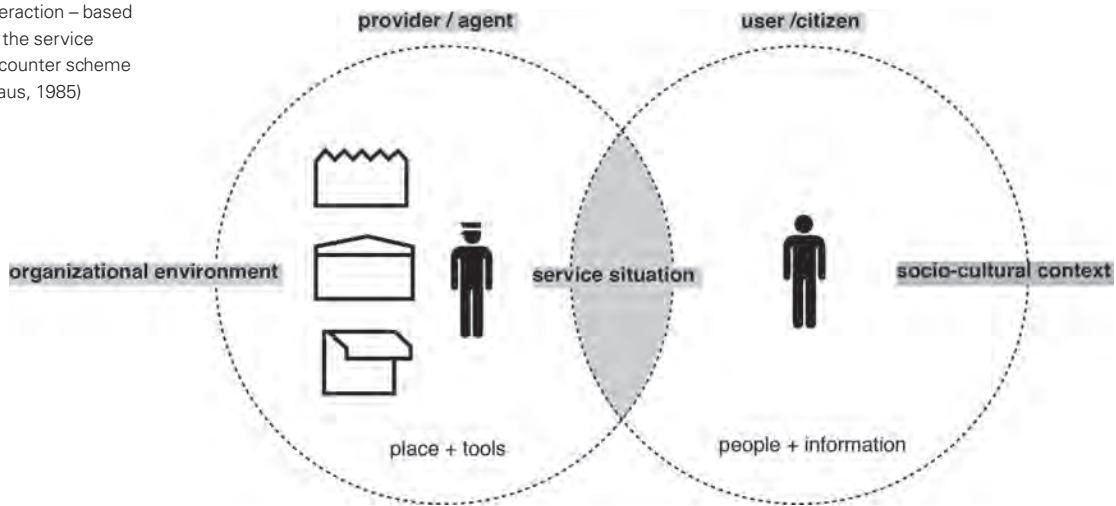
Scheme 2
Collaborative and networked services

place + tools
user-influencer
user-agent
user-ambassador
user-manager
user-beneficiary
user-advisor
organizational environment
socio-cultural context
service situation
user-designer
user-provider
information

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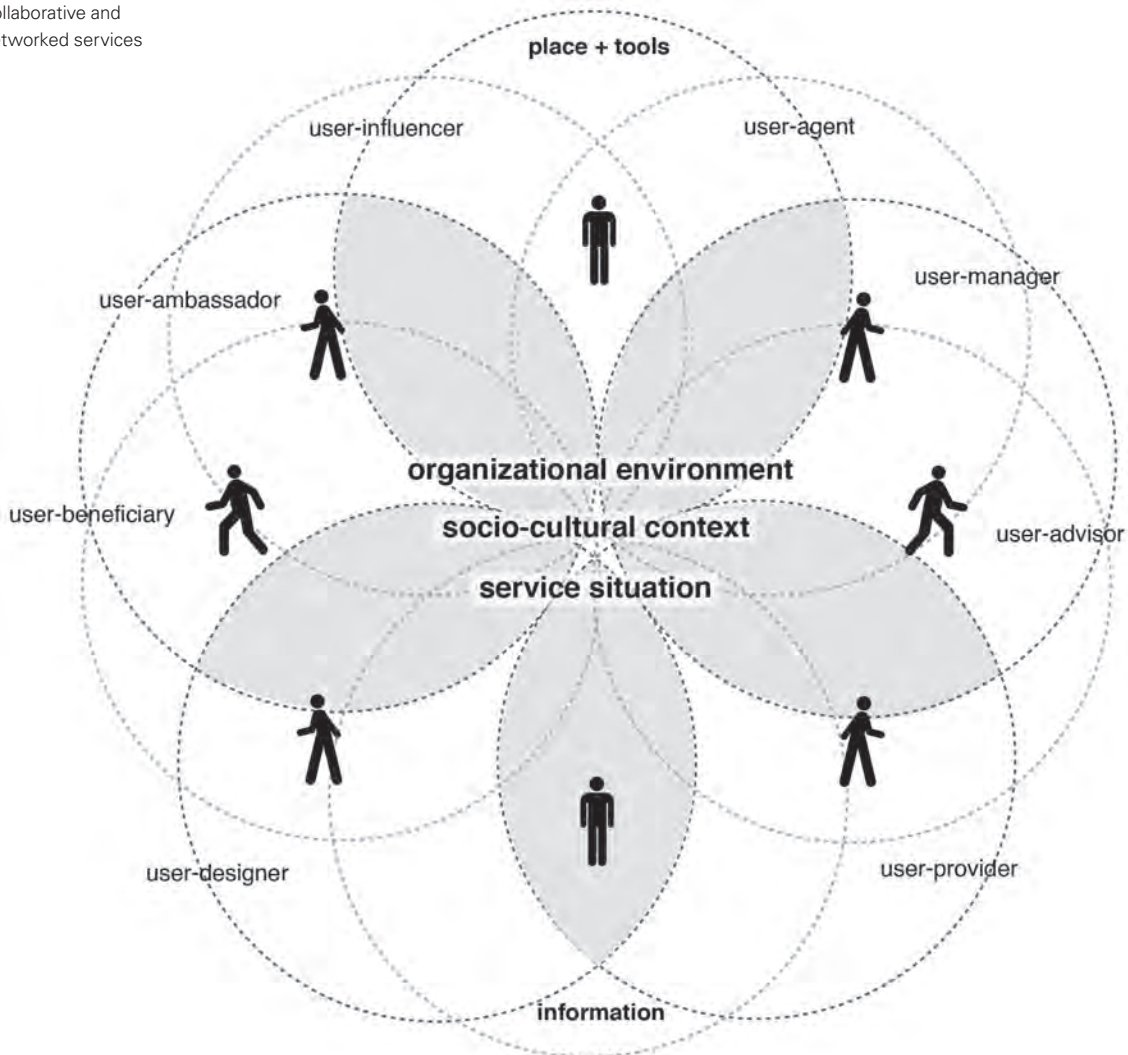
Traditional Services	Collarborative and networked services
Bi-directional relation	Circular interaction
Anonymity	Direct knowledge
Hierarchical organization	Peer to peer / networked organization
Delivery	Enabling
Professionalism	New experts
Division between public and private	Hybrid area semi-public/semi-private
Web as channel/tool	Web as enabler/connector
Focus on how	Focus on why

Table 2 Networked and collaborative services compared to traditional services

perience of Creative Citizens it is difficult to imagine the same services in another place, nevertheless this is a call for research: it is necessary to shape a collaborative service model to be quite flexible, in which some elements can be replicated and others adapted to new situations.

Furthermore, this model should allow the maintenance of the relational and emotional qualities embedded in service making activities, or, at least, contribute to the design of favorable conditions for spontaneous and trustful interactions, recognizing the person behind each individual (Cipolla, 2006).

In table 2 we propose a simplified comparison between the characteristics of the traditional service model and those of the new and emerging one.

In schemes 1 and 2 we show the shift from a traditional service model to a networked and collaborative one, showing how co-design and co-production are contributing in this transformation.

4. New service places:
a fab-lab of city services

In Creative Citizens project we experimented a 'new service place', aiming at creating a catalyser of initiatives, a dedicated entity to co-design and co-produce services.

Therefore, close to the idea of exploring new service models, there is the intention of investigating a novel format, a reference point for supporting active citizens in the neighbourhood.

To outline the identity of this new service place, a main metaphor emerges: it is a parallel between the self-production of objects – making (Micelli, 2011) – and the self-production of services.

In the Creative Citizens project, people acted as real 'service thinkers and makers' therefore we can define this new service place as a sort of 'fab-lab of city services'.

This place is not only dedicated to the self-production of services, but it also represents a point of connection between ordinary citizens, designers, local stakeholders and institutions. It gathers together existing initiatives and also creates conditions to establish unprecedented connections among all the actors involved in the service.

Such a place is located in a hybrid area between the market and society, the amateur and the professional, the public and the private sector and between profit and non-profit. This area is a good environment for fostering social innovation: according to Mulgan (2007, p.34) "social innovations are usually new combinations or hybrids of existing elements" and that putting social innovations into effect usually involves cutting across organizational, sectoral or disciplinary boundaries.

In the Creative Citizens project, individuals, communities, local stakeholders and institutions are involved in design activities and this experimentation represents the prototype of a social learning process in which (service) design knowledge is a key-asset.

That's why, in such a framework, the role of the designer is not only that of a facilitator, but it is evolving into something different: designers bring a vision to inspire and lead the community, using their professional tools to make things happen. (Fuad Luke, 2009).

As a matter of fact, within our experimentation, designers were actual leaders, able to trigger bottom-up activism and transform it in actual services for the community. We also noticed how design expertise was crucial in building scenarios and bringing visions, in developing solutions linked to these scenarios and in providing specific tools to support and share this process.

In this perspective, a "fab-lab of city services" is the centre of a wide co-design and co-production network, a place for design and making, and, hopefully, a place that is pleasant and generative of a broader social learning process.

Daniela Selloni
PhD Candidate
Politecnico di Milano,
Design Department
Polimi DESIS Lab
Italy
daniela.selloni@polimi.it

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Sine Celik, Peter Joore & Han Brezet

Towards a functional categorization of collaborative social innovation networks

Abstract

This research presents a new categorization of collaborative social innovation networks based on the functionality that these networks deliver. An analysis was made based on 500+ cases of various innovation networks that were selected from existing examples worldwide. This database has been used to identify organizational, methodological and functional properties of different collaboration initiatives, and to create a new clustering in seven functional categories: create, facilitate, stimulate, efficiate, educate, associate and corporate.

The research was initiated by plans to implement Creative Cooperative Blokhuispoort, a project that is part of the city of Leeuwarden recently endorsed plans to become the Cultural Capital of Europe in 2018. The aim of this paper is to support this initiative, and similar ones, by determining how various types of collaborative social innovation networks can be classified in a systematic manner. For this purpose, the formation and analysis of a case database will be described, which has helped to come up with a new classification in seven categories - including various subcategories. Each of these categories will be explained by a short description and practical examples.

Keywords

Social innovation. Innovation networks. Creative clusters. Categorization. Collaborative design

1 Introduction – The rise of collaborative innovation networks

The emergence of creative and collaborative networks is increasingly important for the realization of design-driven social innovation. Design-driven social innovation describes initiatives that aim at solving societal issues through identifying new bonds between existing elements, or creating design-based solutions from scratch that provide a social impact. This development is forcing creative industry to find new forms and methods of collaborative design such as local hubs, online challenge platforms or innovation incubators. The importance of collaborative innovation networks is increasing for social innovators and designers (Arranz & Fdez de Arroyabe, 2012). Collaborative networks are the important tools of implementing new ideas into local development strategies because their affectivity grows proportionally with the ability to discover, facilitate and sustain innovations within the society (Rutten & Boekema, 2007). However, it is not always clear what exactly is meant when issues like co-creation, crowd sourcing or innovation networks are being discussed. Apparently, various types of collaborative innovation initiatives may have very different goals and functionalities.

This research was initiated by initiatives to form Creative Cooperatives as part of the city of Leeuwarden recently endorsed plans to become the Cultural Capital of Europe in 2018. These collaborative initiative in the Northern part of Netherlands aim to stimulate the productivity of local creative entrepreneurs by linking them to each other and to various stakeholders from industry, government and societal organizations. The start of this Creative Cooperatives may be interpreted as a response to a socially threatened life-style, and an effort to define more communicative patterns of creation. The ambition is that in these cooperative communities, questions and answers are matched and with new working methods the cooperatives inspire the innovation challenges in the old economy with the creativity from the new economy (Stichting Kulturele Haadstêd Leeuwarden-Ljouwert 2018, 2013).

However, how exactly these initiative should be functioning still needs to be determined, which formed the starting point to create an overview of different examples of innovation networks worldwide, in order to understand the dynamics behind these organizations. During this process, the functional variety of collected cases showed that there is a need for a clear classification

of social innovation networks. This classification may in time help to support the effectiveness of future initiatives in this field.

2 Brief description of existing categorization methods

Currently, there are various emerging typologies that can be identified as (social) innovation networks. These typologies have different properties and this diversity brings along a need for a classification strategy that enables comparison between different network types and links them through a parametric system of relations. There have been various attempts of categorizing innovation in general. This section briefly explores existing studies that have done in the field of classifying innovation based on the literature study done by Miller & Miller, who explain the existing categorization in a comprehensive way. (2010)

EIGHT CATEGORIES

Johnson & Jones (1957): *reformulated / new parts / remerchandising / new improvements/ new products / new user / new markets / new customers*

FIVE CATEGORIES

Freeman (1994): *systematic / major / minor / incremental / unrecorded*

TETRA CATEGORIZATION

Henderson & Clark (1990): *incremental / modular / architectural / radical*

Abernathy & Clark (1985): *niche creation / architectural / regular / revolutionary*

Moriarty & Kosnik (1990): *incremental/evolutionary* market/evolutionary *technical/radical*

Chandy & Tellis (2000): *incremental / market breakthrough / technological breakthrough / radical*

Tidd (1988): *incremental / architectural / fusion / breakthrough*

TRIADIC CATEGORIZATION:

Kleinschmidt & Cooper (1991): *low innovativeness / moderate innovativeness / high innovativeness*

Wheelwright & Clark (1992): *incremental / new generation / radically new*

Dichotomous categorization:

Anderson & Tushman (1990) / Robertson (1967): *discontinuous / continuous*

Grossman (1970): *instrumental / ultimate*

Normann (1971): *variations / reorientations*

Madique & Zirger (1984): *true / adoption*

Yoon & Lilien (1985): *original / reformulated*

Rothwell & Gardiner (1988): *innovations / reinnovations*

Meyers & Tucker (1989): *radical / routine*

Utterback (1996): *evolutionary / revolutionary*

Christensen (1997): *sustaining / disruptive*

Schmidt & Calantone (1998) / Song & Montoya-Weiss (1998): *really new / incremental*

Rice et al. (1998): *breakthrough / incremental*

Balachandra & Friar (1997) / Freeman (1994) / Atuahene-Gima (1995) / Kessler & Chakrabarti (1999) / Lee & Na (1994) / Schumpeter (1934) / Stoubaugh (1988): *radical / incremental*

Although these categorization approaches are very valuable in itself, they are not sufficient for the purpose of this paper, which is mainly focused on finding a systematic clustering that is based on the functional properties of networks that can be seen as enablers and triggers of social innovation, especially from a bottom-up perspective. Therefore, an effort was made to come up with a new categorization of collaborative innovation networks.

CASES	THEME	ORIGIN	EFFECT SCALE	LEGAL FORM	ORGANIZATION TYPE	ORGANIZATION STRUCTURE	ORGANIZATIONAL REGIME	FUNCTIONAL ORGANIZATION
Innovation platforms								
Rotterdamse Nieuwe	social innovation	NL	city	combination	collaboration	committee	silo organisation	service
Open Living Labs	social innovation	world	city	combination	collaboration	matrix	silo organisation	service
Online Innovation Platforms								
Innovation exchange	awarded challenge	world	world	non-profit	collaboration	pyramid	accountable leadership	service
Ecomagination challenge	awarded challenge	world	world	combination	collaboration	pyramid	separate clusters	service
Quirky	awarded challenge	world	world	non-profit	collaboration	matrix	separate clusters	service
Open Idea	awarded challenge	world	world	private	collaboration	pyramid	separate clusters	service
challenge.gov	awarded challenge	world	country	governmental	collaboration	matrix	exclusive elite	hybrid
The Collective	awarded challenge	world	world	private	collaboration	matrix	accountable leadership	service
2degrees	awarded challenge	world	world	private	sole proprietorship	pyramid	silo organisation	service
Innocentive	awarded challenge	world	world	non-profit	collaboration	pyramid	exclusive elite	service
Competitions								
Solar Challenge	boat race	Fryslan	country	non-profit	collaboration	committee	accountable leadership	service
Solar Decathlon	architectural competition	world	world	non-profit	collaboration	committee	silo organisation	manufacturing

SUB CATEGORIES

non-profit
combination
governmental
private

sole proprietorship
collaboration
partnership

committee
pyramid
matrix
ecology

perfect equality
isolated tribe
accountable leadership
separate clusters
silo organisation
exclusive elite
no organisation
emergent leader
perfect dictatorship

service
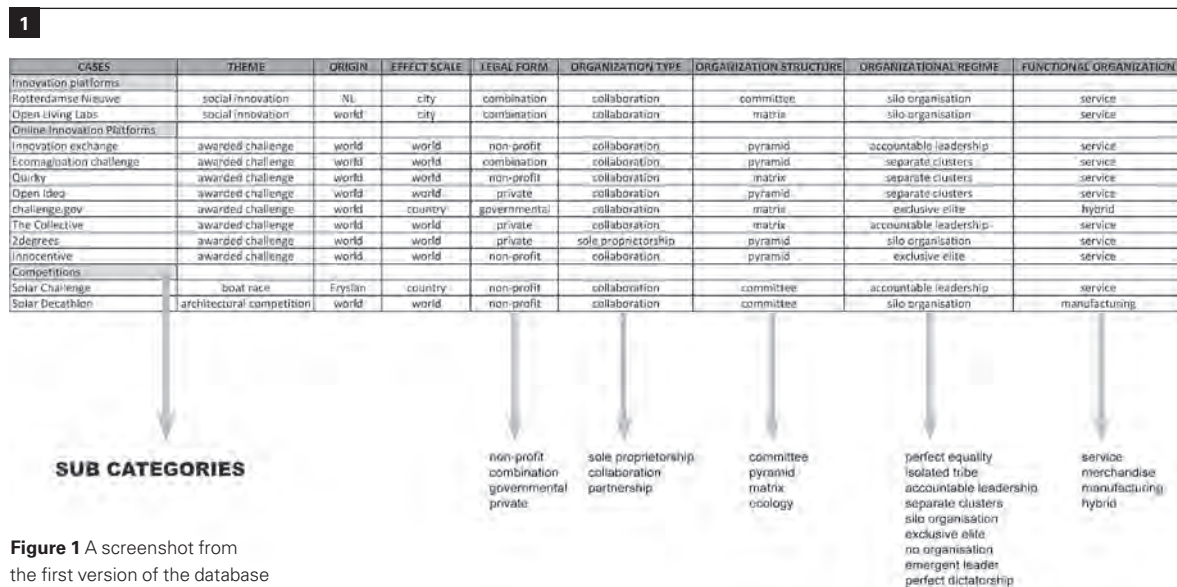merchandise
manufacturing
hybrid

Figure 1 A screenshot from the first version of the database

3 An inventory of collaborative innovation networks

During this research, a large amount of design-driven social innovation networks were collected to understand organizational properties and methodological aspects of remarkable projects worldwide. A series of selected projects were investigated from multiple directions in order to detect a pattern that could be used for creating guidelines or typologies for future initiatives. The analysis on this dataset, which includes 500+ cases, resulted with a new categorization method of social innovation networks.

The inventory was formed through an analysis of currently active creative networks and a series of interviews with international experts in the field of collaborative innovation. The case collection began by identifying relevant cases between regional examples in the North of the Netherlands. In the next phase, the scale of the examples expanded by covering the whole country, Europe and the world respectively. In this way, the list can accommodate as many different organization types as possible, while having a manageable size at the same time.

After selecting the 500 cases to study on, detailed information was collected for each case that can be summarized in five fundamental groups practical, organizational, structural properties, used methods and tools design involvement. However, some of this information was only meaningful when there is a comparison between all cases. In order to carry out a systematic study on the cases, an effort was made to group the cases based on their functional similarities. This grouping started by identifying common points of different initiatives and evolved into its current state of seven categories of social innovation networks. This categorization does not only mean clustering various groups of data but also objectively analyzing and evaluating datasets, in order to gain a holistic vision about the complete system. The research aims to reach a categorization that describes the role of each attempt within a sustainable chain based on several parameters. These empirically defined seven categories appeared to cover the complete database. The next phase of the research concentrated on finding ways to use the database in a beneficial way and testing the various categories on a local scale by running pilot projects with Blokhuispoort Creative Cooperatives.

4 Analysis of the cases

During the random collection of the cases in the database through interviews, the problem was explained in a structural way to the interviewees. In the guidance of carefully picked examples that were collected from governmental reports and contemporary literature, they were asked to name relevant practices they are famil-

iar with. All participants appeared to have a clear about which cases would be relevant for the purpose of this study. This database will be published online later on.

While working with a complex dataset with 500 cases, it is important to prioritize the information. In this case nearly half of the data defines quantitative or informal information such as budget, year of foundation or contact person, which is not expected to have influence on future projects, thus not considered as a priority. On the other hand, the research also covers information over organizational structure, used tools and design involvement, translated into numeric data.

In this database, in addition to origin related grouping as Dutch, European and worldwide projects, 'design involvement' was also considered as a parameter. British Design Council's design cycle with four stages (discover, define, develop, deliver) was used as a reference at this point. This is more or less similar to the cycle described by Joore (2010), in which the four stages are named (reflection, analysis, synthesis, experience). By placing the cases in this cycle, it was possible to understand to which design stage a certain category would fit. This placement enabled a function-based categorization (in terms of a first hypothetical model) that directly relates the role of the designer to the project. Therefore the design involvement can be considered as a parameter.

While looking for relevant parameters, at first, a preliminary functional description was defined for each case that clarified the purpose of the network in a few words. Next, the clustering was worked out to a complimentary system with seven categories and their subcategories.

5 A preliminary categorization of collaborative innovation networks

1. **Create:** Organizations that gather innovative ideas directly through co-creation or crowdsourcing.
2. **Facilitate:** Spaces or organization that provide a platform for creative activities.
3. **Stimulate:** Inspiring organizations or activities that lead individuals towards innovation.
4. **Efficiate:** Networks that help innovators to reach correct tools they need and work more effectively.
5. **Educate:** Organization that prepare a research based ground for innovation and its integration.
6. **Associate:** Networking platforms that bring people together and enable communication between disciplines.
7. **Corporate:** Entrepreneurial initiatives that innovate socially beneficial products or services.

Category 1: Create

The concept of crowdsourcing was no stranger to design world. It is especially used in forms of design compe-

2

3

CREATE
- online platforms
- innovation and design collectives
- design competitions

FACILITATE
- physical meeting spaces
- incubators/accelerators

STIMULATE
- museums and cultural institutions
- festivals and artistic events
- creative collaborations

EFFICIATE
- funding programs
- connecting platforms

EDUCATE
- university-based organisations
- independent organisations

ASSOCIATE
- labour unions
- communicative networks

CORPORATE
- large companies that apply innovative projects
- SME
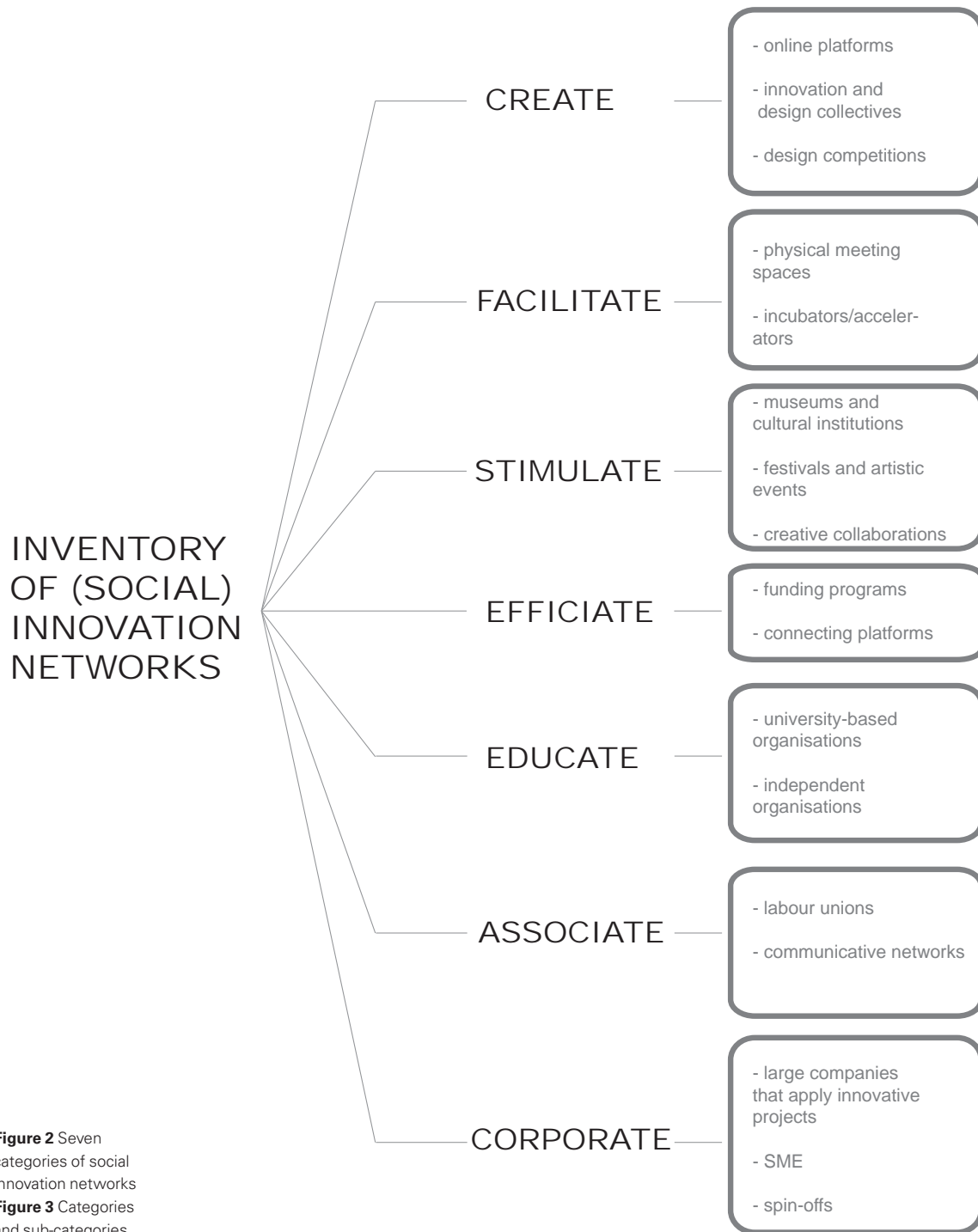- spin-offs

INVENTORY OF (SOCIAL) INNOVATION NETWORKS

Figure 2 Seven categories of social innovation networks
Figure 3 Categories and sub-categories

titions in disciplines like architecture, product design, fashion design and graphical design. However, gathering ideas from a large group of intenders became a part of other fields that are not directly connected to design. Especially innovative firms, who are in constant need of new solutions, started using this method effectively. A large part of this competitive idea generation happens through online platforms that accommodate 'challenges' but there are also offline groups who are aiming at the same target. Some of these offline versions are also non-competitive. Therefore the first category of this inventory covers organizations that are directly aimed at finding solutions through technology, design or planning and have an impact on society by using creativity as a tool.

Online or offline, competitive or not, all forms receive a question from external parties and create a solution. Although the result is achieved through following similar paths in all cases, there are two linked differences between these groups that helped three preliminary sub-categories to emerge.

ONLINE PLATFORMS

Challenge.gov: This online platform aims to enable partnership between government and public to find solutions to mostly technical challenges. Regardless of the topic and technical detail level, government related organizations regularly post awarded challenges on this website. Some of the challenges are open to everyone while the others specify the group of competitors, for instance by inviting undergrad students only. The registered users are expected to submit their solutions for challenges they pick. A jury that is defined by the organization itself selects the best entry and this awarded solution is expected to be applied afterwards. *www.challenge.gov*

INNOVATION AND DESIGN COLLECTIVES

R'damse Nieuwe: This Rotterdam based group aims to bring active citizens together to make their city more attractive. The group meets regularly to work on pre-defined projects but there is an online platform as well. In this hybrid system, the group has a list of pre-defined themes and they receive projects to work on from external parties. As a result, the community delivers concrete solutions or advisory reports that are socially/physically/environmentally beneficial for the city of Rotterdam. *www.rdamsenieuwe.nl*

DESIGN COMPETITIONS

Solar Challenge: Solar Challenge is a Netherlands based race for solar-powered boats. The race stimulates technically oriented students to work with the theme of solar energy and at the same time contribute in the naval culture of the area. Participating groups are expected to design, build and sail the boat along a traditional route that passes through eleven Dutch cities. Innovative solutions that came out of this annual competition has given the organization an international reputation. Similar competitions for environmentally conscious technical innovations are organized in other design disciplines as well, such as the Solar Decathlon of architecture students. *www.dongenergysolarchallenge.nl*

Category 2: Facilitate

Since innovation has overflown from large companies, there is a rising need for physical spaces that bring initiators together and facilitate the idea generation process. In Europe, especially in the Netherlands old industrial buildings are being transformed into collaborative spaces that serve to creative industry. Some of these spaces only provide an affordable shelter function with adequate technical facilities while there are also others providing professional help for problems that might come up on the way to success. In this case, the facility functions as an incubator for new ideas and business start-ups as well. The category 'facilitate' identifies these generic spaces or their initiators that contribute in innovation through the service they offer. It is possible to define two sub-categories here that are explained below with an example from the database:

PHYSICAL MEETING SPACES

Seats2Meet: Functioning in six different countries, Seats2Meet facilitates a dynamic environment for creative individuals to work together, meet each other and to share knowledge. It is an environment where people can use their expertise and enthusiasm to add value to a greater good. The concept focuses on connecting the users virtually and physically at the same time. There are meeting spaces for groups of different sizes, as well as individual working stations. With a small membership fee, it is possible to access these hubs and use every offered service for free. *www.seats2meet.com*

INCUBATORS/ACCELERATORS

Yes! Delft: This Delft based organization helps young entrepreneurs with concrete ideas to realize their innovative ideas in many ways. Apart from offering physical space to work in, the organization also provides networking opportunities, trainings and inspiration. Yes! Delft works together with Delft University of Technology but there are various organization worldwide that are not connected to academia, such as Technolab of Istanbul, a private foundation that helps innovators of the future to grow their own firms from scratch. *www.yesdelft.nl*

Category 3: Stimulate

Feeding innovation is an important because it is not possible to sustain the rest of the cycle unless the society is sourced with inspiration. Art and culture are two

important elements that enable this inspiration and indirectly trigger the innovation process. This stimulation can happen in form of fairs or events that s specially designed for this purpose or serve as a hidden effect of a music festival. Regardless of the difference in directness, 'stimulate' category focuses on organizations that lead people towards innovation by inspiring them one way or another. It is possible to say that a region without a strong cultural background is not expected to develop a sustainable innovation environment that is beneficial for the society.

The database does not cover every museum or music festival on earth, but only focuses on entities that contribute in the cultural development of their target group by implementing new ideas or processing old ideas in an innovative way. The stimulate category can be seen as a combination of three sub-categories:

MUSEUMS AND CULTURAL INSTITUTIONS
Chicago Museum of Science and Industry: Unlike a regular technical museum that only exhibits the development of local science, Chicago's science museum lets the visitor be a part of the innovation experience. The museum owns a fab lab where especially kids can play with new materials and fabrication technologies under guidance of experts. *www.msichicago.org*

FESTIVALS AND ARTISTIC EVENTS
In to the great wide open: ITGWO is a small-scale festival that takes place on a Dutch island and combines stage performances with art and design. The festival aims at being environmentally harmless to the island; therefore every year the organization implements new energy solutions such as smart grids between stages or re-using grey water. For this reason, the organization works together with universities and laboratories. *www.intothegreatwideopen.nl*

CREATIVE COLLABORATIONS
TILLT: Swedish initiative that brings creative minds of artists together with various field of business. The aim of such collaboration is to cross-fertilize the competences of the two worlds: the world of the arts and the world of the organization. On one side TILLT focuses on processes of human growth and artistic competence as a tool to stimulate creativity, innovation, human development, and more. On the other side, TILLT works for increasing the field of work for artists where new art can be born and new artistic methods can be developed. *www.tillt.se*

Category 4: Efficiate
The cycle of design-driven innovation mostly struggles on the second half of the process, which covers development, and delivery of project results. Efficiate category concentrates on initiatives that are offering ser-

vices for this issue. One of trending business types that are similar to incubation facilities are matchmaking organizations that help artists and designers to reach potential customers. The organization is not directly involved in the process but makes the design cycle more effective through establishing correct connections. Most of the time this happens through an online platform. Another type that is subject to this category is organizations that help the innovators financially. This category has two main sub-categories for now:

FUNDING PROGRAMS
Stimuleringsfonds voor Creatieve Industrie: This Dutch funding program serves designers and artists who need financial support to realise their project. Each year the organization announces a total budget and priority topics. Participants are expected to submit their ideas together with a budget plan to be able to receive grants. The aim of the organization is to expand the reputation of Dutch design internationally and support young creative on their independent projects. *www.stimuleringsfonds.nl*

CONNECTING PLATFORMS
House of Design: This is a Groningen based platform that helps designers and artists to find customers for their products or pieces. This matchmaking platform aims to connect correct customer with correct designer, therefore it is possible to say that it functions as an agency of artists and designers. *www.houseofdesign.nl*

Category 5: Educate
Innovation requires research and a continuously updated vision of the status quo. Educational institutes are the main source of this knowledge. A respected amount of innovation comes directly out of universities and this creates an unbreakable bond between academia and innovation worldwide. This category covers every research-based initiative that studies on innovation that has various forms including universities, academies, research institutes, and laboratories within this group. Next to these academic organizations there are also independent units such as labs or research centers who are not directly connected to an educational institute. The difference between origins divides this category into two main sub-categories:

UNIVERSITY-BASED ORGANISATIONS
VEIL Melbourne: Victorian Eco Innovation Lab at University of Melbourne aims to identify and promote social, technical and organizational innovations that could be a part of a sustainable future. Next to performing academic research on innovation, the group also develops concepts in collaboration with others and organizes events that promotes the results of their studies to the whole world. *www.ecoinnovationlab.com*

INDEPENDENT ORGANISATIONS

UNESCO Institute for Water Education: is a research center that has multiple locations worldwide. Although the main purpose of the institute is education, next to MSc and PhD programs that are offered, networking opportunities for the water sector, advisory services for ministries and other governmental organizations are also included in the spectrum. *www.unesco-ihe.org*

Category 6: Associate

There are also groups belonging to innovation world who are not actively coming together to design or develop but they form a network of expertise together. Labor groups, international communities, federations can be major examples of this category. These organizations prepare a ground for communication by regularly organizing events where members share experiences or educate each other. Innovation cannot make a difference unless it communicates correctly with relevant disciplines and public. Associate category also enables the flow of knowledge between necessary people and fields. Although most of these type of organization bring individuals of same professional title together, there are also examples who are concerned with a certain field of interest which makes it possible to see this category in two sub-categories:

LABOUR UNIONS

EFAP: European Forum for Architectural Policies organises events to share knowledge and experiences with professionals who work on creating a sustainable future for cities by adapting architectural policies. The forum functions as a platform that leads to new collaborations, inspirations and innovation in its field. *www.efap2013.lt*

COMMUNICATIVE NETWORKS

DESIS: Design for Social Innovation towards Sustainability is a network of design labs, schools, universities who are actively involved in promoting a sustainable

change. Initiated by United Nations, DESIS also brings its partners together with various non-academic stakeholders for providing a ground for co-creation. *www. desis-network.org*

Category 7: Corporate

Corporate category involves all kinds of businesses that form a respectful part of innovation environment worldwide. The only selection criterion to this category is the purpose of innovation that is defined by the firm. Pure product innovation or technological innovation that is targeted towards financial profit is not taken into account unless it has a certain societal impact or has achieved through socially beneficial ideas. In this category, next to fresh entrepreneurs and large companies that have turned their faces towards innovation, spin-offs that originate from traditionally structured companies are taken into account as well. This category will look at businesses in three different scales:

LARGE COMPANIES THAT
APPLY INNOVATIVE PROJECTS

Lays/Smaakmakers (NL): Lays potato chips organized a crowdsourcing campaign where customers were asked to develop new tastes for Lays crisps. The finalists were made available for the market and at the end most popular product won the first prize. This campaign was applied in several countries. *www.lays.nl/smaakmakers/*

SME

Plakkies: Originating from the graduation project of TU Delft student, Plakkies are basic plastic flip-flops made of car tires coming from South Africa where car tires are dumped massively and illegally. The project is socially and environmentally responsible at the same time. Colorful patterns on the soles are created by orphans of South African villagers and all profit that is earned from these products go to these orphans as well. *www.tudelft.nl/en/current/dossiers/archive/plakkies/*
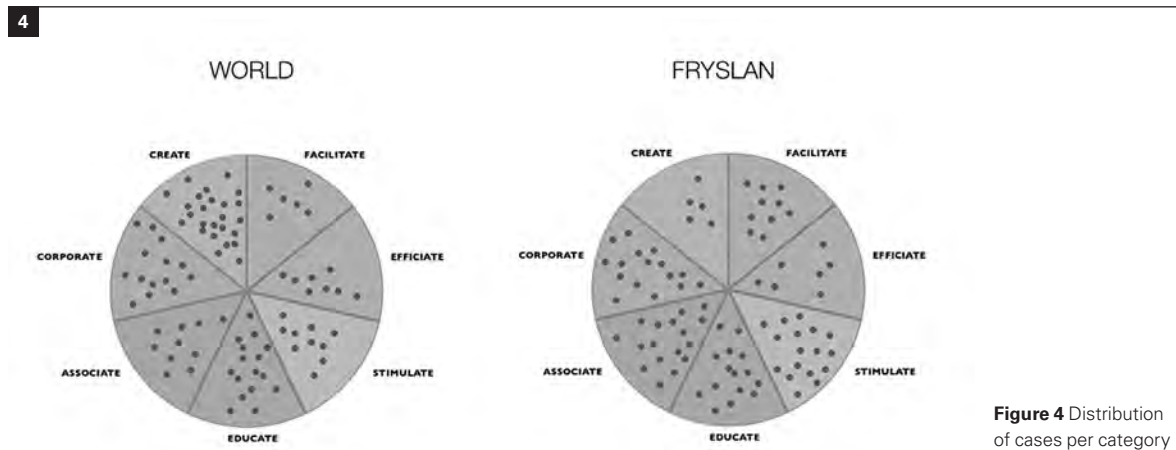

Figure 4 Distribution of cases per category

SPIN-OFFS

Shapeways: This 3D printing company is originally a Phillips spin-off, initiated by a group of engineers and designers who were willing to explore this new technology further. The company applies the latest technologies in 3D printing but at the same they have developed an interesting online shop where designers can put up their own designers for sale. This interesting business model is beneficial for young designers and their connection with this new technology. *www.shapeways.com*

6 Conclusion

In recent years, creative industry became less individualistic with the emergence of collaborative initiatives and social innovation networks. Design-driven innovation is now strongly dependent on the functioning of these creative networks within the system. However, there appear to be a large amount of different types of networks, each with their own unique functionality. Therefore, it is not possible to define a single structure for these collaborative social networks. In this paper, a first effort was presented that aims at clustering various collaborative social innovation networks in a systematic manner. The proposed grouping of 7 categories – and their various sub-categories – appears to be a useful first attempt to support the discussion in this field. Future research will have to determine if and how this typology may be used to advance practical initiatives. The authors will among others work with local Dutch initiatives like the Blokhuispoort Creative Cooperation, to find out if and how the findings of this research can be applied to increase the effectiveness of these promising initiatives.

Sine Celik MSc.
Faculty of Industrial Design Engineering,
Delft University of Technology
NHL University of Applied Sciences
Netherlands
g.s.celik@tudelft.nl

Peter Joore
Faculty of Industrial Design Engineering,
Delft University of Technology
NHL University of Applied Sciences
Netherlands
peter.joore@nhl.nl

Han Brezet
Faculty of Industrial Design Engineering,
Delft University of Technology
Netherlands
j.c.brezet@tudelft.nl

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Maria Frangos & Lorenzo Imbesi

Urban gardens: Design activism and right to public space

Abstract

An unprecedented rise in urban populations has had a tremendous impact on local economies and municipal governance. In response, a citizen-led proliferation of urban practices has taken root that seeks to reframe and resist socio-spatial dynamics. One such practice is urban gardening. Many scholars have explored the political dimensions of urban gardening, however, there has been less consideration of how the political interplays with the aesthetic or the contributions designers can make. This paper argues that urban gardening is not only a political act but an aesthetic one as well. It posits that as a citizen-led practice, urban gardening reveals and confronts existing power relations and systems of authority in a "designerly" way. In addition, by situating urban gardening within design, this paper establishes a new platform of engagement for designers, by considering a more inclusive interpretation of what constitutes design practice.

Keywords

Urban Gardening; Urban Design Activism; Place-making

Introduction

Urbanisation continues to transform cities at an accelerated pace (Zardini, 2009), with fifty per cent of the world's population currently living in urban environments and a projected increase to seventy-five per cent by 2050 (Burdett & Sudjic, 2007; Zardini 2009). This unprecedented rise in urban populations has had a tremendous impact on local economies and municipal governance, "shifting policy-focus away from regulatory and distributive considerations towards the promotion of economic growth and competitiveness" (Swyngedouw, 2011, 16). With respect to land use, this restructuring can be understood in neoliberal terms, where urban re-development and gentrification efforts result in hegemonic spatial policies and practices that alienate marginalised communities (Kipfer & Keil, 2002; Sutton & Kemp, 2011; Zukin, 1995), create socio-economic barriers, and increase social tension (Zardini, 2009). In response, a citizen-led proliferation of urban practices has taken root (Bialski, et. al, 2013) that seeks to reframe and resist socio-spatial dynamics. Grounded in various aspects of the urban experience, these practices have the power to "reinvent our daily lives and reoccupy urban space with new issues" (Zardini, 2009, 16), creating a new form of urban politics and grassroots deliberativeness (Hou & Rios, 2003, 20). One such practice is urban gardening.

As grassroots initiatives, community gardens serve as "catalysts for building social capital and social cohesion by establishing networks that enable collective action" (Fernandez & Burch, 2003, p.3). However, while many urban gardening programs are well supported, their existence is tenuous and subject to many land disputes between gardening communities and local governments, who seek "viable economic alternatives" for land use (Knigge, 2006; Saed, 2002). Lyons et al. (2013) argue that gardening challenges political, ecological and economic boundaries and re-imagines the city as a food-producing place. By identifying the ways in which people actively resist the enclosure of urban spaces through urban gardening practices, their findings position gardening firmly as a political practice that subverts the political and social boundaries about acceptable and unacceptable uses of public space. While many scholars from Cultural Geography and Environmental Studies have explored the political dimensions of urban gardening (Ralson, 2011), there has been less consideration of how the political interplays with the aesthetic or the contributions designers can make.

This paper argues that urban gardening is not only a political act but an aesthetic one as well. It posits that as a citizen-led practice, urban gardening reveals and confronts existing power relations and systems of authority in a "designerly" way (Markussen, 2013). In addition, by situating urban gardening within design, this paper establishes a new platform of engagement for designers, by considering a more inclusive interpretation of what constitutes design practice. This paper begins by presenting Markussen's (2013) framework of disruptive aesthetics of design activism in order to define citizen-led design activism, followed by examples of how Markussen's framework could be specifically applied to urban gardening. Finally, this paper discusses how designers can help advocate for community place-making, shifting their practices and focus toward purpose-driven (Sanders & Stappers, 2008) engagement platforms.

Citizen-led design activism

Over the past decade, design activism has been a topic of growing interest – its role generally defined as promoting social change, raising awareness about values, or questioning the constraints of mass production and its impact on consumers (Markussen, 2013). In this context, design activism is not restricted to a single discipline of design but includes areas such as product design, fashion design, interaction design, new media, urban design, architecture, among others (Markussen, 2013, p.38). In addition to the interdisciplinary breadth of design activism within design, there is a growing movement of citizen-led practices that shape the urban experience in a "designerly" way. Borrowing Markussen's (2013) disruptive aesthetics of design activism conceptual framework, the following section discusses these practices and provides examples of how his framework can be applied to urban gardening projects.

Identifying a "theoretical blindspot" in the research literature, Markussen (2013) argues that design activism must be situated within its own framework, instead of one based on sociological or political theory. He suggests that the notion of disruptive aesthetics embraces two key elements of design activism: the political potential to disrupt or subvert existing systems of power and authority, "thereby raising critical awareness of ways of living, working and consuming" (Markussen, 2013, p.39); and the aesthetic potential for opening up relations between people's behaviour and their feelings about their behaviour.

Embracing both the political and the aesthetic, Markussen (2013) proposes a new and alternative framework, where "action concepts" are grounded in the urban experience (2013). Drawing on the work of Rancière (2004, in Markussen, 2013), he defines these actions as interventions, where heterogeneous subjects and objects are introduced into the urban field of perception, thereby disrupting socially and culturally entrenched forms of belonging in and inhabiting.

For this author, design activism does not manifest itself in physical confrontations such as protests, strikes, or other political acts. "Instead, it lends its power of resistance by being precisely a designerly way of intervening in people's lives" (Markussen, 2013, p.43), altering the conditions for the urban experience and actions in daily life. In this sense, design activism is understood as having an aesthetic dimension as well. Using Markussen's disruptive aesthetics of design activism framework, the next section will present examples of urban gardening projects, suggesting that these projects function as aesthetic interventions.

Ron Finley

Concerned with the impact of food desertification on his community in South Central Los Angeles, Guerrilla Gardener Ron Finley planted a one hundred by ten foot garden on a city-owned vacant lot adjacent to his property. His intention was to provide people who otherwise had no access to fresh food with a means to feed their families. Within days, his neighbours began harvesting food from the garden, while other members of the community began to participate by planting gardens on nearby vacant lots. With the help of volunteers, the project has expanded and flourished into an organisation called LA Green Grounds (Tortilla, 2013).

Defining urban farming as a tool for transformation and an agent of change, Finley argues that gardening is disruptive, as "manufactured realities" are challenged and replaced by new ones (04:57). In this sense, "manufactured realities" are analogous to what Markussen describes as established power structures or systems of authority; whereas challenging and replacing these realities form the central notion for understanding the effect of design activism in its "attempt to disrupt existing paradigms of shared meaning, values and purpose to replace them with new ones." (Markussen, 2013, p.41). Finley's project meets both the political and aesthetic conditions of Markussen's disruptive aesthetics framework, where the "intimate interweaving between aesthetics and the political" provide an answer to the activist nature of design activism (Markussen, 2013, p.39). By challenging food production and distribution systems, Finley's work disrupts the systems of power and control that dominate over individuals and families in his community. Through the act of gardening, LA Green Grounds can be read as a form of design activism, as it confronts authority through an unsettling of power relations that creates spaces and enables "new processes of community and identity making" (Markussen, 2013, 49), re-affirming our understanding of urban gardens, as both physical spaces and expressions of social relations (Hou & Rios, 2003).

Re:farm the city

Founded by designer Hernani Dias, re:farm the city develops open source software and hardware, such as drip irrigators and temperature sensors, providing people with the tools to easily create, manage, and visualise their urban farms. A wiki also promotes an environment for active learning and sharing for the online community (re:farm the city, 2013). Currently located in thirteen cities in North America, South America, Europe, and Asia, organisers provide arduino workshops to students, who learn to build their own customised circuit boards that correspond to the environmental profile of their city. The project also connects participants to their larger physical environment, where they learn to understand their city's weather profile and grow foods that thrive in their respective local settings (re:farm the city, 2013).

For Dias, the most important aspect of re:farm the city is providing free access to tools and knowledge to food insecure people. His collective is among the first of its kind to provide affordable tools and techniques, specific to urban farming, through direct access to technology. re:farm the city, by the very nature of its urban context, is a direct intervention into urban space (Markussen, 2013). Its disruptive character of dissent lies in the "subtle way it cuts across and exposes hierarchies" (2013). In addition, the shared experiences of re:farm the city's network invite active engagement and interaction, while offering new ways of inhabiting urban space (Markussen, 2013). Finally, Dias' gardening approach, advocates social change by addressing the urban condition itself (Markussen, 2013, p.4) through both the material and the technological. By democratising technology through knowledge-sharing and low-cost access to software and hardware, this project plays an active role in by reinserting farming into the urban imagination (Twilley, 2013) and raising critical awareness of how we live (Markussen, 2013). In this respect, re:farm the city can be situated within Markussen's framework of disruptive aesthetics.

Both Ron Finley's LA Grounds and re:farm the city are examples of citizen-led design activism as they disrupt, subvert, or challenge existing systems of authority in their own way. This next section presents some reflections on how designers can become involved in shaping their urban environment through urban gardening practices.

Urban gardening – a platform for designers

There is a growing interest in exploring design opportunities for urban gardening, from simple interventions such as green graffiti to complex systems like rooftop gardens. Urban gardening provides a purposeful way for designers to engage in projects that ultimately lead to the deeper structural changes needed to improve cities (Inam, 2014). By looking beyond the materiality of the built environment, designers have an opportunity to address the cultural, social and political dimensions of our cities and engage with communities in a more meaningful way. *Carrot City* (Gorgolewski et al., 2011) is a good example of the many ways professional designers can situate their practice within urban gardening.

Based on Viljoen's et al. (2005) Continuous Productive Urban Landscape framework, *Carrot City* presents hundreds of urban gardening projects from around the world, ranging from urban furniture planters to large-scale urban farms. In so doing, Gorgolewski et al. (2011) bring to light the significant contributions professional urban design practice has made to urban agriculture. From the utilitarian to the imaginative, designer professionals are increasingly considering the possible synergies between food production and urban design (Viljoen et al., 2011).

Although *Carrot City* provides many inspiring examples of urban gardening projects, there is still much work to do in making the leap from the urban interventions discussed earlier in this paper and through Markussen's framework, to urban transformation on a larger scale with respect to the right to public space. As Hou & Rios (2003) argue, the "growing practice of community-driven place-making signals a need to re-examine the practice of community planning and design" in the making of the public realm (p.19). The call to implicate designers in the making of place is echoed by Vidler (2001), whose vision of the city calls for a search for design alternatives that rethink the exclusions stemming from out-dated zoning, real estate values, and private ownership. As Mitchell (2003) argues, "the need to continue to struggle over and for public space is greater than ever" (p.17).

If the role of design is to sustain, develop, and integrate human beings into "broader ecological and cultural environments" (Buchanan, 1992, p.10), then designers certainly have an activist role to play in shaping their communities. Through activism, designers can continue to provide guidance in tackling both simple and complex problems in various urban contexts (Viljoen & Bohn 2011), from helping communities create urban spaces to advocating for access to public space. To this extent, Inam (2014) considers an expanded role for urban designers. He states that when it comes to the spatial economy of the city, designers are expected to work within the scope of predetermined parameters, such as budget, location and project objectives. The challenge, then, is for urban designers to go beyond their practice and create alternative sets of parameters from which to work in order to have a greater impact on transforming urban environments (Inam, 2014). Designers wield tremendous power with respect to the social, political and economic dimensions of how cities are shaped (Zukin, 1995). At some point, and this differs for everyone, this becomes a moral choice between designing for profit versus designing for public ben-

efit (Inam, 2014), begging the question "what kind of world do we want to live in?" In answering, designers need to decide how they will shape their practice and how meaningful their contributions will be.

Maria Frangos
Masters Student
Carleton University
Canada
mariafrangos@gmail.com

Lorenzo Imbesi
Architect, PhD, Professor
Sapienza University of Rome
Italy
lorenzo.imbesi@uniroma1.it

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Selected posters

SPRING CUMULUS CONFERENCE
UNIVERSITY OF AVEIRO
8 · 10 MAY 2014

Background
Growing figures of dementia and the progressive amount of care needed makes this condition a current global priority in public healthcare. Dementia progressively affects cognitive functions such as memory and communication, resulting in a constant process of adaptation for people with dementia and those around them. As the disease progresses and memory weakens, communicating with people with dementia often becomes difficult.

Objectives
The research focuses on the communication between people with dementia and their families. The main objective is to find whether strategies of codesign can be adapted to the context of dementia care, considering if communication design can empower people with dementia and their families to create their own personalised strategies to communicate and interact, and if this can have an effect on their wellbeing. Therefore, the aim is to create ways of enabling people with dementia and their close families to be codesigners of their journey through dementia.
As a second objective, the research is looking at methods, and how to possibly redesign them, to conduct primary research and include people with dementia in the participatory design process.

Methods
Drawing upon ethnographic and participatory methods and with the support from dementia care specialists, primary research will be undertaken with those suffering from and dealing with dementia. The study aims to identify, test and analyse current designs for dementia in order to redefine the contribution of design for the personal and family experience of dementia. The qualitative information gathered will inform the design practice, that should be complemented with further codesign workshops with users. Stages of the research will be carried out linked to a practice-based, user-centred approach, where prototypes may be produced, and the testing, evaluation and reflection on these outcomes, and consequent iterations, will be a constant theme of all the research stages.

AUTHOR(S)	Rita Maldonado Branco
UNIVERSITY	University of Porto
TITLE	Codesigning communication in dementia
KEYWORDS	communication design. dementia care . codesign
MAIN TRACK	Social engament
AREA	Design

CODESIGNING COMMUNICATION IN DEMENTIA

How can communication design empower people with dementia and their families to find personalised strategies to improve their experience of dementia?

GROWING FIGURES OF DEMENTIA
35.6million people suffering from dementia,number expected to triple by 2050

DEMANDING CARE AND INCREASING DEPENDENCY
cost of dementia $604bn/ year

DEMENTIA

SEVERAL DISEASES, SEVERAL SYMPTOMS, SEVERAL STAGES
that affect everyone differently

AFFECTS COGNITIVE FUNCTIONS
memory, reasoning, communication

PROGRESSIVE
constant process of adaptation

research focus
COMMUNICATION BETWEEN PEOPLE WITH DEMENTIA AND THEIR FAMILIES

PERSONALISED STRATEGIES TO FACILITATE COMMUNICATION AND INTERACTION?

through
communication design objects

codesign process adapted to dementia care

COULD PEOPLE WITH DEMENTIA AND THEIR FAMILIES BE CODESIGNERS OF THEIR JOURNEY THROUGH DEMENTIA?

drawing on previous related work:

graphic interpretation of symptoms – empathy tools

Digging up the Past. The book was modified to reflect how memory is affected by Alzheimer's disease.

The Book of Genesis according my grandfather. Progressive typographic changes represent 4 types of confusion: objects, people, places and time.

Disorientation map.

tools to facilitate interaction between people with alzheimer's disease and their families and carers

Tablecloth with silhouettes of crockery and cutlery to enable laying the table.

Card Game. Personalised set of visual and written cues to help conversation, allowing different levels of interaction.

Card Game. Personalised set of visual and written cues to help conversation, allowing different levels of interaction.

Maldonado Branco, R. (2013). *How can communication design add value to the context of Alzheimer's disease?* Paper presented at the Design4Health, Sheffield Hallam University, Sheffield.

research process
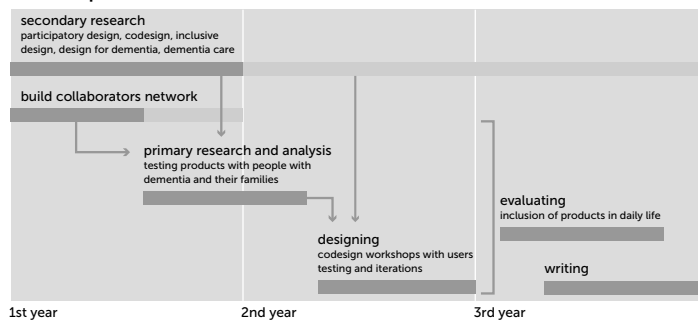
secondary research
participatory design, codesign, inclusive design, design for dementia, dementia care

build collaborators network

primary research and analysis
testing products with people with dementia and their families

designing
codesign workshops with users testing and iterations

evaluating
inclusion of products in daily life

writing

| 1st year | 2nd year | 3rd year |

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1 | Conception: Mingling of neighborhood communication tools

2 | Construction: Implementation of Arduino, photo camera and tablet

3 | Setting 1: Usage within the neighborhood

To see all activities of our active neighborhood group, scan here:

For watching a video of the Hybrid Letter Box' mechanisms, scan here:

To see the issues posted during the box's first test run at the European Neighborhood Festival, scan here:

4 | Setting No. 2: Usage including public projection

To see the issues posted during the festival in Neukölln, scan here:

AUTHOR(S)	Prof. Dr. G. Joost, J. Schubert, A. Unteidig, B. Herlo, F. Sametinger, M. Bergmann, L. Reiter, J. P. G. Sossa
UNIVERSITY	Berlin University of the Arts, Design Research Lab Berlin
TITLE	Hybrid Letter Box
KEYWORDS	digital-analogue, neighborhood, infrastructure
MAIN TRACK	Social Engagement
AREA	Design Research

Hybrid Letter Box

Enabling Civic Engagement in Local Environments

The Hybrid Letter Box is a interface that enables low-threshold participation in a range of societal online-processes. As a technological artefact it bridges the gap between digital and analog, aiming at the inclusion of digital strangers (e.g. the elderly). The Hybrid Letter Box is part of our efforts in creating a sociomaterial infrastructure[1] in urban communities and thus embedded in an intensive two year long Participatory Design project in a Berlin neighborhood.[2]

By transferring a hand written message to a digital platform we are creating a simple analog-to-digital interface. The digital space is necessary to spread issues effectively, so that citizens can take part in controversial discussions in order to form "publics"[3] by organizing around shared issues and transforming them into communal action.

One central goal in designing these bridge-technologies is to set the threshold as low as possible. For that, we make use of ritualized communication behaviours and translating them into digital actions. By utilizing this globally known ritual, the principle of the Hybrid Letter Box is also transferable to other cultural contexts. Furthermore, neither prior knowledge nor specific digital devices are necessary for part-taking in our sociopolitical network.
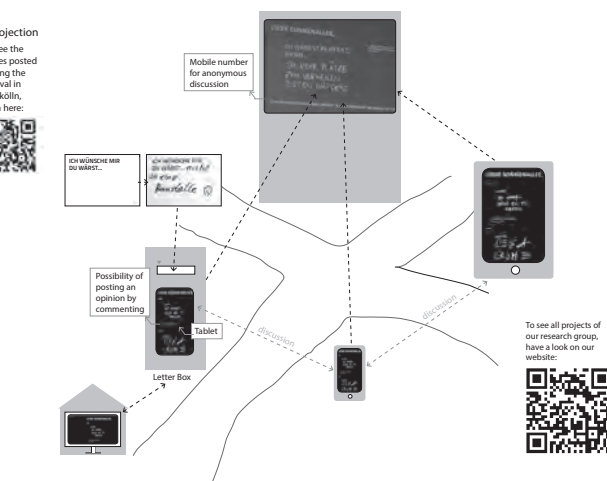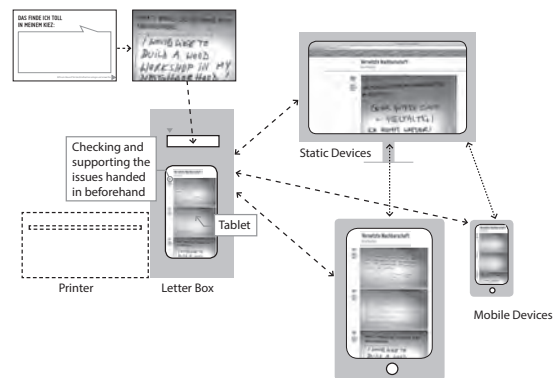
Ongoing developments:
• additional printer
• development of a construction plan
• smaller, cheaper, all-weather open source version
  of the Hybrid Letter Box

....
1   cf. Ehn, P. (2008). *Participation in Design Things*, PDC'08 Proceedings of the Tenth Anniversary Conference on Participatory Design Bloomington, USA, 92-101
2   Unteidig, A., Sametinger, F., Schubert, J., Joost, G. (2013). *Neighborhood Labs: Building urban Communities through Civic Engagement*, Proceedings of the Participatory Innovation Conference, Lappeenranta University of Technology Lahti, Finland
3   Dewey, J. (1927), *The Public and its Problems*, H. Holt and Company, University of California

Checking and supporting the issues handed in beforehand

Static Devices

Tablet

Printer   Letter Box

Mobile Devices

Mobile number for anonymous discussion

ICH WÜNSCHE MIR DU WÄRST...

Possibility of posting an opinion by commenting

Tablet

Letter Box

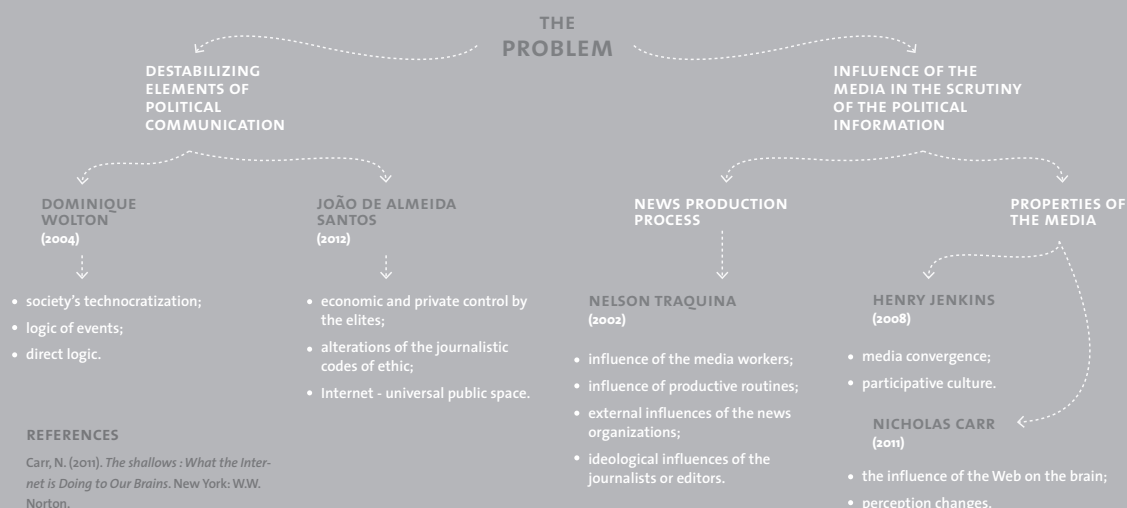To see all projects of our research group, have a look on our website:

WHAT'S ON: cultural diversity social engagement shifting education

SPRING CUMULUS CONFERENCE
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PROBLEMS AND SOLUTIONS
CONTRIBUTIONS FOR A MORE AWARE CITIZENSHIP

A STUDY DEDICATED TO THE DESIGN OF TOOLS TO READ AND ANALYZE POLITICAL INFORMATION, ONLINE.

THE PROBLEM

DESTABILIZING ELEMENTS OF POLITICAL COMMUNICATION

INFLUENCE OF THE MEDIA IN THE SCRUTINY OF THE POLITICAL INFORMATION

DOMINIQUE WOLTON (2004)

- society's technocratization;
- logic of events;
- direct logic.

JOÃO DE ALMEIDA SANTOS (2012)

- economic and private control by the elites;
- alterations of the journalistic codes of ethic;
- Internet - universal public space.

NEWS PRODUCTION PROCESS

NELSON TRAQUINA (2002)

- influence of the media workers;
- influence of productive routines;
- external influences of the news organizations;
- ideological influences of the journalists or editors.

PROPERTIES OF THE MEDIA

HENRY JENKINS (2008)

- media convergence;
- participative culture.

NICHOLAS CARR (2011)

- the influence of the Web on the brain;
- perception changes.

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PROPOSED SOLUTIONS

- emphasis as a way to mark the most relevant sentences or paragraphs in the news;
- summarizing the content of news by hiding a few paragraphs;
- allowing the user to add tags;

- visualization of the evolution of news over time;
- following personalities;
- commenting and questioning the news content and identify those with the highest field propagation.
- and others in study ...

This study focuses on the difficulties presented by the destabilizing elements that political communication and media properties create in the transmission of information, in order to assert the needs in the design of tools that help citizens to become more aware of these issues. As a practical project, the research proposes the design of a news aggregator that offers a set of features capable of reducing the power of these influences while making the users more active and interested in political affairs.

In addition to the identification of the problems, the research will also present some of the features identified in case studies as possible solutions for noise reduction, distortion and information concealment.

The media play an important role in the development of a common conscience. However, there are influences that hinder the communication process of political information and yet others that interfere with the ability of the citizens to scrutinize that information. It is fundamental to develop tools that reduce the capacity of these destabilizing elements and promote the interest of the citizens for these matters.

AUTHOR(S)	Mécia Sá (FBAUP + UA) Miguel Carvalhais (FBAUP) Francisco Providência (UA · DECA)
UNIVERSITY	Universities of Aveiro and Porto
TITLE	Problems and Solutions, Contributions for a More Aware Citizenship.
KEYWORDS	Interaction Design, Design, News, Web, Politics, Social Media.
MAIN TRACK	Social engament.
AREA	Design, Music, Art Studies, Digital media

WHAT'S ON. cultural diversity · social engagement · shifting education

SPRING CUMULUS CONFERENCE
UNIVERSITY OF AVEIRO
8 · 10 MAY 2014

SINGULARITIES OF THE TERRITORY
Introducing new elements for the legible reorganization of the historic city centre of V.N.Gaia, Pt

The purpose of this research project, embraced by local administration, is to define, develop and design a new integrated system of urban visual communications.

Through new solutions we seek to promote legibility and citizen interaction with different spatial contexts, in order to solve the problems of information, orientation and communication of visitors and habitants with different needs, by combining the efforts between public transport, hiking trails and bike lanes.

We search to pursue a new balance between the definition of distinct visual identity from this territory and the intuitive universal decoding.

Seeking an effective balance between technological mobile development and the use of physical supports in a sustainable manner, through methodological and technological solutions applicable in the future to Portuguese cities.

At the historic city centre of V.N.Gaia, we seek to respond to real needs, supporting us in morphology, territorial identity and new tourist and cultural attractions.

This confined area of porto wine cellars is based on inherent conditions and exhibits a pattern by loose letters ads, perched at the roofs performing landmarks with great expressiveness and genuine character, in visual context.

more info here

Alexandra Cabral, PhD researcher
Adriano Rangel, PhD supervisor

University of Porto
Faculty of Arts
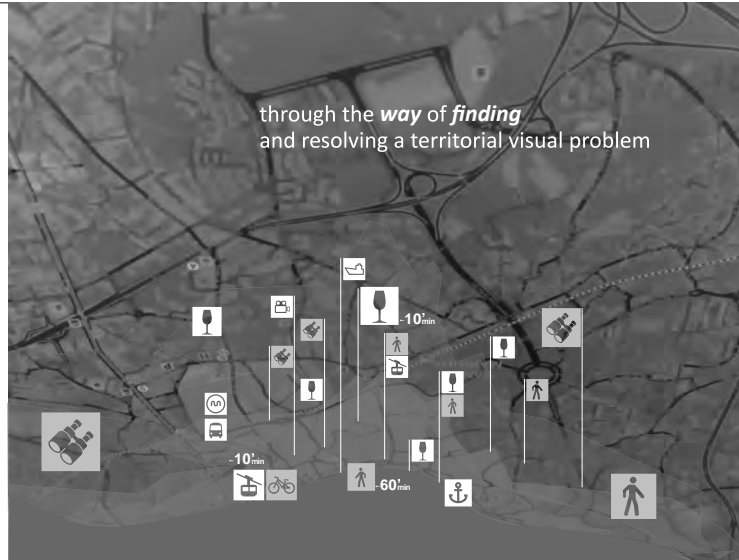
Singularities of the territory
Introducing new elements for the legible reorganization of the historic city centre of V.n.gaia

Design . Wayfinding . City image

Cultural diversity

Design

through the *way* of *finding* and resolving a territorial visual problem

1.768 BUILDINGS
6.731 RESIDENTS
600.000 TOURISTS/YEAR
80% FOREIGN TOURISTS

WHY TOURISTS GET LOST?
43% difficulty in orientation
32% absence of signage
25% difficulty in reading maps

TOURISTS SUGGESTIONS TO IMPROVE SIGNAGE SYSTEM
46% more signs along the area
22% use of more icons
14% more historical/cultural info
10% more transports info
8% pavement signage

WALKING ROUTES
This applied research aims to upgrade tracks and routes, owners of relevant visual interest, outside the common tourist and pedestrian circuits, through the core of territory, highlighting different typologies. We identified new elements of contemplation, observe spaces that remain through time and dissect the user interaction with the different spatial contexts.

PAVEMENT SIGNAGE
This part of the project is now in the final stage for implementation.
By that we aim to expand the visibility of the stores, cultural equipment, and tourist institutions, that can not be found in the marginal road. It was set a timescale, taking into account the importance of the time factor in relation to physical distance in a unknown territory .

SHIPYARD
In order to identify the forms of appropriation of the territory, we enhance the shipyard, where are still manufactured the rabelo boats. A space that remains in time, a symbol and a single print authenticity in the landscape.

LANDSCAPE AS THEATRE
Introducing the George Simmel's expression *city printed by the senses*, we have expanded the intervention area to the geographic last limit.
The douro river estuary nature reserve confronts us with a landscape free of information.

CONTEMPLATIVE PATHS
With this new orientation we have included the *contemplative pathways* project.
By using the expression of Eugenio Turri *landscape as theatre*, where the man is an actor and spectator at the same time, we intend to develop a conscious intervention of the historical heritage and the intrinsic rhythms of the landscape.
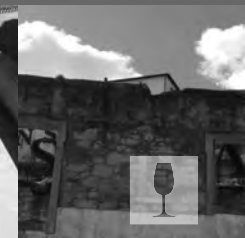
WINE CELLARS
Combining the plan of emotions, representations and perceptions, the wine cellars signs appear on the morphology of the territory as identifying specific milestones. Its structures composed of loose letters, having genuine character, reflect the territorial uniqueness. Is to enhance the impact and the pattern defined by the same in night canopy.

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**WHAT'S ON:** *cultural diversity social engagement shifting education*

SPRING CUMULUS CONFERENCE
UNIVERSITY OF AVEIRO
8 · 10 MAY 2014

Contributions of design to enhance the heritage
in Sever do Vouga.

ABSTRACT

This work focuses in a design project for social innovation in the territory of Sever do Vouga, partnership with the Fundação Edite Costa Matos and the University of Aveiro.
From the initial objective proposed, for the retention of youngsters in the territory, it was drawn a product--service system to support tourism and local crafts. Through the application of design processes (active ethnographic research), and analysis of case studies, structured a project scenario for the development of natural and cultural heritage of the area. This process allowed the approach to local entities such as artisans to achieve a collaborative workshop with the proposal of new craft products, resulting in a kit.
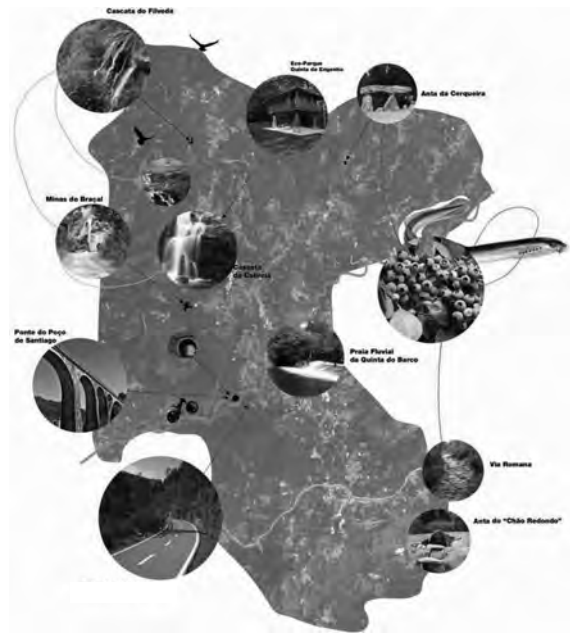
AUTHOR(S)	Mário Renato Tavares
UNIVERSITY	University of Aveiro
TITLE	Contributions of design to enhance the heritage in Sever do Vouga
KEYWORDS	Sever do Vouga, valuation of heritage, handicraft, tourism, colaboration, product-service system
MAIN TRACK	Cultural diversity, Social engagement
AREA	Design and Territory; Social Design; Service Design; Design for Social Innovation

Description This poster describes an investigation of a Master in Design, resulting in the Projeto TAS: Turismo e Artesanato de Sever, an initiative action to build an interactive platform between local agents. The project goal is to build a sustainable rural community by linking the local resources both on the internal and external communities, and establish new business models to enhance the quality of life, through new scenarios to support rural tourism through a network of artisans, tourism services and promoting traditions and regional products.

Methodology A diverse set of authors and themes were studied, among which: the contribution inter/trans/multidisciplinary design, methodologies for social innovation, sustainable development, tourism and handicrafts. To construct the research scenario, it was developed through the methodology presented by Design Council (Transformation Design: Looking, Making things visible, Prototyping).

Project design and results The project started from the need to create and activate new tools that promote the local culture, sensitizing local stakeholders regarding the development of new inspirational products in local legends (by a illustrated book) associated with the spaces of tourist interest, fostering a bond to trigger value. It appears from this experience that it is possible to approach the design of the territories and it is believed that it can replicate such initiatives in other times and in other territories.
The interest of marketing a product already emerged, thus demonstrating the economic viability of this project scenario.

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fig.1
fig.2

fig.1- Visual representation of Sever do Vouga
fig.2 - Pictures from the workshop with artisans

List of Cumulus members 2/2014

48 countries & 197 members

FULL MEMBERS

AUSTRALIA (4)
- Swinburne University of Technology, Faculty of Design, **Melbourne**
- School of Design, **Queensland** University of Technology
- Australian Academy of Design, **Melbourne**
- University of Technology UTS, **Sydney**

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- University for Applied Science (FH-JOANNEUM), Industrial Design, **Graz**
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- University of Art and Design **Linz**
- Salzburg University of Applied Science, **Salzburg**
- University of Applied Arts **Wien**

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- **Mechelen** University College
- Ecole Superieure des Arts Saint-Luc, **Brussels**
- Department of Design Science, Artesis University College of **Antwerp**
- Howest creative courses, **Kortrijk**
- C.A.D. College of Advertising & Design, **Brussels**

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- Universidade do Valo do Rio dos Sinos (UNISINOS) Design School, **Porto Alegre**
- ESDI – Escola Superior de Desenho Industrial, **Rio de Janeiro**

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- University of Montreal, School of Industrial Design, **Montreal**
- School of Industrial Design, Carleton University, **Ottawa**

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- Pontificia Universidad Católica de Chile (PUC Chile), FADEU, **Santiago**
- Instituto Profesional DuocUC, School of Design, School of Communication, **Santiago**
- School of Design, Universidad del Desarrollo, **Santiago**
- Escuela de Diseño, Universidad de **Valparaíso**

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- Central Academy of Fine Arts CAFA, School of Design, **Beijing**
- Hunan University, School of Design, **Changsha**
- Shandong University of Art and Design (SUAD), **Jinan**
- Hong Kong Polytechnic University, School of Design, **Hong Kong**
- Tongji University, College of Architecture and Urban Planning (CAUP), **Shanghai**
- Tsinghua University, Academy of Arts and Design, **Beijing**
- Cheung Kong School of Art and Design, Shantou University, **Shantou**
- **Hong Kong** Design Institute
- School of Design, Jiangnan University, **Wuxi**
- Shanghai Institute of Visual Art (SIVA), Fudan University
- School of Art and Design, China Academy of Art, **Hangzhou**

COLOMBIA (1)
- School of Architecture and Design, University de los Andes, **Bogotà**

CZECH REPUBLIC (1)
- Academy of Arts, Architecture and Design, **Prague**

DENMARK (3)
- **Aarhus** School of Architecture
- Royal Danish Academy of Fine Arts, School of Architecture, Design and Conservation, **Copenhagen**
- Designskolen **Kolding**

ESTONIA (2)
- Estonian Academy of Arts, **Tallinn**
- **Tartu** Art College

FINLAND (7)
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- HAMK University of Applied Sciences, Programme in Design, **Hämeenlinna**
- Lahti University of Applied Sciences, Institute of Design, **Lahti**
- University of Lapland, Faculty of Art and Design, **Rovaniemi**
- **Helsinki** Metropolia University of Applied Sciences
- Savonia University of Applied Sciences, Kuopio Academy of Design, **Kuopio**
- Kymenlaakso University of Applied Sciences, Culture Sector, **Kotka**

FRANCE (20)
- Ecole de design Nantes Atlantique, **Nantes**
- Institut d'Arts Visuels (IAV), School of Higher Education in Art and Design, **Orléans**
- Ecole d'Art Maryse Eloy, **Paris**
- **Paris** Institute of Art and Design, Ecole Duperré
- **Paris** Institute of Art and Design, Ecole Estienne
- **Paris** Institute of Art and Design, Ecole Boulle
- Ecole de Communication Visuelle (ECV), **Paris**
- Ecole Supérieure d'Arts Graphiques et d'Architecture Interieure-Design (ESAG)-Penninghen, **Paris**
- Olivier de Serres, **Paris** – École Nationale Supérieure des Arts Appliqués et des Métiers d'Arts
- Les Ateliers – Ecole Nationale Superieure de Creation Industrielle, **Paris**
- Reims School of Art & Design, Department of Design and Art, **Reims**
- Strate College Designers, **Paris**
- Ecole Supérieure d'Art et Design de **Saint-Etienne** (ESADSE)
- KEDGE Design School, **Toulon**
- Paris College of Art, **Paris**
- Higher School of Visual Arts and Design (ENSAD), **Paris**
- ESAIL (Ecole Supérieure d'Architecture Intérieure de **Lyon**)
- école intuit lab, **Paris**
- Ecole Supérieure d'Art et de Design de **Valenciennes**
- LISAA L'institut Supérieure des Arts Appliques, **Paris**

GERMANY (9)
- University of Applied Sciences **Cologne**, Köln International School of Design (KISD)
- Folkwang University, Faculty of Art and Design, **Essen**
- Burg Giebichenstein University of Art and Design, Faculty of Design, **Halle**
- Hochschule für Gestaltung **Offenbach am Main**
- Pforzheim University of Applied Sciences, School of Design, **Pforzheim**
- Hochschule für Gestaltung, **Schwäbish Gmünd**
- University of Applied Sciences **Würzburg**, Faculty of Design
- FH-**Dortmund**, FB-Design
- University oft he Arts, **Bremen**

GREAT BRITAIN (15)

- Arts University College at **Bournemouth**
- **Edinburgh** Napier University, School of Arts and Creative Industries
- Ravensbourne **London**
- Royal College of Art **London**
- University of **Salford**, School of Art & Design
- University College Falmouth, **Cornwall**
- University for the Creative Arts, **Epsom**
- **London** College of Communication, University of the Arts
- **Leeds** College of Art
- **Nottingham** Trent University
- Central Saint-Martins College, **London**
- College of Arts, University of **Lincoln**
- School of Design, **Northumbria** University
- Faculty of Art, Design & Architecture, Kingston University, **London**
- **Sheffield** Institute of Arts, Sheffield Hallam University

GREECE (2)

- Technological Educational Institution (T.E.I) of **Athens**, Faculty of Art and Design
- AKTO Athenian Artistic Technological Group, **Athens**

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- Moholy-Nagy University of Art and Design **Budapest**

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- Indian Institute of Technology **Bombay** (IIT), Industrial Design Centre (IDC)
- MIT Institute of Design, Maharashtra Academy of Engineering and Educational Research (MAEER), **Pune**

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- National College of Art and Design **Dublin**
- Dublin Institute of Technology (DIT), School of Art, Design and Printing, **Dublin**

ISRAEL (1)

- **Holon** Institute of Technology

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- Domus Academy, **Milan**
- Istituto Europeo di Design – Scuola S.p.A., **Milan**
- Politecnico di Milano, Facolta del Design, **Milan**
- University of Rome "La Sapienza", Industrial Design, **Rome**
- ISIA di Roma, Istituto Superiore Industrie Artistiche, Industrial Design, **Rome**
- Scuola Politecnica di Design (SPD), **Milan**
- ISIA **Florence**, Higher Institute for Artistic Industries

JAPAN (6)

- Kyoto Seika University, Faculty of Art, Design and Manga, **Kyoto**
- Tokyo Zokei University **Tokyo**
- Nagoya City University, School of Design and Architecture, **Nagoya**
- **Chiba** University
- **Kobe** Design University, Faculty of Arts & Design
- **Kyoto** Institute of Technology

LATVIA (1)

- Art Academy of Latvia, **Riga**

LEBANON (1)

- Lebanese American University, **Beirut**

LITHUANIA (2)

- Vilnius Academy of Fine Arts, **Vilnius**
- **Vilnius** College of Design

MEXICO (1)

- Division of Art, Architecture and Design; International Programs, Universidad de **Monterrey** (UDEM)

MOROCCO (1)

- Ecole supérieure de Design, Art'Com Sup, **Casablanca**

THE NETHERLANDS (5)

- Design Academy **Eindhoven**
- Royal Academy of Art, **The Hague**
- **Rotterdam** University, Willem de Kooning Academy
- **Utrecht** School of the Arts, Faculty of Visual Art and Design
- Windesheim University of Applied Sciences, **Zwolle**

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- Unitec Institute of Technology, **Auckland**
- Victoria University of Wellington, Faculty of Architecture and Design, **Wellington**
- Massey University, **Wellington**
- **Otago** Institute of Design
- **Auckland** University of Technology (AUT)

NORWAY (4)

- Bergen National Academy of the Arts (KHiB), **Bergen**
- Oslo National Academy of the Arts (KHiO), Faculty of Design, **Oslo**
- Oslo School of Architecture and Design (AHO), **Oslo**
- Oslo and Akershus University College of Applied Sciences, **Oslo**

POLAND (3)

- Jan Matejko Academy of Fine Arts, **Cracow**
- Academy of Fine Arts, Faculty of Industrial Design, **Warsaw**
- Polish-Japanese Institute of Information Technology, **Warsaw**

PORTUGAL (3)

- Instituto de Artes Visuais Design e Marketing (IADE), Escola Superior de Design, **Lisbon**
- Escola Superior de Artes e Design (ESAD), **Senhora da Hora**
- University of **Aveiro**

QATAR (1)

- Virginia Commonwealth University in Qatar, **Doha**

REPUBLIC OF KOREA (1)

- Seoul National University, Future Culture Design Agency, **Seoul**

RUSSIA (4)

- **Saint Petersburg** State University of Technology and Design, Department of Design
- **Saint Petersburg** State Polytechnical University
- Faculty of Arts, **Saint Petersburg** State University
- The Ural State Academy of Architecture and Arts, **Ekaterinburg**

SINGAPORE (1)

- Temasek Polytechnic, Temasek Design School, **Singapore**

SLOVAKIA (1)

▸ Academy of Fine Arts and Design **Bratislava**

SLOVENIA (2)

▸ University of **Ljubljana**, Academy of Fine Art and Design
▸ University of **Ljubljana**, Department of Textiles

SOUTH AFRICA (1)

▸ Greenside Design Center, College of Design, **Johannesburg**

SPAIN (5)

▸ Escola Superior de Disseny Elisava, **Barcelona**
▸ **Mondragon** Goi Eskola Politeknikoa, Mechanical Department and Chair of Industrial Design
▸ Escola D'Art Superior de Disseny de Castello **Castelló**
▸ Escola d'Art i Superior de Disseny de **Valencia** (EASD Valencia)
▸ Universidad Francisco de Vitoria, **Madrid**

SWEDEN (7)

▸ University College of **Borås**, Swedish School of Textiles
▸ Chalmers University of Technology, Dept. of Product and Production Development, **Gothenburg**
▸ University of **Gothenburg**, HDK Steneby, School of Design and Craft
▸ **Lund** University (LTH), Industrial Design
▸ Konstfack **Stockholm**
▸ **Umeå** University, Umeå Institute of Design
▸ **Linnaeus** University, Department of Design

SWITZERLAND (6)

▸ Nordwestschweiz, University of Art and Design (FHNW), **Aarau & Basel**
▸ **Genève** University of Art and Design (HEAD)
▸ University of Art and Design **Lausanne** (ECAL)
▸ **Lucerne** University of Applied Sciences and Arts
▸ **Zürich** University of the Arts, Department Design & Art Education
▸ **Bern** University of the Arts Department of Design and Fine Arts

TAIWAN (3)

▸ National Yunlin University of Science and Technology (YunTech), College of Design, **Yunlin**

▸ National Chiao Tung University, Institute of Applied Arts, **Hsinchu**
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2 countries & 5 members

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