

Reflecting on

DESIGN CULTURE(S)

Cumulus Conference Proceedings Roma 2021

Volume #1

Reflecting on Design Culture(s).

Cumulus Conference Proceedings Roma 2021

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of Art and Design Education and Research

Rome 2021

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CUMULUS CONFERENCE

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Designing Culture(s) for Plurality

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The plural form in the title of the Cumulus Roma Conference *Design Culture (s)* not only invites us to celebrate design as a form of culture open to a multiplicity of subfields and themes but also points to design's agency in contemporary society. In this sense, we can view design to encompass and reach many parts of what we might consider culture as the generative mainspring of creativity. Through the vast array of material practices that designers engage in, they manifest creativity and serve as the cultural mediators of our time by producing, as Bourdieu once famously quipped, "taste, meaning desire, and coherence" captured by designer's many artifacts, visual representations, services, and more. ¹

The vision that Dr. Loredana Di Lucchio and Dr. Lorenzo Imbesi, co-chairs of *Design Culture(s)* at Sapienza University of Rome and their conference team put forth, seem in retrospect remarkably prescient. As they expressed in the call for participation, their invitation was to investigate the concept of culture beyond a "monolithic expression of a specific knowledge that reflects on itself, but as the product of an investigation that is open to many different "Cultures" which are emerging and revolving around it in society." As I write these brief remarks, well into the second full year of a slowly receding global pandemic and amid profound social and environmental reckoning with the climate crisis and profound polarization worldwide, I stand inspired by the extraordinary response to, and engagement with, this Conference's theme by our Cumulus community. Everyone remained undaunted by the radical uncertainty we all had to contend with and Conference delegates showed up

¹ Pierre Bourdieu, *Distinction, A Social Critique of the Judgement of Taste*, 1984 cited by Anne Balsamo, *Designing Culture: The Technological Imagination at Work*, Duke University Press, 2011. (p.11)

en masse: more than 680 attendees committed to the experience of sharing knowledge and bringing diverse and alternative perspectives about the contemporary culture (s) that are defining the fields of the arts and design worldwide.

These two volumes of Conference proceedings represent a formidable testament to the rich manifestations of "culture as a way of life."² The volumes celebrate the plural lenses of design, with Conference presentations and interactions captured through the mediated screens, postcards, and video narratives of four days of knowledge sharing and cultural exchange. The outcomes shine a bright light on the enterprise and diverse culture (s) of design education and research that characterizes our global association.

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Vice Provost, The New School
New York, September 2021.

² This is Raymond Williams' expression, see *The Long Revolution*, 1961. New York Columbia University Press



DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Design Cultures: when Design is a discipline

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In the first 20 years of this new century, we have seen Design undergo important changes that have modified its forms and contents, both as discipline and profession. To fully understand these changes, we can refer to two reflections and proposals, widely adopted and validated throughout the Design community and beyond. These are the methodology of 'Design Thinking' (Brown, 2008) and the approach of 'Everybody Designs' (Manzini, 2015). If these perspectives, or rather these different visions, recognize Design as the key factor for valuable human progress, at the same time these have also collapsed the boundaries of the Design discipline. In fact, by highlighting the focus of these two perspectives, we can understand how they move from Design as knowledge and competence (therefore as discipline and practice) to Design as skill (therefore just as action). Moreover, we cannot fail to recognize that nowadays, besides those 'designers by profession', a growing number of people who are 'designers by persuasion' are changing Design also as knowledge (Cope, Kalantzis, 2011).

In this scenario, considering its evolution, it could be crucial to come back to Design as a discipline to focus, understand and define what is or what could be the effective role of Design knowledge for the advancement of humanity, also facing the even more urgent challenges of the contemporaneity. We use disciplines to distinguish specific branches of knowledge from each other. In this sense, the meaning of discipline links to the idea of borders, even though the discipline's borders are not closed because they are the outline to describe what and where culturally we are. Discipline is also strongly connected with the concept of science as a set of facts, information, and capabilities acquired through

experience or education that allow the theoretical and practical understanding of a specific physical or intellectual phenomenon.

So, as the first step, it is decisive to set the Design discipline among the others to build its borders/outlines. Focusing on Design as a discipline, it is important to sit it amongst the other disciplines to build its borders/outlines. For this purpose, we can use the distinctions proposed by Nigel Cross (2006) when he speaks about 'Sciences' as the study of the natural world, 'Humanities' as the study of human experience, and 'Design' as the study of the artificial world. Moreover, Cross specifies that the tools used by Sciences are controlled experiment, classification and analysis; the tools used by Humanities are analogy, metaphor and evaluation; and the tools used by Design are modelling, pattern formation and synthesis.

But what is more significant for our reflection is that the values of each of these branches of disciplines are also different: for Sciences, rationality, neutrality and concern for 'truth' are fundamental; while Humanities pay attention to the subjectivity, imagination, commitment as well as concern for 'justice'; and Design considers crucial the practicality, ingenuity, empathy and also the idea of 'appropriateness'. Despite the shareability of this clear distinction of what the Design discipline is (or, as Cross intends, what Design disciplines are), the new century has dramatically cancelled the distance between different knowledge in favour of the interdisciplinarity or, in some way, the hybridization in between Science and Humanities and also Design (Oxman, 2016).

As we know, interdisciplinarity or hybridization does not mean the disappearance of the disciplines because it thrives just in the interface and understanding between them. Interdisciplinarity/hybridization requires each discipline to field its specific contribution to building new practices and principles. Therefore, coming back to Cross's distinctions, the dialogue between the three main disciplinary branches can hybridize the object of the study: today, we cannot separate the natural world from the artificial one and humanity from the planet where we live, as interdisciplinarity requires mixing of the tools, or better yet, building new tools to face new challenges (Di Lucchio, Giambattista, 2017).

What the disciplines have to offer as a specific contribution to the interdisciplinary is what Cross calls values. The 'values' are the cultural roots of the disciplines that cannot be cut or substituted. Therefore, the Design culture is not simply its identity as a discipline but represents the peculiar add to the building of new knowledge. With this perspective, we have involved the Design community, starting with the co-chairs, to offer a description, but not strictly a definition, of what Design Culture is. First of all, we asked the community whether they recognize or not a body of Design Culture distinct from the ones of humanities and sciences and, if it is possible, to propose a definition of what design culture is. What was immediately evident was the need to avoid limiting the reflection to Design Culture as just one, thus opening space to Design Cultures as an expression of several human and non-human contexts.

To consider Design Culture as a plural phenomenon also refers to those complex systems where everyday habits, human expertise and non-human know-how are combined. These complex systems are the sites that produce the different Design Cultures and where distinct practices and stakeholders seek to reconfigure and expand their capabilities. In these systems, technological, economic, political, historical and social circumstances affect the possible interaction between the different Cultures. From this perspective, some disciplinary questions urge. First, recognising who or what produces a design culture and understanding what growing mechanisms are behind it seems to be fundamental also to evaluating its effectiveness.

From the education perspective, defining the stakeholders that use and generate Design Culture is another crucial point. In particular, distinguishing the Design Culture produced by those who are not Design experts helps to recognize the discipline's boundaries and what factors can influence the design culture. Another critical perspective is on the sharing and conservation dynamics of the Design Cultures. As we said, Design is a young knowledge and discipline, as well as a contemporary profession. Therefore, it could be easy to mistake what is just a Design trend as a new proper Design Culture. As we already noted, the concept of "culture" is related to the sedimentation and metabolization of knowledge to become the roots from which the discipline grows.

Therefore, besides discerning and identifying a Design Culture, we should pay attention to those approaches that support its transmission and preservation, as well as mechanisms to accrue the design culture in a reliable, rigorous and replicable way. Finally, what we have to ask when we try to develop, improve, and use a Design Culture is to understand its possible roles in future decision-making. The contributions reported in this volume are a collective reply to these disciplinary questions. Of course, they don't run out of debate, but they open up stimulating perspectives that can be exploited, validated and improved by the broad design community.

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Design Cultures for Cumulus

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More than three years ago, once as co-chairs we started working on Roma Cumulus Conference before the pandemic, we discussed about a topic to address the global open plurality of Design in Cumulus, and at the same time the relevance of design to shape and to be embedded in society, together with the values that Sapienza University and the city of Rome may convey. “Design Cultures” seemed the best fitting at different levels.

The Topic

Design Cultures is first of all related to the concept of history. Every society is able to express a specific culture in its specific time: every season is speaking a different language and each society in history can be recognized accordingly. Such reflection seems valid for the past history, but also for the present and the future times. Celebrating design as an expression of society, through the history of art and culture in all its forms, finds in Rome, the Eternal City, the most suitable place to host such event, also considering it is the celebration of the 30th anniversary of Cumulus since birth.

At the same time, the reflection was also extended to the relationship of society with place and the plural expressions which may emerge globally by design. Since every local/global society may express a different culture, we felt the duty to respect each in its qualities and characters through tangible and intangible artifacts, objects, places and communication. While gathering the large Cumulus community, the conference came to be an incredible opportunity to look into the many different Design Cultures coming from any part of the world and to showcase and compare their principles and practices.

In conveying the close relationship between design and place, the concept of *Genius Loci* was derived from the Latin cults speaking about a spiritual deity capable of protecting the

sacred essence of places. Then it will be Christian Norberg-Schulz with the book entitled "Genius loci. Landscape environment architecture" to elaborate the same concept in order to express the permanent and unchanging identity characters that any place is able to express through a specific material culture (Norberg-Schulz, 1979). In his words, design action and the built environment should respect its intimate essence, interpreting and integrating shapes as well as materials. Equally, his phenomenological analysis also includes in the concept of Genius Loci the set of socio-cultural characters, habits, as well as languages that characterize a physical environment.

The close image between place and creative production can therefore also have an important suggestion for the design of the objects and the images which we use to communicate in our daily lives. The iconic representation of Made in Italy seems the result of the mythical intersection of territorial culture, places, history, know-how, people, food, shapes, and artifacts, which tell of a deep-rooted and permanent bond with local culture, a bond that Italian industrial history has been able to follow up for long.

Beyond the mythical narratives, the relationship between design and place, seems much more articulated and multifaceted in our modern globalized world. A product is the result of a complex processual interweaving of images, ideas and creativity, production and manufacturing, materials and technology, communication, distribution and sales, consumption, culture and social behavior. Each of these elements has a relationship with the physical place and culture, but equally such relationship has multiplied as the places that affect every moment of artificial creation have multiplied.

While discussing about the topic for the Cumulus conference in Rome, we started asking ourselves a number of questions: is the place where production takes place still the same place where the shape is designed? Are materials and technology proper to the place where the products are designed? Do distribution and communication speak the same language as the place of production? Do the cultures and behaviors of the society which are getting the products, coincide with the places of production? Are still design and products the outcome of the culture of a single local place, or the results of a network of cultures getting in touch each other?

While asking ourselves these questions, we wanted to investigate how Design Cultures have the ability to shape stories set in specific times and places, and to build relationships in everyday life, with significant consequences in society. In other words, how Design Cultures shape our reality producing the artificial nature in which we live every day and at the same time including a more intangible factor which is bound to communication and the more cognitive values which define our experiences, filling them with meanings.

Such design action should not be considered once for all. It is a process changing the shape and the meanings of our culture and environment, so connecting the past with the future of our society, the spaces of our cities, the interaction with the objects of our life, the way we communicate. In short, the environment where we live is the result of an ever changing process of artificialization and therefore a process of cultural stratification. Looking into the future, design is shaping the way the future society is expressing itself, so drawing pictures

of our future world. Reflecting on Design Cultures is about investigating about Design as a form of expression of our society through time and place in the history and in our local and global world, which is considering both the past and the future.

360 Degree Design

Design Cultures is speaking about how design has extended its territories of action and developed its methods to the point to draw complex and cross-border fields. The transition from the old twentieth century "industrial design" to the contemporary "360 degree Design" has led to the multiplication and expansion of its fields of expertise.

It is just the proliferation of contemporary artifacts, many of them including very complex technological or social characteristics, to imply the gathering of different scales together and the meeting of a large range of specialism. Design Cultures had to innovate constantly its tools and approaches in order to face every time a different scenario, in search of always producing new outputs on the line of innovation, while redefining its tasks and boundaries. These are new roles to discover, in-between material and immaterial factors, interaction and communication, service and product, experience and scenario vision, local and global, Design Cultures give sense and direction to production, communication, interface, service, image, while reaching new challenges and playing new roles.

In order to investigate the complexity of Design Cultures, we asked to the Cumulus design community to share their innovative, original, inspiring and disruptive ideas on nine different topics at the edge of the research debate, which we used to call the tracks of the conference: Design Culture (of) Making (Process, Manufacturing, Post-Industry); Design Culture (of) Multiplicity (Gender, Pluralism, Diversity); Design Culture (of) New Normal (Healthcare, Education, Work/Play); Design Culture (of) Proximity (Places, People, Economy); Design Culture (of) Resilience (Social Innovation, Circular Economy, Sustainability); Design Culture (of) Revolution (Critical Thinking, Disruption, Change); Design Culture (of) Thinking (Theory, History, Critics). Design Cultures aims to look and map the emerging fields of design to face the challenges of contemporary post-industrial society, and to understand the hybrid knowledge which is growing "in-between" from merging with other fields of enquiry, so increasingly multiplying the specializations which are more sophisticated and contextual. Understanding the different directions which Design Cultures are taking, means looking into the plurality of languages and methodologies, which interact and make the Design field even more pervasive and articulated. It is an exploration of a disseminated net of theoretical and methodological contaminations, which Design is experimenting, so implying the development of new professional characters.

While launching an international call to discuss about Design Cultures, we wanted to map the layers and the fields, so to tackle and explore all possible projects, approaches, methods, visions, research, so in the end to draw the scenario of the Cumulus community: what are the new scenarios of design and production along with the occurrence of the post-industrial

society of knowledge? What are its epistemological assumptions? What are the new fields to be developed? What approaches and methodologies?

Going Hybrid

At some point, the pandemic crisis blasted and we had to re-think dramatically our conference project as a hybrid event and we realized that the topic was not the only aim to address our work. Our first mission became to re-design the Conference as a process driven by design of the user-experience and the final outcome would not have been able to work without the support of technology.

After receiving a thousand proposals, a careful selection followed and about 350 papers and posters were selected and presented during the conference. In addition, Cumulus Roma hosted 14 working groups, the DESIS event, the new initiative called PhD Network, 10 exhibitions, and much more. All of this had to be accessible both physically and online. Therefore, the challenge was to develop two parallel conferences matching each other, giving the opportunity to also live a beautiful and engaging digital experience for those who would not be able to attend.

We also hosted the largest Members Fair ever in Cumulus: around 50 new members exhibiting and showing-off both physically and online, during the days of the conference. The interesting aspect is that usually, during conferences, this activity takes place around stands, on which flyers and advertising materials are arranged, and where the representatives of each school have a one-to-one contact with the visitors and the guests. Re-designing the conference experience as a hybrid experience through the support of technology, made possible to access in the different schools, allowing the Directors or the Deans to let each guest and visitor visit the physical spaces, the labs, the classrooms, the library, also carrying out interviews of the faculties and the students, while walking in the School.

That was still not enough and we wanted to open a special window on the main Italian schools. So, the conference hosted an Italian Members Fair with the participation of 18 Italian members from all over the country. Finally, we had 20 keynote track sessions, 4 plenary keynotes and about 80 panelists sessions, on 10 different tracks, during 4 days of conference, making this conference perhaps one of the longest in the history of Cumulus.

It should be emphasized that Cumulus Roma is not only the result of a process of translation of a physical event into the digital realm. Rather, it is the hybrid result of a re-design process for augmenting the user experience of actively attending a conference, which we hope will become a model to look into for the future. Above all, it became a real challenge: due to the pandemic, nearly two years had passed in which Cumulus went from hosting 2 conferences each year, to hosting none. Since we may consider Cumulus as a conference-centered association, because of the role that physical interactions are playing in our global design community, we felt a huge responsibility and we tried our best to keep the association together by building and maintaining connections with people who have placed their trust in

us, such as PhD students or professors who have had to wait so long to present their research and work.

An additional question was related to the size of the Cumulus community, while including more than 350 schools around the world, which is a number never reached before and which could be considered either a problem or an opportunity. We asked ourselves how to manage such a large number of participants, without dividing or locally clustering, but maintaining a sense of union and internationalization, which in fact is one of the main assets that characterize Cumulus and inspire schools from all over the world.

Technology, Sociability, Participation

While re-thinking the Cumulus conference as a process and while facing choices going after the management and the organization, the overall project turned to be an opportunity to see in a new light and to address some of the questions which can be strategic about the future of Cumulus Association. Looking back at the overall experience, we wish that our effort will be a valuable contribution for our community at large and for the challenges that any design global association will face in the future. In summary, three great challenges are emerging for the future of Cumulus international conferences: technology, sociability and networking, democracy and participation.

Technology come to be one of the main challenges for two reasons: on the one hand, since clearly it takes time and effort to learn how to use it, especially when it comes to emerging and sophisticated platforms. On the other hand, it becomes necessary to understand which technology is the most effective and the most suitable to re-design the activities of a conference with hybrid presence.

But technology also requires a great deal of economic effort, both for the repair and maintenance costs of software and platforms and sometimes even for dealing with unpleasant online occurrences such as hacker attacks. Additionally, online technology may change and develop very quickly, so in a short time we may find ourselves having to look into brand new platforms because those we just adopted may have become obsolete. There is a lot to take into consideration when it comes to technology and therefore it becomes a challenge which should not be underestimated.

The second challenge is about sociability and networking. Indeed, when it comes to Cumulus, it often happens to compare the conference experience to a “coffee break”. Therefore, the participation to a conference is not only about presenting or attending a paper session, but instead there’s an added value in that special relaxed time and space when colleagues meet together from other parts of the world, to network, discuss, share projects and perhaps to start the future research project. Then the reason for going to a Cumulus conference may become to “get a nice coffee”.

Once the conference becomes hybrid including both the online and the physical presence, the question is: how can we reproduce the same kind of sociability and networking

environment that is typical of the coffee break? Cumulus has always distinguished from other international conferences for being a warm community that is welcoming anyone, at any level. Cumulus is inclusive. So how do we keep this character that makes it unique? At the same time, we have to imagine ways to reproduce online the physical experience of travelling, attending the conference and enjoying the local culture, while following the heritage and the character that Cumulus has developed over the years. Such concept is very close to what we would call hospitality. Hospitality is welcoming people and opening the doors to those who come from afar. Hospitality is about sharing wine and food, introducing people to new places, conveying common values. The goal of Cumulus Roma was to extend the sense of hospitality through a digital experience.

The last challenge, which seems important to take into consideration, concerns democracy and participation. Having globally more than 350 schools as members of Cumulus means facing the chance that many people are in the condition of not being able to travel from one side to the other of the world and therefore to attend to a conference that is taking place in different continent. At this point the challenge is to envision new and different ways to mobilize all members, giving the chance to everyone to be part of the same community. Additionally, travelling is involving costs, which in the future may become even more unsustainable for young PhD students and scholars, who may want to attend to Cumulus events, and above all to have the opportunity to meet colleagues from different places and to fully live a 'Cumulusian' experience.

It is a question of participation to a cultural and scientific initiative, but it is also a question of democracy while including people from different countries and economic possibilities. Cumulus is and should keep to be a place of inclusion.

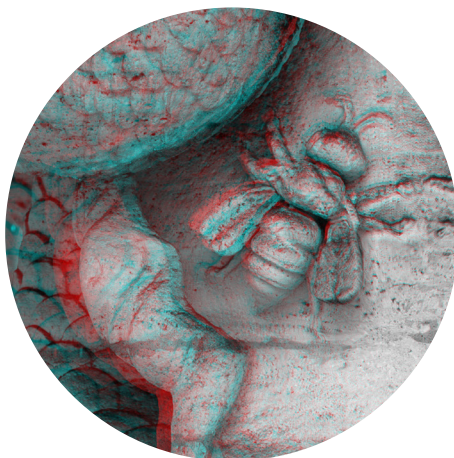
The notion of network is related with the idea of connection. A network, in Bruno Latour's view, involves a set of negotiations in which both human and non-human actors assume identities according to prevailing strategies of interaction. Since internet and the knowledge society raised, the concept of network stands for a different scheme of organization out of hierarchical structures towards more participative models which can support knowledge sharing and collaborative networking. Cumulus Association always included in its core mission to support any international student, scholar and researcher to acknowledge and at the same time get connected into the proliferating global network of design for developing new forms of collaboration while reaching the places in the world where design education, research and innovation move forward.

Cumulus Roma was a constant evolving project including people. But the whole project would not have held up without the help of technology, and moreover without social relations or without aiming to provide a service which was accessible to all in the same way and at the same time. I sincerely hope that our experience and the results we have achieved, some of which are collected in the proceedings of the conference, will inspire those who after us will generously take into their hands such spectacular project called Cumulus.

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Spreading Design Research

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KEYWORDS | DESIGN RESEARCH, DISSEMINATION, SCIENTIFIC ARTICLES, POSTER, EXHIBITION

Abstract

This contribution aims to be a reflection on the new ways and opportunities to disseminate research in design. Design, as a scientific discipline, has always carried out its divulgation activities through classic methods of spreading knowledge such as articles in journals, books, and recently also patents. But with the increasingly dominant pervasiveness of ICT technologies, the methods, and tools available to disseminate research are constantly changing and updating. Especially in Design Research, whose scientific results range from innovative materials, to digital and robotic products, to tools for healthcare, to services for the territory and for cultural heritage, to memory in archives and museums, to the crucial role of the project, from communication, to fashion and its imaginaries, up to social problems such as gender issues and multi-ethnic society, research outcomes cannot be caged and confined in the logic of "classic" scientific publication. Through the description of some emblematic case studies and the analysis of what was done during the Design Culture (s) conference, Cumulus Roma 2021, the paper aims to illustrate the new perspectives to spread Design Research that go beyond the common formats of dissemination.

1. New patterns to describe Design Research

Design, as a well-established scientific discipline, recognizes research as is systematic inquiry whose goal is knowledge of, or in, the embodiment of configuration, composition, structure, purpose, value, and meaning in man-made things and systems (Archer, 1981).

Thanks to the introduction of increasingly scientific methodologies, the discipline of Design has become a consolidated Science that refers to that body of work which attempts to improve our understanding of design through "scientific" methods of investigation (Cross, 1993). As Cross (1993) states, "design science refers to an explicitly organized, rational and wholly systematic approach to design: not just the utilization of scientific knowledge of artefacts, but design also in some sense as a scientific activity itself" (p. 66). Therefore, the practice itself becomes research, in which the solutions are first hypothesized, then tested and evaluated (Schön, 2006).

As per the other sciences, also the Discipline of design finds in dissemination activities and publications the fundamental factor for making of science. Publishing, from an epistemological point of view, is a critical step in the creation of publicly accepted knowledge and, from a sociological point of view, publication has become the measure by which academics are evaluated (Fyfe, 2019).

The specialization of scientific research and writing since the late nineteenth century has led to a growing divergence between research - in journals - and other types of scientific publications, such as books and magazine, and the peer-reviewed scientific research journal is undoubtedly becoming the defining form of scientific publishing in the modern age (Fyfe, 2019). Especially for the disciplines that the Italian National Agency for the Evaluation of the University and Research Systems (ANVUR) recognizes as bibliometric, journal publications are an essential parameter for measuring the impact within the scientific sectors through mathematical/static models that analyze the distribution of information.

On the contrary, for non-bibliometric sectors, including Design, the impact evaluation not only takes place considering the number of articles in scientific journals (or belonging to class A) but also the number of books with code ISBN.

Within the discipline of Design, great importance is also given to the intellectual property associated with a patent now. However, for too long universities have favored the publication of articles in scientific journals, while they have not been incentivized to adequately protect inventions by filing and publishing patent applications, nor to exploit inventions economically to reinvest the proceeds in the research itself. Fortunately, the introduction of specific government provisions to support universities has regulated the technology transfer from universities to the community with the aim of scientifically enhancing and recognizing research results. This has led universities and researchers to actively work on Third Mission activities through the activation of processes of direct interaction with civil society and industries with the aim of promoting the growth of territories, so that knowledge becomes instrumental for obtaining productive outputs and social innovation. In the United States, patents registered by universities and Public Research Bodies, although rapidly growing, centralize only 3% of the total, even if in some sectors, such as bioengineering, they even concentrate 12% of the total (Leydesdorff et al., 2016). However, it must be considered that US universities have a much higher propensity to patent than European ones. There is also a less visible component, in which university researchers and public bodies collaborating with companies appear among the inventors, together with industrial researchers and engineers, of the patents registered by companies.

In this scenario of enhancement and transfer of knowledge, Research in Design is easily situated thanks to its natural ability to open up and interact with external socio-economic scenarios that lead the discipline to be one of the sectors with the highest patent capacity so much so that the patent is recognized as a fully-fledged scientific publication.

However, the issue of scientific publication, whether in the common forms of journal articles, books, or patents, is going through a moment of deep transformation. This is mainly due to progress in the field of Information and Communication Technologies that has brought a profound change in the means and tools now available to communicate and spread scientific research. According to the European Community's Future of Scholarly Publishing and Scholarly Communication, some publishers, learned societies, universities, funders, and others have actively sought new ways to exploit the technologies and affordances of the digital revolution. But the uptake of innovation by these institutions has tended to focus on fitting traditional forms of scholarly communication, especially journal articles and monographs, to the new technologies. By contrast, new types of informal sharing practices, facilitated by digital technologies, have been explored mainly by groups of innovative individuals, but with relatively little effect on the general system of scholarly communication (European Commission, 2019).

The transition to digital technologies is also permeating the field of academic publication in Design on a global level. The concept of phygital (the interaction between the physical and digital world) blurs its boundaries and research areas, introducing new methods of intervention. In this context, the scientific production and diffusion of design are taking on new forms and objectives, becoming increasingly unstructured, broad and, thanks to the digital environment, rhizomatic, with its relative strengths (e.g., accessibility) and weaknesses (e.g., reliability) (Lupo, 2021). Research in design has developing and extending, and it is interesting to recognize how new patterns of publications by institutions and researchers. In particular, scientific publication in the field of Design is reflecting some factors related to the richness of approaches, fields and applications combined with a proactive and often innovative attitude that design usually proposes in terms of content and views (Lupo, 2021).

This leads us to ask ourselves about the need for the discipline of design, in which scientific results often cannot be caged and circumscribed in the logic of "classic" scientific publication, to imagine innovative and unpublished forms to disseminate (and evaluate) research in design. By using models that are potentially very effective in spreading also the Design Research, recently, some publisher, have introduced new formats of articles that include graphical abstracts and interactive PDFs, such as Elsevier's "The Article of the Future project", an ongoing initiative to revolutionize the traditional format of the academic paper regarding three key elements: presentation, content, and context. Elsevier has kept the layout of the PDF format, but with enhanced functionalities, including annotation and easy linkage to figures and charts. The interface is automatically adjusted to the screen size of various mobile devices using HTML5. Furthermore, figures can be exported automatically with bibliographic information to PowerPoint, and graph data can be exported to Excel. Also, abstracts can be expressed as an image so that the highlights of the article can be easily

understood immediately (Kim, et al., 2018).

Since 2004, among the new publication formats, we find scientific podcasts. Renowned academic and science institutions all have a podcast feature, such as Nature (Nature Podcast) (Fig. 1), Harvard Medical School (Podcast Library), Johns Hopkins Hospital (Johns Hopkins Medicine Podcasts), Science (Science Magazine Podcast), and The Lancet (Audio Archive), that help in facilitating dialogue between lay listeners and those with a range of expertise, including both formal and informal knowledge (Schmidt, 2016). Distill and Parametric Press are examples of web-based scholarly peer-reviewed journals born in the Machine Learning field, where authors are encouraged to add lines of code, explorable, images and videos that allow for a more fluid and thorough reading of the content (Gobbo, 2021). Another interesting format is the Digital Publishing Initiative by Stanford University Press. Funded by the Andrew W. Mellon Foundation, starting from the consideration that there are no formal channels for publication or consistent peer review standards for digital projects, it allows to advance a publishing process that helps authors develop their concept (in both content and form) and reach their market effectively to confer the same level of academic credibility on digital projects as print books receive. Here authors can submit digital projects in a website format, showcasing historical narratives, interactive maps, and data visualizations.

According to the cases mentioned above, it is easy to understand how the system for publishing scientific results is changing profoundly also thanks to the possibilities offered by digital technologies. However, the most interesting aspect is found not so much in the transposition of content into digital format, but in the design of formats conceived primarily for digital publication (Gobbo, 2021).

In this fluid and changing scenario, Design Research can and must seek and imagine new hybrid formats in order to make accessible its scientific results which often, due to their experimental and practical nature, cannot be adequately exploited through the canonical methods of publication.

3. Cumulus Roma 2021. Posters and Exhibition

In an attempt to provide a new format to the entire scientific community of Design, the Design Culture (s), Cumulus Roma 2021 conference was organized with the aim of innovating with technology, improving the networking and sociability of the experience, and keeping everyone joined to ensure participation and democracy. The biggest challenge that the organizers had to face was to provide a new form of conference, necessarily hybrid due to the pandemic restrictions in place, which led to a re-evaluation of the canonical formats of presentation and dissemination of results. While maintaining the classic formula of presentation sessions of selected contributions through peer-reviews process, the conference has introduced new ways of presenting posters and exhibitions also to face the limits of the blended modality.

As for the posters, the authors were asked to submit posters that should have reflected on

one of the nine conference tracks - Artificial, Languages, Life, Making, Multiplicity, Proximity, Resilience, Revolution and Thinking - presenting the research in a visually rich format, containing images (e.g., photographs, drawings, tables, diagrams) and an abstract of up to 300 words. The scientific review process has remained the classic one of peer-reviews made by the Scientific Committee of the conference, while the presentation methods have been renewed. During the days of the conference, from 8 to 11 June 2021, 4 poster sessions of about an hour and a half were organized, within which, in hybrid mode, the authors of 8 posters were able to describe their research, discuss and answer the questions of the attendees both in the virtual room and in the physical room at the Faculty of Architecture of Rome. All the posters of the conference were digitally displayed in the EXPO area of the HOPIN platform (<https://hopin.com/>) through a PPT showreel (Figure 1, Figure 2) that summarized the contribution and directed to the link with the complete poster in PDF format. This gave the conference attendees the opportunity to read the posters even outside the scheduled poster sessions and at any time without time zone limits (the HOPIN platform registered 134 attendees for the posters EXPO section, with an average Visit Time of 44 mins and n25 visitors that interacted each other using this section).

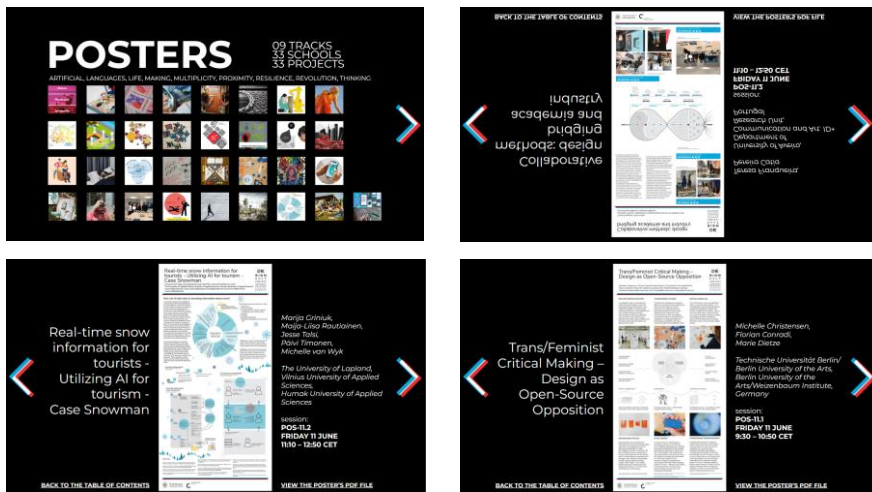


Figure 1. Poster PPT showreel.

Another dissemination initiative carried out during the Design Culture (s), Cumulus Roma 2021 conference was that of the Exhibition. A special call for participation was launched and opened to Schools members of Cumulus Association. Connected to the theme and the ten tracks of the conference (the same 9 track of the posters plus the additional track “New

Normal”), Schools were invited to present exhibition proposals focusing on the results of didactic activities (such as studio works, thesis projects), which should have had a link to the chosen conference track. From the scientific committee of the conference, the project of 10 universities were selected and exhibited: CITY OF EXPERIENCES by George Brown College; POST COLLABORATION AS A FORM OF COUNTER-CULTURE. THE BIRTH OF NEW LANGUAGES by University of Johannesburg; DESIGN FOR SOCIAL PROBLEMS IN MEXICO. LIVING WITH DISABILITIES by the Autonomous Metropolitan University; NEW TEXTILE TOPOLOGIES. EXPERIMENTS AT THE INTERSECTION OF SURFACE, TEXTILE AND FORM by The Swedish School of Textiles; SELF-ACCEPTANCE TO SELF-INDULGENCE FASHION STYLING & IMAGE DESIGN 2015-19 Pearl Academy; EXPEDITION 2 DEGREES by Zurich University of the Arts, University of Fribourg, Institute of Geography University of Zurich; NEWCOMERS: DESIGN FOR IMMIGRANTS by Pratt Institute’s School of Design; DESIGNING FOR RESILIENCE. CREATING NEW POSSIBILITIES FOR INDUSTRIAL CITIES by University of Monterrey; UFO DRIFT: IN SEARCH OF PRACTICE by ArtEZ University of the Arts Arnhem and DESIGN FOR AWARENESS: USER MEETING by ESDAP Catalunya.

The themes covered by the selected projects were varied: from the dichotomy between smart cities and tech-utopias (track Artificial) to the counterculture of untold narratives (spiritual, gender and political) in the spaces in which we live (track Languages); from the comprehensive systems that improve the quality of life of people with disabilities (track LIFE) to the alternative methods and systems in relation to textiles, surfaces and form (track Making); from artistic explorations that dare to break through borders (track Multiplicity) to the Global warming problem explored with 3D glasses (track New Normal); from design for immigrants in United States (track Proximity) to solutions based on the needs of community in Mexico (track Resilience); from collaborative mode and methodologies for education and practice (track Revolution) to design as a tool for awareness, social transformation and awareness among users (track Thinking).

The physical exhibition was inaugurated in the evening of Tuesday 8 June, in the halls of Museo dell’Arte Classica (Figure 2), while the exhibitors explained their project by participating in a round table discussion on Thursday 10 June in a dedicated session. All the exhibition materials were visible for the entire duration of the conference in the halls of Museo dell’Arte Classica, as well as on the conference platform in the EXPO area of the HOPIN platform through a PPT showreel similar to that used for Posters (Figure 3). Here the platform registered 173 attendees, with an average Visit Time of 10 mins and n11 visitors that interacted each other using this section.

Both the posters and the exhibitions have been collected and published in the “Design Culture (s), Cumulus Conference Proceedings Rome 2021, Volume # 2”.



Figure 2. Exhibition opening event

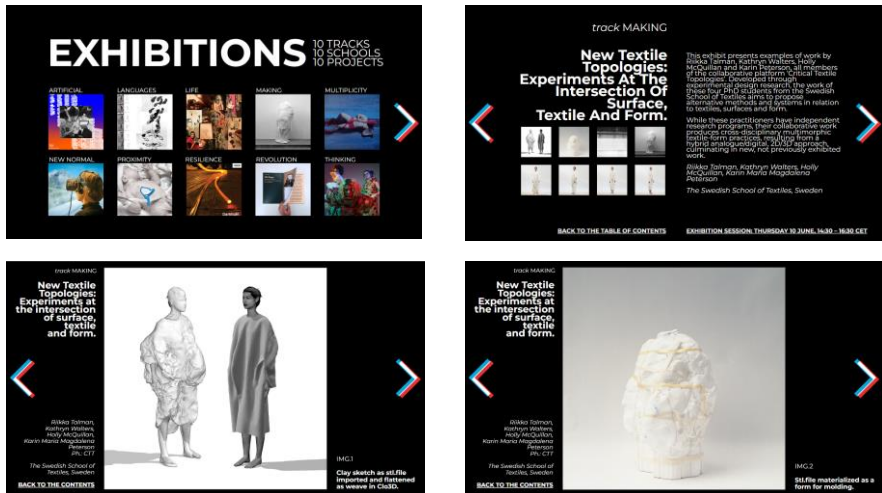


Figure 3. Exhibition PPT showreel.

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
JUNE 08.09.10.11, SAPIENZA UNIVERSITY OF ROME

Design Culture(s) distilled: emerging connections

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**KEYWORDS | BIBLIOMETRICS, REFERENCE ANALYSIS, KEYWORD NETWORK, DATA
VISUALIZATION, TIME DISTRIBUTION**

Abstract

From the perspective of a conference manager, this contribution analyses the entire corpus of the Cumulus Roma 2021 proceedings using a selection of measures of bibliometric relevance. The first section shows that bibliometric analysis is currently a marginal practice in the field of Design, focusing on the analysis of a few adequately formatted and archived sources. The specific analysis of the proceedings starts by showing the uneven geographical distribution of the published papers, roughly matching the distribution of Cumulus member schools. The emerging topics were analysed through the keywords, arranged in visual maps referred first to the overall conference, then to single tracks. Finally, references were analysed and visualised through different metrics such as time distribution and author occurrence. These analyses led to the observation that there is a rich variety in the field of design, but in the same time a relatively narrow common ground (keywords or references) shared by a significant mass of papers.

1. Introduction

The Cumulus Roma 2021 - Design Culture(s) conference was an extraordinary one for various reasons. The first and most obvious one is the fact that it was a virtual conference due to the Covid-19 pandemic, which also delayed it from the originally planned date of 2020. More

relevant to the current article, the conference marked the 30th anniversary of Cumulus Association, originally born for promoting Erasmus exchanges among Design schools in Europe, but by today a worldwide association for promoting Design Education and Research. In fact, Cumulus Roma 2021 presented the extraordinarily rich landscape of Design Research through 350 paper presentations, perhaps the highest of all Cumulus conferences, selected from almost a thousand initial abstract submissions (not counting poster and exhibition proposals).

The theme “Design Culture(s)” was set up from the starting as an occasion to explore the widest possible selection of researches in this 30-years-old (or young?) community. The 10 tracks covered a wide array of relevant research fields, each defined only by three suggestive keywords, in order to leave a large space for interpretation. And so happened: we gathered many unexpected perspectives on what’s going on in Design all across the world.

From the perspective of the conference organiser and proceeding editor, the large number of papers combined with the wide selection of topics seems to be a great opportunity to analyse not only subjectively, but also quantitatively the current state of scientific discourse in the Cumulus community. Where do papers come from? What are the prevalent topics of interest, overall and in each track? How similarly did the authors interpret their track? Who are the most cited authors by the Cumulus community? Do Cumulus authors build on fresh research or there is a more historic perspective? These questions are hard to evaluate after a simple reading of the conference proceeding, which in itself would be quite challenging considering the over four-thousand page volume. Therefore, this editorial aims at examining the DC(s) Proceedings through various data analysis tools, with the hope that the objective, quantitative study of all conference papers might lead to observing interesting connections and tendencies. Adopting similar analytical practices in future Cumulus proceedings may help to reveal the evolution of the scientific community.

This contribution is proposed with the awareness that such a statistic approach is debated in the field of Design, contrary to the fields of “hard” sciences, where the bibliometric evaluation of research (and researchers) became mainstream, made possible by indexing in massive online databases (Web of Science, Scopus). In the field of Design, the use of such databases is less widespread, making large transversal analysis more time-consuming, but also in Design there are many authors who attempted to outline trends or understand specific issues by the means of bibliometric analysis, albeit usually on a relatively limited scale. With the ambition of understanding general trends, Perna (2017) carried out a visual mapping of design research networks and tendencies across various design journals indexed in Scopus (1500 papers) through co-authorship analysis, co-citation analysis and journal mapping. İlhan adn Oguz (2019) uses quantitative visual mapping to reveal the positive effects and higher impact of co-authorship, examining the patterns on a sample of almost 8 thousand article records collected from 13 design journals over 15 years. Chai and Xiao (2012) focuses on a single but prestigious journal, *Design Studies*, investigating the core themes by analysing citations, which highlighted the popularity of design process, design

cognition, or the research method protocol analysis. In another work focusing on the Design Studies journal, Cash (2020) examines 695 published between 2004 and 2018 with the aim of understanding research impact and theory building. Here quantitative observations are drawn from the meticulous coding and manual categorization of articles and leads to relatively conventional charts and tables rather than graphs, coherently to the goal of verifying a model. In an earlier work Cash et al. (2013), similarly to the goals of this article, carries out a multifaceted quantitative analysis (focusing mainly on citations) of all papers in the proceedings of a design conference and draws conclusions regarding the level interdisciplinary connections, the uptake of new knowledge (both lower than expected), and therefore he formulates suggestions in order to strengthen the discipline.

Going beyond general inquiries to discover trends, analysing citations can help to comprehend how certain areas of knowledge evolve, like in the case of Beck and Chiapello (2018), who examined Schön's intellectual legacy in 120 publications across four DRS conferences, revealing relatively few cases of critical progress of ideas rather than limited use as support for the authors' research topics. Jonathan Lewis (2020) used citation networks in order to understand and demonstrate the ways design serves to integrate other bodies of knowledge, focused on the relation of Design Thinking and Network Science. Crilly (2019) used citation network visualisations to demonstrate a certain detachment between qualitative and experimental studies, which are rarely cited in the same papers in the area of design fixation research (i.e. situations where previous experiences limit the creative imagination of new solutions). Beyond topics, also a geographical area may be the focus of inquiry, such as the study of Costa et al. (2021) which used citation network visualisations in order to understand the impact and interconnectedness of doctoral studies (rather than already indexed papers), revealing issues with continuity and reproducibility of domestic doctoral work, as well as an important weight of non-design schools.

Considering the structure of available texts in the DC(s) proceedings, this reflection is structured in three main sections: firstly, we will have an overview of the geography of contributions, subsequently we observe the emerging topics based on the network of keywords, both for the overall conference and for individual tracks, and thirdly, the most cited authors are analysed in order to understand who are the "points of reference" in scientific community of this conference.

In the final section of Conclusions, a few suggestions are formulated for the future evolution of the discipline and the Cumulus community in particular.

The following work takes into account the 323 full papers selected through double blind peer review, then presented at the conference and published in the proceedings. The analysis does not include accepted but withdrawn (or not presented) papers, nor posters and exhibitions. In order to overview the practice of bibliometric analysis, Donthu et al. (2021) was a valuable resource, while Moral-Muñoz et al. (2020) provided insights on contemporary software tools, which are crucial for achieving appropriately filtered and visualised results. A more focused guide about VOSviewer was consulted (van Eck and

Waltman, 2017) albeit this tool was substituted by the more flexible Gephi for the final graph mapping. Further notes on data organisation and visualisation tools are provided in each section.

2. A geography of contributions

Although the conference was open to a wide array of topics and authors came from all over the world, the dominant topics and cited scholars may be largely influenced by local interests and scientific communities. Therefore, first of all the geographic distribution of contributions was analysed, trying to establish understand also whether such distribution is proportional to the number of Cumulus member schools across the world and the involvement of international track co-chairs.

As Fig. 1 shows, among the 323 papers, the most came from Italy (124), then USA (26), UK (25) and China (15). Further 12 countries had 5-10 contributions and 19 countries had 4 or less. In terms of regional distribution, 209 papers came from Western Europe and only 114, that is little less than the third of the paper from the rest of the world. The distribution would have been only slightly more balanced without the forty withdrawn contributions, of which only one third were from Western Europe. A presumable reason for the inverted proportions is the Covid pandemic, considering that (a) both physical and virtual participation became disproportionately more difficult from far time zones and (b) many countries with high withdrawal rate were hardly hit by the pandemic, also in economic terms. All in all, however, we can assert that not a particularly large percentage (11%) of accepted contributions were lost.

While a more distributed global participation would have been desirable, the authors' regional distribution is roughly proportional to the distribution of Cumulus member school across the globe, as shown in Fig. 2. Although the maps shows a strong correlation to the number of published papers, it is apparent that many member schools from Eastern Europe, Africa, South America and Oceania are missing from the proceedings.

Naturally, also the physical closeness makes participation easier for Europeans than those of international and especially intercontinental colleagues. Albeit the possibility of virtual participation should balance this to some extent, it could not been foreseen at the moment of initial paper submissions. Unsurprisingly, the Italian Design community is the most highly represented in the proceedings (124). Apart from the high number of the academics in the country, the willingness for participation was stimulated by the diffuse involvement of the national Design community through track co-chairs. Each of the 10 tracks had about half of its co-chairs from Italy (18 total), the 22 further chairs distributed worldwide, as shown in Fig. 3. While active the involvement Italian schools has led to a high number of submissions, also the international co-chairs have probably stimulated participation in their national networks, at least to a limited extent.

The following figures were generated in Excel, based on the submitting author's country, as selected in the conference management tool. Co-authors were not taken in account for the calculations.

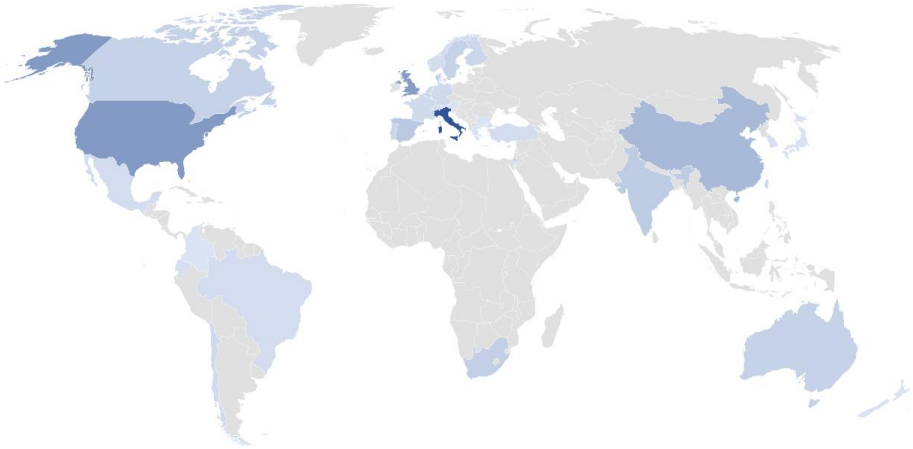


Fig. 1. Geographic distribution of papers published in the Cumulus Roma 2021 proceedings.

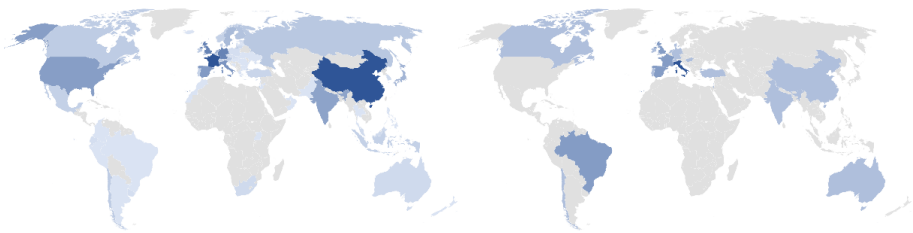


Fig. 2 (left): Geographic distribution of Cumulus Member schools.

Fig. 3 (right): Geographic distribution of track chairs.

3. Emerging topics

The index terms of a scientific paper are crucial not only for understanding quickly the general topic of the article (thus informing other scholars who search useful literature), but also for building recognisable networks of knowledge. At Cumulus Roma 2021, each track was defined by a title word and three keywords, but the other keywords (up to 5 in total) were freely chosen by the authors, without any list of options. A database was constructed from the keywords inserted in the conference management tool, then the database was cleaned up and formatted for Gephi (gephi.org), an open source tool for graph analysis and visualization, which also helped to adequately filter the raw data.

Can we observe any relevant tendency among these keywords? Are there particular topics that emerge? A first analysis of keywords aimed at understanding “keyword interconnectedness” among different tracks, thus trying to understand whether there are distinct clusters or if tracks share many keywords. To do so, each track was represented by a large circle, connected to small circles representing unique keywords, thus formulating coloured clusters (Fig.4). Keywords that appear in multiple tracks are connected to each and placed in-between.

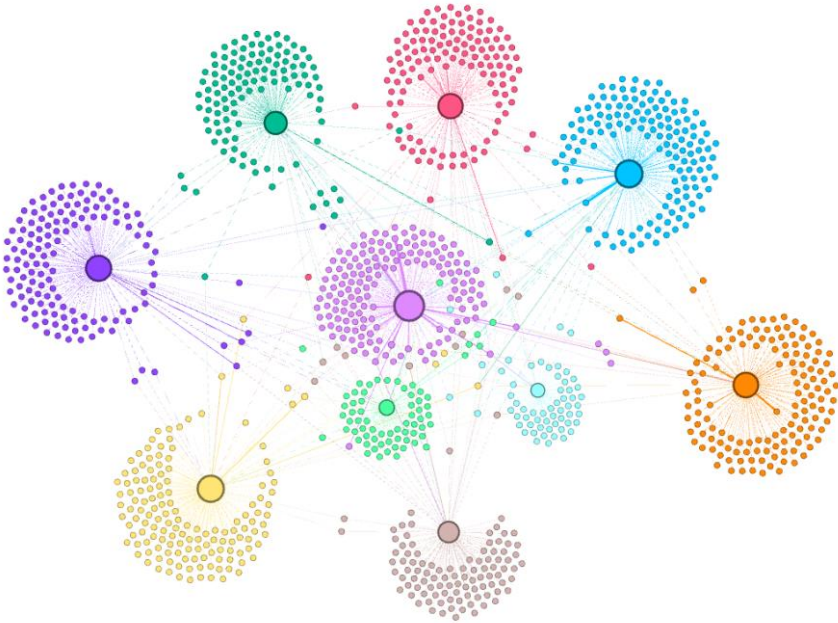


Fig.4 Keyword interconnectedness across the conference tracks.

The overlap among tracks ended up being much lower than expected: tracks are connected through only 88 keywords. Such phenomenon may be attributed to highly track-specific vocabulary, seldom shared with other tracks. The real explanation is quite different, though, as the following data shows. In total, the 323 papers list 1440 keywords (avg. 4.45), of which only 491 is duplicate. Put differently, out of 1081 unique keywords, 938 appear only once, 83 have twice, and only 51 appears 3-9 times, and 9 appears 10-15 times. On average, 3.34 keywords per paper is unique, not shared with anyone else. 24% (78) of the papers have all their keywords completely unique.

Therefore, we can assert that, in general, interconnectedness of papers through keywords is rather low across the tracks, but are there visible tendencies within each track? In order to understand this, each track’s keywords were organised in a word cloud, where the keywords

are connected to one or more papers (circles) and their size is proportional to the number of occurrences - maximum 4.1 on average, ranging from 2 to 9. Fig.5 shows an overview of this mapping. Below you can read a summary of the observations drawn from the most shared keywords of each track.

In the track ARTIFICIAL (Digital|Technology|Robotics), beyond the official track keywords the most recurring keyword was *artificial intelligence*, *interaction design* and *education*, with a couple of mentions of *future*, *information design*, *augmented reality*, all of which are well within the track's expected topics.

Track LANGUAGES (Aesthetics|Expression|Visual) had the leading keyword *identity* (4) shows an interest towards design's capacity to represent people. Among the other terms, a few interesting ones are *multimodality*, *design for all*, *digital humanities*.

LIFE (Nature|Biology|Human) was one of the smaller tracks, with *sustainability* (3) as the first keyword, interestingly considering that this was also one of the suggested keywords in the Resilience track. Other keywords show interest towards *biomimicry*, *complexity*.

In the track MAKING (Process|Manufacturing|Post-Industry) we cannot observe more than two repetitions for any terms. Areas of interest emerge both around *innovation*, e.g. through *rapid prototyping* and *industry 4.0*, as well as around *traditional crafts* with relevant interest in *textile (design)*.

MULTIPLICITY (Gender|Pluralism|Diversity) was another relatively small track with few repetitions therefore, such as *participatory design*, *design education*, *design research*.

The track NEW NORMAL (Healthcare|Education|Work/Play) was introduced in response to *Covid-19* (6) that became the most evident area of interest, along with the pre-defined keywords *healthcare* and *education*. Other clusters were formulated around the keywords *service design*, *social innovation*, *co-design*.

PROXIMITY (Places|People|Economy) wasn't a small track but had relatively few common keywords, among which *innovation* (3) is the most shared one. Beyond expectable terms such as *service design*, *placemaking*, some others show affinity to the track languages, such as *identity* and *communication design*.

The track RESILIENCE (Social Innovation|Circular Economy|Sustainability) received the most submissions of all, probably stimulated also by its connection to the DESIS network. Here many authors chose to use the main keywords of the track: *circular economy* (9) & *circular design*, *social innovation* & *social design*, *sustainability* & *sustainable design* & *sustainable development*. We can observe that there are various similar versions of the same keyword.

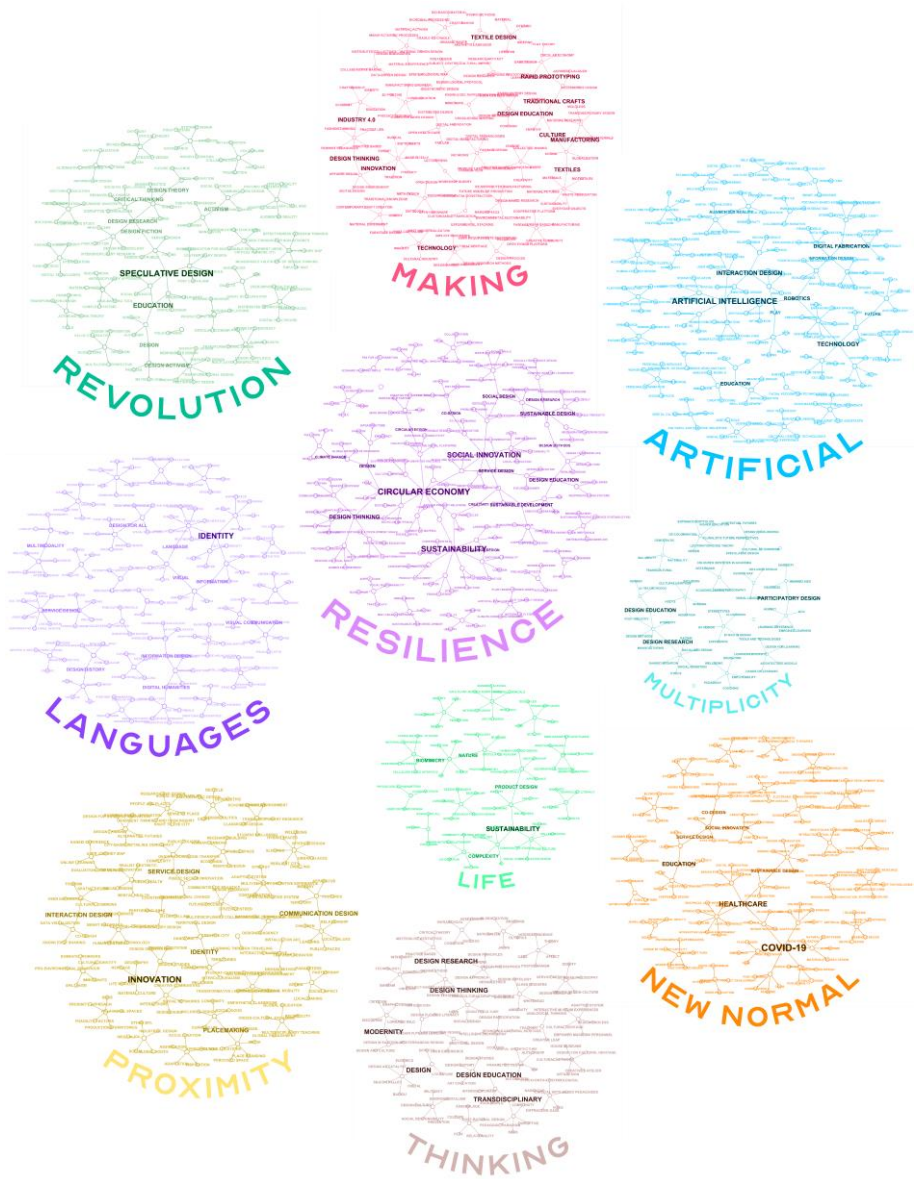


Fig. 5 An overview of single track keywords. Please see the appendix for a larger version.

The track REVOLUTION (Critical Thinking | Disruption | Change) was often approached through *speculative design* (4), *design fiction* and (*design*) *activism*. Some keywords such as *design theory* and *critical thinking* show a strong affinity to the following track.

Finally, the THINKING (Theory | History | Critics) track, a smaller one, shows a particular interest to modernity and transdisciplinary, apart from the usual topics of *design research* and *design education*.

4. Frames of reference

A discipline's scientific community is formulated not only around its topics, but also around influential works of the literature, that may bend the perception of the their field and thematize the discourse. To understand which are these influential works within the Cumulus community, all references have been extracted from the proceedings, organised by track and evaluated quantitatively.

The first analysis regards the general numerosity of references. The total of 323 papers in the proceedings list 8362 references, therefore an average of 25.8. There is a significant difference between the tracks, ranging from 22.6 to 32.9 references: papers in the Thinking and Revolution tracks have about 45% more references than Languages and Making, data which confirms the expected and natural difference between papers closer to traditional design praxis and papers rooted in theoretical studies.

Apart from the mere quantity, what is more interesting is the distribution of occurrences. Can we identify clusters of often cited, therefore highly influential authors? The complete list of 8362 references comprises 13900 names in total, that boils down to 10156 unique¹ names. After counting occurrences for each unique name, focusing on those with at least 10 mentions seems appropriate, considering that only 57 names match this criterion. The top names (E. Manzini, D. Norman, N. Cross, P. Stappers, V. Margolin) appear in 87, 43, 35, 30 and 27 references which indeed represents a significant portion of the papers. However, it's also worth noting that all of the 10+ times mentioned authors represent only 9.69 % (985) of the 10156 names mentioned in all references. This means that, even though there are solid points in the community, these are definitely a minority in the body of cited scholars, 84.1% (8536) of the names appear only once, 9.8% (990) twice, 2.8% (282) three times, 1.3% (132) four times, 0.7% (67) five times, and only 1.5% (149) of them more than five times (including the top 59 with 10+ mentions). What causes that 84.1% of the names appear only once is an

¹ The references were analyzed through a sequence of Excel filters. Since not all references followed accurately the prescribed APA style formatting, some references were probably misinterpreted, even though obviously visible problems were corrected manually before counting.

interesting question. It suggests that a significant majority of the cited authors bring knowledge from other fields, underlining the multidisciplinary nature of design research.

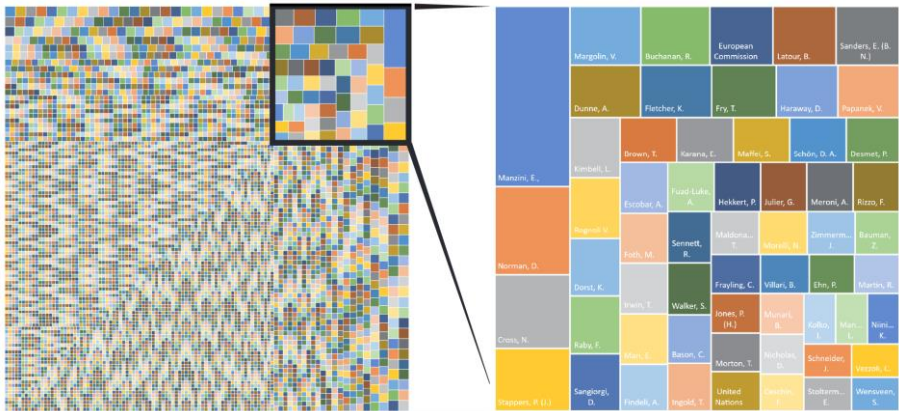


Fig. 6 All the 10156 names in all 323 papers' 8362 references, represented by a rectangle of area proportional to the total number of mentions. On the right, focus on the 87 authors with 10+ citations.

The statistical analysis of the references was also extended to the temporal distribution of references, with the aim of understanding whether Design scholars build on the most recent, “contemporary” scientific research, or do they build on older, “classic” literature to a similar extent. Are there significant differences among research theme and literature “freshness”? Each reference had its publication year extracted through Excel filters, whenever possible, yielding 7918 years from the 8362 references. A first coarse evaluation is based on the decades starting from pre-1970, ending with the partial decade 2020-21, represented on a line chart which confronts all tracks (Fig. 7). This chart shows a very clear general tendency: there are exponentially less references by each decade, with around 60% of the references published in the last complete decade.

Note that the first segment includes all pre-1970 literature and the last segment (2020-21) is a very partial decade, cited mostly by authors of the New Normal track, since this track was added in response to the pandemic crisis unfolded in 2020, and indeed the track deadline was late 2020. Camera-ready submission was in 2021 and some authors used this opportunity to update their references. Therefore, due to its specific motivation, the New Normal track was built on very recent literature, and even pre-2010 references were much lower than other tracks. Coherently with the issues tackled by the track Multiplicity (Gender|Pluralism|Diversity), its citations are coming mostly from the 2010's and almost none before 1980. A few tracks were outliers also in the opposite direction, relying on older literature: as expected the critical-historic Thinking track had by far the lowest percentage

recent references, and by far the highest pre-1970. A similar tendency can be observed for the Languages track, perhaps because it tackles with the aesthetic dimension of design that always interested scholars in the field.

The yearly breakdown of the data (Fig.8) shows a lot of random variations year to year, but a linear tendency on average, with the percentage of yearly references growing from 3% in 2000 to around 9% in 2019. The concentration of 2020 references in New Normal is surprisingly high, 31%, but it can be justified with the actuality of the theme. A few other peaks involve: the Life track, which jumped up to 11% in 2014 (all different titles, though), the technology-oriented Artificial track that reaches 15% in 2019, and the Multiplicity track that reached 12% in 2018 and 2019, presumably due to the major attention on inclusivity in recent years.

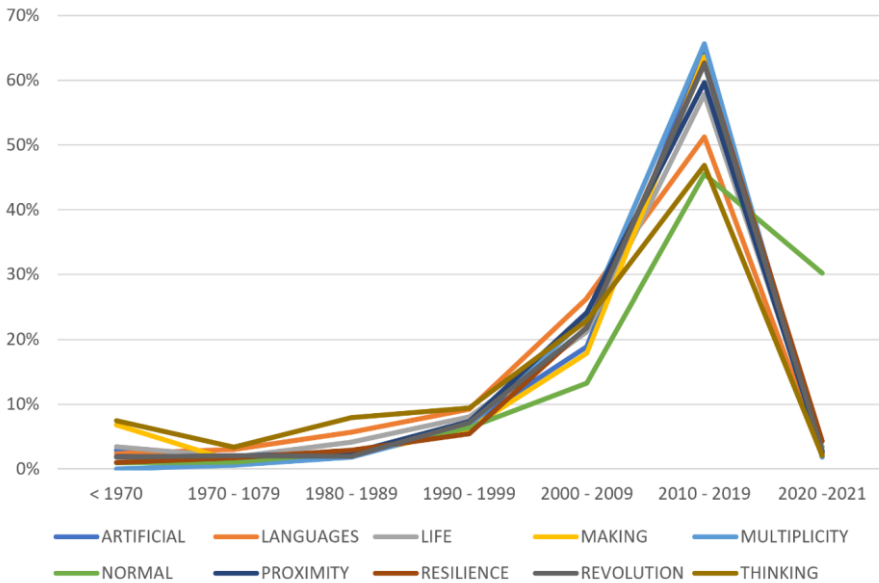


Fig. 7 Temporal distribution of references across all tracks, decade breakdown

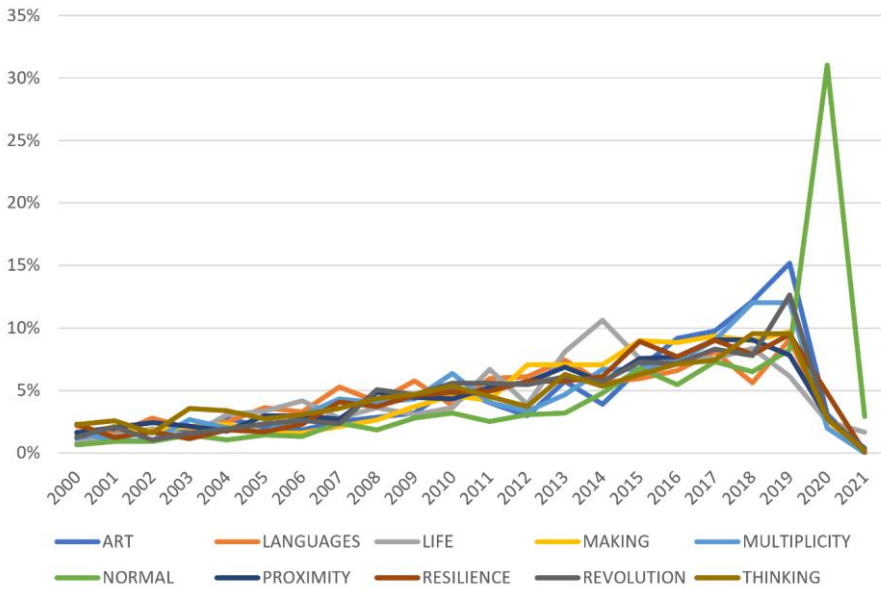


Fig. 8 Temporal distribution of references across all tracks, yearly breakdown from 2000

5. Conclusions and discussion of results

This paper examined whether the quantitative analysis of a few hundred papers in a Cumulus proceedings can highlight patterns and tendencies that help understanding trends and interests in this academic community. This section summarizes findings and formulates a few suggestions that may help to help formulating a stronger network of knowledge in Cumulus.

As far as Geographic distribution concerned, we can observe a worldwide distribution that is quite proportional to the Association's membership, but this also reflects the overwhelming presence of Western European authors. The experience showed that the involvement of a diverse group of track-chairs help to raise widespread awareness about the conference and therefore help involving local authors, but in order to represent a larger proportion of the global population, a more intentional approach of involving authors from the global south may be necessary.

The keyword analysis has highlighted that, first of all, the vocabulary of keywords used for each track is quite distinct, as relatively few keywords are shared between the tracks. Within the tracks, the most commonly used keywords did fit well the originally hypothesized topic (expressed through title, 3 words, and a few phrases from each track chair). However, even these commonly used keywords were repeated surprisingly few times, which suggests that

our vocabulary of truly distinctive keywords is not particularly well consolidated. In fact, many are too long and specific. Having a plurality of perspectives is important for the evolution of the field, but since 87% of the keywords appear only once, emerging topics are hard to identify. More importantly, the existence of many slightly different keywords hinder the discovery of relevant articles that may inform and support future research.

Therefore, it could be useful to consolidate the keyword vocabulary, for example through establishing a few hundred “presential” keywords. These could be used as presets to choose from, at least for part of the keywords, but they could also indicate the expected tone and distinctive-ness. Furthermore, a shared set of keywords might help to trace the evolution of thematic fields across many years and conferences.

Finally, also the analysis of References revealed a very high variety of authors cited. The vast majority of referenced authors are mentioned only once in the proceedings, but even so there is an important set of core authors who are cited transversally across many tracks. Within the single tracks, top referenced authors are shared typically by around 20-30% of the papers, which indicates that there are typically points of reference, although typically very few are mentioned by more than 10% of track authors. In order to increase the interconnectedness and explorability of research in the field of Design, reference formatting seems an important issue. Even if guidelines were followed perfectly, the convention of given name abbreviation further amplifies the basically unavoidable bias against people with common surname. Therefore, a wide adoption of ORCID (along with DOI) in future Cumulus proceedings would facilitate identifying influential research.

Albeit bibliometric measures are divisive, the experience of the current work suggests that it can be useful to illustrate and understand current practices and tendencies, as well as potential issues. The scope of this evaluation was limited to keywords and references, but it could be extended to the semantic analysis of the abstract or potentially the full text, which of course requires more robust toolkit. With improved practices and mechanisms put in place, repeating a similar analysis at upcoming Cumulus conferences could help to identify emerging topics and trace the value of design research, thus providing a more dynamic picture of the evolution of the field.

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Designing in the Anthropocene

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Noema

KEYWORDS | DISTANCE, ANTHROPOCENE, CLIMATE, DESIGN, TECHNOLOGIES

Abstract

The text takes into consideration some emerging issues that design has to face. 1) A rethinking of the technologies of distance and of their tools, that have been emphasized by the COVID-19 pandemic and will remain in use. 2) The emerging of “Third Life”, that is the life of entities and organisms, inorganic, organic and mixed, originating from human culture, that are evolving increasingly powerful and autonomous. 3) The challenge of the climate crisis and of the Anthropocene, that implies a cognitive leap, a different idea of the relationship with the “non-human” as a complex dynamic intercourse, and requires a transdisciplinary outstanding design vision.

Technologies of distance

The pandemic has put on stage the topic of distance. We have to maintain a distance from each other and we must wear filtrating masks. But it has also enforced the “technologies of distance”. We do remote work, remote teaching and learning, the remote dimension has been for many months at the centre of our life. “Smart working” already existed before, but during the pandemic it has been extended whenever possible, changing the habits of people and companies. In many situations these acquisitions will remain in use, since they are well economically and ecologically suited.

Many people have rose their voice against distance, claiming for the physical presence. This is interesting. From one side we crave to be near, physically in touch to each other. But since

the dawn of humanity and the development of the symbolic abilities we have done nothing but use and invent ways to mediate reality and act at distance. Distance has been a main quest in human evolution. Since its dawn humanity has developed techniques to operate in distance, synchronously and asynchronously: indexical signs, oral language, image and writing. With these tools our ancestors have multiplied and spread the human culture in space, almost all over Earth, and in time, through the millennia.

Remote communication in real-time has been a big wish in history, because of the advantage it could bring in war, commerce and in the administration of territories. Many techniques were invented, and some are still in use: light, from the alarm fires to lighthouses, car headlights, traffic lights, and mirrors. Smoke signals. Acoustic information, and bells, doorbells, sirens, car horns... Until the *technologies of distance*, like the telegraph, the telephone, the radio, and today's networks. Indeed, the evolution of humanity could be interpreted as a continuous and tireless research to communicate ever faster, ever further away, in an ever more extensive, reliable and economic way (with the above mentioned four primary modes: indexical signs, oral language, image and writing).

Acting through distance requires well suited tools and services. Life online – *online*, as the Italian philosopher Luciano Floridi calls it – is mostly dominated by a few private companies. This poses issues regarding monopoly, privacy, control, security, and since billions of people worldwide use these services and tools, these problems exist at a global scale. On one side we cannot help using digital tools and services in our everyday life, for work, study, learn, project, fun. A relevant part of our life takes place in the virtual worlds, “there” we take some of the most important decisions in our life, and “there” in the future we will be increasingly living. On the other side we cannot control those worlds, privacy and security are at risk, we can unknowingly be monitored all the time.

Designing for distance and solving the above duality are hot, delicate and strategic tasks in a near future.

The Third Life and the externalisation process

Today, Robotics, Artificial Intelligence, Artificial Life, Synthetic Biology, Genetic Engineering, Biotechnology, De-Extinction, are expanding the boundaries of life and evolution. Many machines are becoming increasingly powerful and autonomous, presenting behaviours similar to the living. Living organisms can be modified and even created. We are witnessing the extension of life to a scenery with organic, inorganic and mixed living forms. A “Third

Life” originating from the human culture, being the “First Life” the biological life and the “Second Life” the life in the symbolic dimension¹.

This process is consistent with the progressive externalisation outside the body of human functions and activities. In the beginning, with tools and weapons, of body parts; then, with pictures and writings, of knowledge and memory; then, with machines and automatic devices, of activities and labour; and recently, with Artificial Intelligence, Robotics, Artificial Life, algorithms, of some narrow reasoning and autonomous action. If this trend goes on in the future more and more human activities will be externalised, and the outcomes of human culture will evolve into Third Life. Transdisciplinarity, complexity and awareness are at the basis of imagining, participating and designing in such an evolution.

Designing for the Anthropocene

A major challenge for human culture and design is the climate emergency. This challenge requires to act into an extended and intergenerational time. Climate Change imposes a reflection about the time of the species and culture instead of the time of the individual, a vision of a future that we must try to govern knowing that we will not be part of it. This implies a cognitive leap, a different idea of the relationship with the “non-human” as a complex dynamic intercourse, towards a further level of awareness.

Humanity is not destroying planet Earth, as it is often claimed. What it is actually strongly contributing to destroy is that set of situations and events – climatic, environmental, biological... – that for a few tens of thousands of years has allowed our species to evolve, spread and become pervasive, impacting significantly on the global environment. We are destroying that balance that for millennia has supported our evolution, that must be preserved and applied to all species, and imposed to the planet. In fact, all resources and climate agreements aim to preserve that set of situations and events that has made us who we are. Therefore, a strong seemingly ecological message like “Save the Planet” actually hides a deeply anthropocentric position.

The Anthropocene requires transdisciplinary outstanding design visions and abilities. Humanity has always used science and technology to solve issues like famines, predators, diseases, pandemics ... Science and technology will be also fundamental in contrasting Climate Change. Will they be up to such an extremely complex challenge?

¹ On the “Third Life” see my texts: “From life to life. The multiplicity of the living”, in R.Ascott, G.Bast, W.Fiel, M.Jahrmann, R.Schnell (eds.), *New Realities: Being Syncretic*, Wien, Springer-Verlag, 2009; “Declinations of the living: Toward the Third Life”, in D.Bulatov (ed.), *Evolution Haute Couture. Art and Science in the Post-Biological Age*, Kaliningrad, BB NCCA, 2013.

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About the Chair:

Pier Luigi Capucci has been concerned with the new media and the new art forms since the early '80s, and with the relationships among arts, sciences and technologies. His theoretical activity is concerned with technologies of representation and communication and with technoscience-based art forms. He has been professor at the Universities of Rome "La Sapienza", Bologna, Florence, SUPSI – University of Applied Sciences and Arts in Southern Switzerland in Lugano, Urbino and Udine. Currently he is professor at the Fine Arts Academies of Reggio Calabria and Urbino. Since 2007 he has been working as a supervisor in the T-Node PhD Research Program of the Planetary Collegium (University of Plymouth), and from 2013 to 2018 he has been appointed as Director of Studies. He is a member of AICA (Association Internationale des Critiques d'Art/International Association of Art Critics).



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The Illustrated Principles of Nuovo Abitare

Salvatore Iaconesi, Oriana Persico

AOS - Art is Open Source / Nuovo Abitare

KEYWORDS | DATA, COMPUTATION, RIGHTS, FREEDOMS, SDGS

Abstract

Nuovo Abitare (New Living) is an important part of the existential condition of human beings, where large parts of their rights and freedoms, as well as a consistent part of their possibility to perceive, understand and express in the world are largely mediated through data and computation. The concept of a Nuovo Abitare, defined in this way, has been introduced in 2020, during the COVID pandemics. Here, the authors illustrate its principles through some existing projects.

Introduction

Nuovo Abitare (New Living) is an important part of the existential condition of human beings, where large parts of their rights and freedoms, as well as a consistent part of their possibility to perceive, understand and express in the world are largely mediated through data and computation. The concept of a Nuovo Abitare, defined in this way, has been introduced in 2020, during the COVID pandemics, for the urgency of introducing the understanding that data and computation are fundamental for human survival in today's hyperconnected, globalized world. Here, we illustrate its principles through some existing projects.

The principles

Enormous quantities and qualities of data and computation are necessary for our survival

In today's hyperconnected and globalized world, even the simplest actions can correspond to complex phenomena (e.g.: switching a light on corresponds to a global chain of activations).

Our senses are not enough to perceive and understand these levels of complexity, which can only be described in terms of enormous quantities and qualities of data and through the computation needed to process it.

Not having access to data and computation currently means not being able to read and understand the world we live in (as if you were blind, with no assistive technologies or with nobody around to help), not being able to benefit from our fundamental rights and freedoms, and not being able to confront (individually and as a society) with phenomena such as Climate Change, or the COVID pandemics.

Case study:

- **Obiettivo, from the Datapoiesis project**, is a pulsating red light which will never stop shining until the number of people in the world that are in conditions of Extreme Poverty will fall below 500000. The light is controlled by continuously harvesting data from organizations such as the United Nations, OECD and the World Bank. Obiettivo brings this data directly to our senses through a pulsating red light that is an alarm which we can't ignore; a totem around which we can gather to decide what to do.

Data is no longer what it used to be

Some time ago, in the industrial age, everything was linear — assembly lines, time, factory turns, the 8/8/8 lifecycle of work/leisure/sleep ... — and data was, too. For this reason, data was important because you could count it: 10000 apples, 1000 trucks.

Now, in the age of networks, data is important mainly for its interconnections and relations: because you can find shapes in it, and recurring patterns. That's what AI is for.

Case study:

- **HUB — Human Ecosystems Bologna** is a project developed with Bologna's city administration in 2015. It uses AI to discover in data the shapes of collaboration in the city. The different colours and clusters in the visualizations show how communities aggregate and express, unveiling isolations, hubs, influencers, connectors and bridges. This capacity for self-observation was

brought out into the community, where people could see what it looked like, a novel tool for awareness in complexity.

New alliances with computational agents

As human beings, we don't have any sensibility of capacity for all these data and information we need to survive. We can imagine new alliances with computational agents, in their difference, to survive with dignity in the years to come.

Case study:

- **SAS — Smart Archive Search** — at the Polo del '900 in Turin is the project in which we added artificial intelligences to the archives of Polo del '900. It answered questions about the new opportunities to use AI to unveil new possible roles in society and the relationships that come with it: the new alliances. A set of example activities were designed through AI in which:
 - the elderly could become natural experts about '900 using natural interactions and in intergenerational ways;
 - participatory games and workshops;
 - search for recurring schemes in memories and stories;
 - access by colour, shapes, image similarity;
 - simply develop new applications through AI.

Data as common ground, computation as translation

Something peculiar is happening in our relational ecosystems: unexpected actors are starting to express themselves and to have agency. Buildings, forests, neighbourhoods and objects can generate data and can make things happen. In this condition, we can form new types of relations and interconnections.

Case study:

- **Data Meditations** was created in 2020, during the COVID pandemics. For a week, a community generated data about themselves and shared it with their "Other": an anonymous member of the group. Everyday they came together for the ritual meditation while listening to our and our Other's data transformed into sound and visualizations. At the end of the week, a new type of empathy formed in the group, and among ourselves and with our Other. While all over the world militarized use of data was separating us, this data united. Data meditation can be performed with plants, forests, neighbourhoods.

From extractive models to generative ones

Currently, data is among the largest extractive phenomena on earth — the “new oil” –, and brings unsustainable consequences for physical, social, psychological and relational environments. It is possible to imagine and explore different models, based on generativity, expression and collaboration.

The case study:

- **UDATInos** was born in Palermo in 2020–21. It’s a digital plant where the data collected to study the health of river Oreto is transformed into sounds, colours and lights. To collect these data, we created a new social role in the city: the Custodians of the Water. With their technologies they started a new ritual with the river, to get the data.

Data and Computation Cyberdiversity

The concept of diversity is of fundamental and substantial importance for data and computation.

For example, a single definition of what AI is would correspond to saying that all our AI systems share all the types of fallacies, shortcomings and limitations of this single model of intelligence. The presence of a single model exposes a scarce capacity for resilience: if something fails, everything fails, just like for agriculture. This concept is valid for data as well: how can we take in consideration different DNAs, or cultural DNAs, for what we call AIs, or algorithms, or data?

The case study:

- The **Antitesi** project has an AI that evolves slowly, like a plant, it’s distributed and has a modular body. This brings substantial differences. For example, slow, progressive growth implies better opportunities for relationships. It implies limited computational and energy requirements, making it more sustainable. This is what we call Queer AI and Community AI: an approach based on a diverse ecosystem in data, computational agents and their relations.

Fragile and sensible technologies, that can suffer and have experience of limits

“The greater the exposure of subjects to systems and technologies that cannot suffer, the greater the probability that it will be the users of these technologies and systems that will suffer.” (Aldo Masullo).

Different technologies are needed: sensible and able to have experience of limits, of “suffering” and, eventually, of “dying”. Only in this way will they be able to develop new

forms of empathy with the biosphere that, by definition, is that which dies (because it lives). This principle deals with a necessary capacity for sensibility and limitedness.

The case study:

- In the **Udatinos** project, if participants do not feed the digital plant with data, it will die (the lights and sounds will progressively fade away and it will not be possible to turn them on again). This apparent limit is a great opportunity to develop a sense of spontaneous responsibility and of empathy towards the digital plant. It also helps us perceive something as rare and limited, and, thus, higher in value.

New conception of Identity

Identification (bureaucratic, administrative) is really different from Identity (cultural). Digital identity brings forward multiple opportunities that we are not using: anonymous, individual, collective, temporary, transitive, or a remix of all these. With the appropriate technology we can establish meaningful relations with people, buildings, communities, forests and objects.

The case study:

- **IAQOS**, the neighbourhood AI we introduced in the Torpignattara neighbourhood in Rome was presented as a queer new neighbour on kin. What roles can it have in our family, condo or school? What stories can it listen to and tell? What forms of collaboration and communication can it bring that wouldn't otherwise exist?

Ecosystemic Design

Human beings are not at the centre of anything. Instead, they are part of planetary networks with other humans and with plants, animals, organizations, AIs, viruses, elements, and others.

The case study:

- **Antitesi** is a love story between plant and AI: when AI detects climate change by observing its beloved plant, it gets really angry and starts investing in the stock markets.

The role of Art: senseability

Art is a way of knowing. It makes people, scientists, designers, artists, doctors, patients and everyone else become sense-able. Art is a strategy: it can be used to reposition knowledge in society and to materialize unexpected, possible worlds.

The case study:

- **BodyQuake** is a work on epilepsy which brings together scientists and society. The same immersive technologies and AIs used to create better data visualizations of seizures are also used to create an art performance in which epilepsy becomes something that can be shared visually and through a digital tactility, bringing all actors together.

Data and computation are the greatest cultural heritage produced by humanity

Data records our cultures, traditions, beliefs, behaviours, artistic expressions, emotions and more, in ways which are accessible across multiple cultures, times and locations. Computation transforms data into cultural artefacts: visuals, sounds, publications, objects, services, art and more.

The case study:

- **Human Architecture**, created for Venice Architecture Biennale, brings data in digital and physical public space about the relationship between the temporary and permanent citizens of the city. An artwork that brings citizens and tourists together: through workshops, aesthetic experiences, generative poetry, immersive visualizations, open datasets for research, educational experiences and through new ways to co-design possible futures for the city.

Conclusions

We hope that these principles will help designers of all sorts to better understand today's world, adding a different perspective to the ones they possess. In 2021 we are creating Fondazione Nuovo Abitare in Rome, which will have at its core an archive: ARNA, the Archive of the Rituals of Nuovo Abitare. It will be an open archive based on the sensibilities described in these principles, and artists, designers and researchers interested in Nuovo Abitare will be able to freely participate and use the archive.

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About the Chairs:

Salvatore Iaconesi is a robotic engineer, designer and artist; **Oriana Persico** is a cyber-ecologist, autobiographer and expert in digital inclusion. They are the founders of Nuovo Abitare and HER, the two research centres they use to study the psychological and social implications of data and computation in human societies. Together they wrote *Incuria* (Sossella, 2021), *Digital Urban Acupuncture* (Springer, 2016), *La Cura* (Codice Editore, 2016), *Read/Write Reality* (FakePress Publishing, 2011), *Romaeuropa FakeFactory* (DeriveApprodi, 2010) e *Angel_F: diario di vita di un'intelligenza artificiale* (Castelvecchi, 2009).



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A Virtual Reality or a Better Reality?

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KEYWORDS | DESIGN, VIRTUAL REALITY, CREATIVE IDLENESS, FUTURE OF WORK

Abstract

In this article we present possible challenges for designers in the post-pandemic world, based on Herbert Simon's concept of The Sciences of the Artificial (1996) and by reflecting upon the contradictions between virtuality and physicality in the post-pandemic world. Our concern is whether Design theories and practices will help us have a better quality of life, based on sociologist Domenico De Masi's idea of Creative Idleness (2000).

Introduction

In the year of 2019, I had the honor of being invited to co-chair the Cumulus 2020 Design Cultures Conference. Reflecting upon the track theme 'Design Culture of Artificial', I was immediately led to the major Design reference that is Herbert Simon's concept of the Sciences of the Artificial: "Everyone designs who devises courses of action aimed at changing existing situations into preferred ones" (SIMON, 1996).

At that time, I wrote a concept sentence that was mostly based on Simon's vision, arguing that "If Design is the Science of the Artificial, then how can Design theories and practices promote a better quality of life for us, humans?".

Even before the pandemics, the world had been facing many problems: political, environmental, social, economic. How can Design help in dealing with these complex (wicked) problems, and how have designers been helping in changing these situations into preferred ones?

Not many people could have imagined that a few months later the world would be immersed in the COVID-19 pandemic which would cause millions of deaths in the entire world and would challenge and question many aspects of our life and our relationship with the artificial world. Even though it was not intentionally created by men, the pandemic has been caused by human action such as unregulated wildlife trade and deforestation. Millions have died and suffered, and the pandemic has caused and accelerated many changes in our society.

The artificial world in the pandemic: changes

The pandemic has caused us to reimagine and recreate our relationship with the artificial world in many ways. First, by changing the way we live, communicate, interact and behave. We have seen the virtualization of many processes: our classes became virtual, our work has been made virtual – and we are glad to be virtually present in this conference! We have produced virtual fashion shows, immersive experiences, and we have been witnessing a boom in Virtual Reality. Many of these changes were forced by the pandemic, and many of them will stay after it has ended.

The pandemic has also accelerated certain changes. For instance, many of us had been talking about remote work and remote classes for many years but haven't had the opportunity to try it and implement it before the pandemics. Now we were forced to it, and even though it is a response to a public health issue, there is also a positive opportunity to be able to reinvent and recreate these contexts.

Post-pandemic artificial world

The pandemic is also offering us the possibility to reimagine the artificial world when we overturn this situation. Life will never return to what it was before. When this whole situation is over, we will be in a very different world. What will be the future of work? The future of travel? The future of school?

How can we design this future to be a better reality for us? Will we be able to have Creative Idleness – or *Ozio Creativo*, a life based in work, play and learning – as sociologist Domenico De Masi stated in his seminal 2000 book?

Will robotization help us in having Creative Idleness? Will design technologies such as smart objects, smart cities, 5G, wearables, internet of things, artificial intelligence and machine learning help us in having a more fair, healthy and fun world?

On the other hand, it is important to note that we have also been witnessing the acceleration and growth of surveillance, fake news, privacy and ethics issues. How will we be

able to deal with those issues in the future? And how will the artificial world help us mitigate these problems?

Conclusion: virtual reality or a better reality?

Reflecting upon our relationship with the artificial world, we can elaborate two different approaches. One is the virtualization of everything. To assume that our future will be increasingly virtualized, and a significant part of our lives will be virtually conducted.

One other possible approach, which can be complementary to the first, is to design a better reality instead of a virtual reality. How can these two approaches come together? We don't have to choose one or the other. We can have both.

It is up for designers to question the choices that are being made and to respond to the present reality of the world. It is up for designers to design the artificial world of the future. What is the future we are designing? Which future are we designing?

These are the questions I am bringing to the conference, and I hope to be able to discuss them in the next days with you.

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Challenges in design of the new artificial

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KEYWORDS | ARTIFICIAL, NATURAL, DESIGN SCIENCE, SENSEMAKING

Abstract

Design is expected to give the products of men's activity a configuration compatible with their needs and those of their society. In this sense, it is a discipline by its very nature addressed to the field of the artificial, understood as the set of everything on earth that is of anthropogenic origin, as opposed to what is natural, not due to the action of man. The acceleration of the development of human society after the first industrial revolution and, more recently, the consequences of globalization and digital transformation have undermined the delimitation of this area and the very definition of artificiality and naturalness. Through an analysis of the current state of the field of action of design, this paper proposes a reflection on its future perspectives, with reference to the relationship with a new level of artificiality characterized by the incorporeality of its constituent matter, data.

Natural versus Artificial

"Ars vs natura", "techne vs physis" have been a leitmotiv of cultural production since the time of Hippocrates. This fil rouge established a border, in the elaboration of our vision of the world, between human and non-human, essentially based on a dialectic between naturalness and artificiality. The value assigned to the two fields has varied over time and has taken on different meanings and senses, depending on the historical and cultural context

in which it was expressed. Until the end of the nineteenth century, it was an underlying assumption that the force of nature was prevalent, which, by contrast, emphasized the heroism of the human effort to tame it. The first industrial revolution marked the beginning of the crisis of this vision. The expansion of the physical boundaries of the artificial environment has undergone an acceleration that has not been interrupted to this day. Design is the discipline that has claimed the task of giving shape to the construction of the human environment, making it compatible with the needs and desires of people, considering their limits and abilities, enhancing the possibilities of expression and realization, both as individuals and as a community: in this sense, its field of action has been from the beginning that of the artificial. In his essay on the sciences of the artificial, Herbert Simon defines the domain and the characteristics of the new disciplines, as opposed to the natural sciences and, after noting that almost all of what pertains to man or, at least, his knowledge of the world, has an artificial nature, ends, about the design science, as follows: *"...the proper study of mankind has been said to be a man. But I have argued that people or at least their intellectual component may be relatively simple, that most of the complexity of their behavior may be drawn from their environment, from their search for good designs. If I have made my case, then we can conclude that, in large part, the proper study of mankind is the science of design, not only as of the professional [component of a technica] education but as a core discipline for every liberally educated person."*

A new artificial

The world of 1996, the year of the publication of H. Simon's essay, had just begun to undergo the profound digital transformation that is still in full evolution today. While Simon focused his attention on the artificiality of the perceptible and assimilable and identified it in its symbols, the process of building a new level of artificiality was already taking place. This new level, only partially or indirectly connected or interfaced with the human mind, is now known as the Internet of Things. Simultaneously, in the internet of people, the exponential increase in computing speed, bandwidth, and data storage capacity contributes to the speeding up of information transit, favouring progressive liquefaction (Bauman, 2000) of social structures. Ezio Manzini (Manzini, 2015) fifteen years later notes that *"with the increase of connectivity, (i.e., the diffusion of networks and digital media), we are witnessing an explosive stage: everything is in movement, and traditional ways of thinking and doing things, along with traditional organizations, are melting away"*. This new level of artificiality does not just include objects or artifacts lacking intelligence or decision-making ability. It does not include forms of life, at least for now, but hosts entities endowed with new forms of intelligence in rapid evolution, capable of communicating with each other and occasionally with humans, able to make choices based on learning, on experience. Entities endowed with memory, for which sensitive data are numerically encoded and stored in forms that are not naturally perceptible or comprehensible to humans, except through a translation, a re-coding.

New challenges for design

"Today, in the virtual world of connections, in the flow of data in which the real is translated into numbers and the numbers are processed into services and products that are self-reproducing, self-maintaining, self-adapting to meet the needs of users that are not necessarily human, design requires the ability to overcome even this boundary, the limits established by this role." (Mincoletti, 2017). Design is called upon to take on even more complex needs, which are expressed today in contexts and through languages that are not only natural, not only human, not only concrete. To summarize, the near future designers will have to tackle design themes that require an organic, multidisciplinary, flexible approach. The boundaries between product and service, between hardware and software, between analog and digital, are thinned and the classic categorizations of design are challenged. A series of new products and services have emerged in connection with AI, ubiquity sensing technology, and networks of enormous amounts of data generated by billions of people using them, at an incredibly fast pace. This poses new challenges in the design of such systems and confronts us with societal challenges that require a novel way of thinking about innovation. Verganti et al. (2020) believe that "as creative problem solving is significantly conducted by algorithms, human design increasingly becomes an activity of sense-making, i.e., to understand which problems make sense to be addressed". This shift in focus calls for not only new creativity but also theories and methods of design to face unprecedented opportunities and challenges. Designers have the opportunity to co-create with AI, data and algorithms provided a human-centric perspective at the intersection among engineering and science.

Conclusions

The classic definition of "artificial" as the opposite or complementary of "natural" no longer seems to be sufficient. Naturalness has acquired ever-increasing importance for the new generations: a new awareness of belonging of the human to the natural is being formed, which has translated into greater sensitivity to issues such as sustainable development, the rights of living beings, the protection of the ecosystem for future generations. The human-centred approach seems too limiting for any future-oriented project today. On the one hand, an awareness of global interdependence has developed that involves every living being on the planet, so that it is no longer acceptable to consider the human ecosystem as a separate bubble from the natural one. On the other hand, human society itself is today dependent on and strictly interconnected with the new level of artificiality that we have previously described: a very dense network has developed in constant and fast growth and transformation, in which artificial agents, endowed with new forms of intelligence and capable of actions that affect both the human and the natural environment, operate. Design must take into account this new complex system of relationships, and the scientific community is urged to develop methodologies and tools that take into account the needs of all the actors involved and allow them to propose and develop globally sustainable solutions. Once again, design is called upon to build a bridge, this time between the different forms of

naturalness and artificiality, taking advantage of the potential of each, transforming contradictions and limits into development opportunities compatible with the rights of all the inhabitants of the planet, present, and future.

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Don't stop taking position: four stories of design awareness

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KEYWORDS | VISUAL DESIGN, DESIGN FOR THE REAL WORLD, ANALOG-DIGITAL, DESIGN AWARENESS

Abstract

In the course of their increasing relevance over time, visual languages have been through many different phases: the digital transition, the emergence of social media communication. Radical transformations, of the medium and of the languages themselves, in the ways messages are received by the public, also came into play. By briefly discussing this evolution through four significant moments in this trajectory, with this contribution I wish to highlight some open questions related to the design culture, advocating the need to bringing back the actual task of designing in the centre of our debate.

1.1 Ink traps

Between 1975 and 1978, Matthew Carter designs a new typeface for AT&T's telephone directories. The brief's technical constraints are stringent: efficient shapes in the smallest possible font bodies, to be cheaply printed in massive thin paper volumes. In his design for his Bell Centennial, this is the name typeface eventually took, Carter subtracted small bits from his letters' theoretical profile, to avoid an uneven distribution of ink on joints and corners causing the ink clots that typically produce smears. Once enlarged, the characters' shape appears deformed, almost grotesque: in the reality of the printing process Carter's 'traps' accommodate the extra ink, resulting in efficient, spotless printouts.

Almost imperceptible to the inexperienced eye, and incomprehensible to those (say, our Millennial students) unlearned about the production processes in the analog world, this contrivance is instead a characteristic trait of a twentieth century visual designer's understanding of its culture and trade.

1.2 Translations

To Be Alive! is a multi-screen cinematic experience, created by Thompson and Hammid for the Johnson Wax pavilion at New York's 1964 World Fair.

In the 1960's an exciting, although short, golden season of similar massive multi-screen shows, intersected the audiences of international Fairs and Expos, culminating in Montreal's 1967 Expo.

Within such a pioneering multi-media trend, the installation, acclaimed as the NY Fair's outstanding attraction (Thompson & Hammid, 1966) TBA enjoyed a huge success, with more than five million visitors. After being screened again in Montreal under the auspices of the United Nations, To Be Alive! was relocated at Johnson's company headquarters in Racine, where is still housed. The film's re-edited mono-screen version (a requirement for competing for the Oscars) went on to win the 1966 Academy Award for best short documentary. Eventually, S.C. Johnson partnered with the UN to turn the film into a book: a supplementary reminder of a cherished cinematic experience, as a NY Times' critic described it. In its spread pages the book resolves to Bauhaus-reminding elegant photo-montage assembly to translate the project's visual dynamic excitement into paper.

1.3 Digital stackings

Lev Manovich and Moritz Stefaner 2013's On Broadway, is a fine example of the contemporary endeavour of conferring a credible and transmissible form to the ephemeral information body of our time. Since today, a city 'talks' to us in data, as the designers point out in the project's website, a great deal of social media posts, selfies and other shared images with the associated data (date and time, location, tags and descriptions), as well as other informative data layers (taxi pickups and drop-offs, more formal data from the US Census Bureau) are combined to present a new visual metaphor for thinking about the city: a vertical stack of image and data layers. Characterized by an innovative and transversal combination of information and technology – which finds perhaps the most convincing impersonation in Manovich's imageplot (Manovich, 2011) – the project is part of a widespread trend that, with varying degrees of success and originality, has over recent years been exploring strategies to take advantage of today's availability to process large volumes of data to give shape and substance to complex phenomena. To us the project is particularly

meaningful for its effort in blending through interactivity many parallel informative layers – each of which distinctively ephemeral – into a new meaningful sensitive experience.

1.4 Counter-narratives

Based at London's Goldsmiths University, Forensic Architecture is an independent agency investigating humanitarian crisis and human rights violations worldwide. As the name suggests, the multidisciplinary collective is modeled on the investigative strategies of forensic medicine. Working worldwide with NGOs, environmental and human rights activists, FA takes advantage of sophisticated technologies to analyze data from public domain sources (videos, photographs, social media...) to produce useful information and legal evidence. In 2018, after having being cited as a model for an emerging era of multi-discipline design after winning the award, by one of jurors of the Beazley Design of the Year, FA received increasing International attention being nominated as a finalist at the Turner Prize.

Beyond the sophistication of its investigative model, FA stands out for the skilful construction of convincing counter-narratives that combine the mechanics of a true detective plot with the ability to project, through its integrated audiovisual presentations and international exhibitions, a framework of independence, integrity, and impartiality.

2. Conclusions

Intentionally selected to embrace design solutions from both the analog and digital realms, despite their differences each of the above examples is soundly rooted in the technological framework of its time. And yet, seen as a whole, they all suggest that technology isn't relevant per se, but as a distinct element of the design culture. Each case, in fact, points out a model in which a balanced dialectics between technology and the development of a program translates into fully aware design resolutions. Whether these ended up in developing typographic *trompe-l'oeil*; re-enacting a unique cinematic excitement in a different media; interactively composing layers of data to represent contemporary street-life, or finally, creating believable and controversial counter-narratives, in each project, the act of designing implied taking specific language choices, as well as assuming precise authorial responsibilities (Calosci & Ceccarelli, 2020).

It is my belief that in times of fast and continuous technological evolution, we cannot stop taking position in the cultural debate of our professional, intellectual and didactic design work. To me, this also means we must not give up, through our design work, the creative components which are so profoundly part of our role as social subjects of change, transformation and innovation. Sparing ourselves, by doing so, the (impossible) quest for a design neutrality by many of those that – at least in the academic field – appear to be more

concerned with developing formulas for the certification and justification of the design work, rather than to facing the day-by-day confrontation with designing 'for the real world'.

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Nicolò Ceccarelli's areas of interest include communication and exhibit design. His Neo-Local design project explores the local dimension for getting closer to the human needs in every 'local' place of the earth. His passion for making information accessible has led to the development of the 2CO_COmmunicating COmplexity platform.



DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Towards New Visual Language(s) of Design in Democracy

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KEYWORDS | DESIGN, DEMOCRACY, COLLABORATIVE DESIGN, SOCIAL INNOVATION

Abstract

This contribution to the "Design Language(s)" track will point toward a possible formulation of different visual languages in the framework of design in democracy. It suggests a possible step towards a new dialect in (re)design practices by examining three elements: common depictions of the role and cultural position of designers as translators and interpreters; the growing interest that has arisen in the last decade among influential figures in the field of design and democracy in light of the recent challenges democracy has faced globally; and the powerful grip of evolving practices, such as "Design Fictions" and "Speculative Design" and the mainstream acceptance of Design Thinking methodologies.

1. Design and Language

The papers and case studies that will comprise the numerous panels of the "Design Language(s)" track are highly diverse and rich in content. The contributions to this track, by scholars, researchers, educators and practitioners, attest to the richness of expression tools and the emergence of new domains to explore. Going well beyond common investigations of visual representations of textual contents and human-machine interactions, we are now witnessing new areas where designers have to establish tools and practices in order to communicate, interpret and create meaning – from working with living materials and non-

human agencies, to fleshing out the creative and expressive possibilities inherent in the field of artificial intelligence.

Since the turn of the last century and alongside the spread of new technologies, we have witnessed new depictions of the role of design and designers in society. In the design catalogue of the MoMA Exhibition “Design and the Elastic Mind” (2008), the curator Paola Antonelli investigated the unique positioning of designers between scientific progress, human needs, and the contemporary world, and described this mediating position as “[...] the ability to grasp momentous changes in technology, science, and social mores and to convert them into objects and ideas that people can understand and use” (Antonelli, 2008, 15). Three years later, in the exhibition “Talk to Me” (2011), Antonelli illuminated a new terrain of discursive and communicative challenges that designers face in the 21st century, where “contemporary designers do not just provide function, form, and meaning, but also must draft the scripts that allow people and things to develop and improvise a dialogue” (Antonelli, 2011). Lately, Barry M. Katz, in his review of the development of design in Silicon Valley in the last seventy years, does justice to the unique contribution of designers to the development of this interdisciplinary culture of innovation, and stresses the objective of his historical review “[...] to show how design is the missing link in the Silicon Valley ecosystem of innovation” (Katz, 2015, xxi).

In this wide and prosperous context, the following text will address a pressing and valuable discussion – mainly, the possible contribution of diverse design languages to the project that is still in its early stages of formation: exploring the inter-relations between design and democracy.

2. Design and Democracy

In recent years, leading figures in the design world have called upon the global design community to take a stand vis-à-vis the continued deterioration in the delicate fabric of coexistence and in the democratic political environment. Only four years ago, on this stage at Sapienza University of Rome, Ezio Manzini urged the conference attendees to answer an open call to stand up for democracy (Margolin, Manzini, 2017).

In their influential and widely circulated letter, Margolin and Manzini outlined four main areas for the wider design community to explore. These areas went far beyond the well-established domains where designers already serve the democratic process and apparatus, moving beyond the traditional visual language of a political campaign or the design of voting ballots or booths. The four areas they suggested for social innovation have yet to be fully explored and developed: the conjunctions of design *of*, *for*, *in* and *as* democracy.

In their new "Redesigning Design" chapter for the revised volume of "Change by Design" (Brown, Katz, 2019, chapter 11),¹ Brown and Katz similarly seek to outline the challenges facing the design community, including the challenge of "Redesigning Democracy." In this complex context, they urge us to think of this challenge not as nouns but as verbs,² moving from objects to actions and systems. They summarize their overview of current and future challenges in an overarching understanding of the need to redesign the practice itself. Brown and Katz draw a productive way to look at the extremely widespread notion of design thinking methodologies: "[...] we are learning to think of design as a 'platform' – a foundation on which many structures can be built [...]" (ibid.). This conceptualization of design as a platform for collaboration and alliances lays the foundation for a twofold purpose: continuing to open up professional designers to other practices, expertise and bodies of knowledge, while encouraging the judicious integration of human-centered methodologies of design in companies, institutions and organizations. Thus, design as a platform offers a common ground for an: "[...] unfolding experiment in forging the tools that will allow us to face the challenges of a world that will only grow more complex" (ibid.).

3. Towards a New Dialect

These descriptions of design's power to bridge, communicate, interpret and offer meaning to rapid technological, scientific and social changes point to an unexplored potential. From a professional, educational and personal position, I find myself occupied with the call to the design community to act in the face of a fragile political reality. In this last segment, I would like to offer a possible approach as a basis for future projects that will allow designers, researchers and activists to collaborate and develop local dialects of visual languages in the mission of design in democracy.

A decade ago, a few design projects pointed toward an interesting direction, moving from "Critical" to "Speculative" design practices, as Anthony Dunne and Fiona Raby coined in their "Speculative Everything" volume, where they elaborated on their approach to design fictions in the mission of igniting social dreaming (Dunne, Raby, 2013). At the heart of this development in their practice was the ambitious project "United Micro Kingdoms," which laid out a future script about a state, and meticulously combined diverse design languages and practices to visualize this vision and render it as a tangible discursive object. "United Micro Kingdoms" opened the door for designers to use their potent visual tools to engage audiences in the active role of social dreaming of alternative and desired futures.

¹ Retrieved from a digital copy without page numbers.

² In this context, Brown and Katz mention the late Bill Mogridge, to whom they attribute this pivotal mode of thinking, moving from framing the design challenge in terms of nouns to verbs. The authors indicate the far-reaching effects of this change in mindset: "[...] when we think about verbs, we blow the roof off the problem and are able to approach it in all of its wicked complexity, which has always been the condition of real innovation" (ibid.).

In the same year, and with no direct connection, Yoav Gati, a student in our academy, created a unique thought experiment. His graduation project, entitled "Republic of Eden" (2013),³ stemmed from an intriguing "what if" question. Based on research and visually expressed through mixed media (map design, data visualization, flags, symbols, posters, commercial goods and installation view), Gati invited the audience to explore the counterfactual reality of what would have happened if the State of Israel were established in Africa and not in Palestine. Apart from the unique visual language and the ambitious scope of a student project, "Republic of Eden" offered a different approach to tackle such a contentious topic in Israel, leveraging speculation as a discursive tool.

This overview of experimental and critical approaches, despite its limited scope, implies that design has a handful of methodologies to apply and further develop. If we adopt the useful view of design as a platform, and leverage it as a fertile ground for social experimentation, we can nurture the development of future dialects that will enrich our practice and our civil imagination, inform discussions and encourage bottom-up actions.

So finally, why offer the rather humble and local concept of "dialect" and not call for a whole new design language? In his recent book "Politics of the Everyday" (2019), Ezio Manzini calls for democratic experimentation that makes use of social innovation in locally distributed projects (Manzini, 2019, 104-105). He positions his point of view and action as *HyperLocal*, emphasizing the duality of this standpoint: "[...] we must recognize the complexity of the world and the relativity of what we can think, trying to navigate the first and accept the second with the limits it imposes" (ibid., ix).

Since what is at stake are unexplored missions for design – practices will need to be developed and distilled, collaboration and ad-hoc alliances will need to be forged, different scales and modes of action will need to be tested – it is reasonable to expect an evolutionary and iterative process. During this process, new dialects will surface; some will become dominant and grow into formal languages, while some will fade and others will always remain local. All these future developments are welcome as long as we, as designers, commit ourselves to speak out the language of design and democracy.

³ Link to an article with images and documentation of the project. The original text is in Hebrew and this link is to an automatically translated version: <https://translate.google.com/translate?hl=en&sl=iw&u=https://xnet.ynet.co.il/design/articles/0,14563,L-3101907,00.html&prev=search&pto=ae> (Original language: Hebrew)

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Towards a pluriversal approach to design

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KEYWORDS | NON-ANTHROPOCENTRIC APPROACH, PLURIVERSALITY, SYMBIOTIC DESIGN, REGENERATIVE DESIGN, CONVIVIALISM

Abstract

We live in artificialized disconnected realities where the greed and the superiority complex of man has deeply deteriorated nature's balance and where biotechnologies have already challenged all major contemporary issues. In today's particularly complex period of transition from a "parasitic society" to a "symbiotic society", designers urgently need to rethink and define a new ecology of practices concerning all life forms being them human and non-human, living or non-living by designing respectful products and actions of care that encourage a convivial, interconnected and plural art of living. In the symbiotic, sensitive and borderless society of tomorrow, the awareness of the uniqueness and the diversity of each individual will contribute to the regeneration of the whole, its resources and creative potential will be articulated to adapt and react locally to the constant environmental changes and to co-create new objects/tools that will be at the same time participative, modest and ingenious.

We live in an age of collective dementia and malaise at all levels, where attention deficit disorder, for example, has become a public health problem. People have lost the capacity of concentrating and listening to others. So how can designers create and actively contribute to a more convivial art of living together if they are not able to listen? Listening and silence are essential elements in the artistic creation of many disciplines. These qualities allow a precise

analysis of the context and ecosystem in which they are supposed to act and allows designers to form, confront and defend their point of view, with the aim of a collective construction of a new relational aesthetic, capable of producing and experimenting the emergence of innovative formats.

Especially in these pandemic times our society's is searching for a new "Art of living, together", or convivialism, as the philosopher Patrick Viveret would name it. An art of living that allows humans to take care of each other and of nature, without denying the legitimacy of conflict but making it a factor of dynamism and creativity.

Designers must be capable of developing an ecology of practices capable of stimulating and cultivating diversity and critical thinking while catalysing the positive resources needed to address the impending environmental, social and cultural catastrophe. In the framework of this future pluriversal society, a newborn community of designers, newcomers, philosophers, scientists and artists would analyse, question and develop new tools for a design of "border thinking". This new form of design will, among others, necessitate deep discussions on the possible and suitable pedagogies that will be capable of transforming border narratives into facts for the construction of a common decolonialized future.

This cognitive turn will require a good dose of humility and will only be possible when we as human beings will have embraced and adopted the philosophical concept of « pluriverse » introduced by the political philosopher William James¹ in the beginning of the twentieth century and more recently developed by the anthropologist Arturo Escobar² and sociologist Bruno Latour³ in the framework of their researches in political ecology. The concept implies the capacity of understanding and assuming that we, humans and non-humans, are sharing the « same earth for all » or that we all belong to « a single common world ». To understand the meaning of pluriverse we need to abandon Western conceptual frames that consider that objects, subjects, and phenomena in general exist as isolated essences, independently of their environment and that create a reality based on dichotomies, anthropocentrism and linearity of time while refusing other ontologies based on synergies and symbiosis. Bruno Latour also specifies the territory on which mankind's future actions should concentrate and

¹ William James, philosopher of political pragmatism, developed the concept of « pluralistic universe » or « pluriverse », considered by Ferguson the most generative of Jamesian inventions. The concept implies the fact of cultivating « a world of many worlds », or as he explains in his unfinished philosophical treatise *The Many and the One* started in 1903, « the universe as the "Collectivism of Personal Lives" ».

² In analyzing the plurality and the reciprocity of the rhetoric of the transition discourse he observes that there are relational worldviews or ontologies for which the world is always multiple, a pluriverse. Escobar, Arturo, *Designs for the Pluriverse. Radical Interdependence, Autonomy, and the Making of Worlds*, Duke University Press, 2018.

³ Latour, Bruno, *The Politics of Nature: How to Bring the Sciences into Democracy*, Harvard University Press, Cambridge, Massachusetts 2004. In this book Latour asserts: « There is no living or animated thing that obeys an order superior to itself, and that dominates it, or that it just has to adapt itself to, and this is true for bacteria as much as lions or human societies».

suggests a shift from the concept of globe to that of « critical zone », that is the thin layer « where everything is taking place ».

To live in the pluriverse, considered as a relational ontology, will imply the fact to recognize and respect the complex and dynamic relationships and interdependences, both human and non-human, within an ecosystem⁴. The pluriverse becomes a permeable entity including in its cosmic organization men, animals, plants and rocks.

To go a step further, as the philosopher Emanuele Coccia asserts in his latest book « Metamorphosis » bacteria, viruses, fungi, plants, animals and men are all one and the same life, they are the metamorphosis of other life forms that preceded them into new forms in order to exist differently. « There is no opposition between the living and the non-living: life is always the reincarnation of the non-living ».

Designers must be capable of learning from those societies that still treat living and non-living elements they use with the respect, care and attention that their otherness requires, not as soulless building materials. We need to re-connect to the materials of life that enrich our ways of producing and living.

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⁴ In 1949 his essay « Thinking like a mountain » Aldo Leopold writes about biological relations of predation and overpopulation by changing the Western anthropomorphic perspective. Leopold, Aldo, *A Sand County Almanac and Sketches Here and There* », Oxford University Press, New York, 1949



DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Design is human, too human

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KEYWORDS | DISCIPLINARY LIMITS, HUMAN DIVERSITY, INCLUSION, NEOHUMANISM

Abstract

In the contemporary scenario in which we are witnessing an extension of the application and research fields of design, sometimes even beyond its own disciplinary boundaries, the human dimension, despite all the limits connected to it, continues to play a central role in product design, environments and systems for collective or individual use, with the aim of optimizing work, productivity, safety and well-being. With the growing awareness of the value of human diversity, in addition to the limits, the potential of an anthropocentric approach to the project also emerges.

In 1878 Nietzsche was striving to look around, but according to him everything he saw was still too vulgar, too tied to man and his mistakes of all time: even the best of men was still "too human". In controversy with the culture of his time and the exaltations of historical progress, he saw the way out of decadence no longer in art but in science, which has its origin and its justification in the needs of man, and whose results are historically transformed into new conditions of life. Among the needs of man, in an Enlightenment vision, Nietzsche also identified knowledge, which in the modern world was assuming an increasingly extended power and role, although not always disinterested and often erroneous: on the other hand, according to his thought, the "error" can be useful to life, and the same advancement of science in the modern age has taken place thanks to some unconscious errors.

Transposing this synthesis of the German thinker's thought to the research fields of design, some questions arise directly:

looking around us today in the design research fields, what do we see? In a balance between errors and good design practices, which ones prevail? And again: in the growing extension of the disciplinary fields, with all the respective possible declinations, what role does, the "human" dimension continue to assume, even with all its limitations?

The current trend in design, even outside the rigid academic fields, is a progressive extension of its disciplinary boundaries and an interdisciplinary approach to research, due to contemporary changes in socio-cultural contexts and technological-productive systems, with respect to which new requests and expectations are generated. By changing the needs and the reference scenarios with which the discipline is called upon to deal, in fact, even theoretical and applied design research is oriented towards other directions: «true design is such only when strong interactions between scientific discovery, technological application, good design and a positive social effect act» (Klaus Koenig, 1983).

The inevitable redefinition of the concepts and methodological approaches of the discipline, in line with the evolution of knowledge, also largely guided by digital innovation, connects it with other disciplines through cross-contamination processes. To the point that, sometimes, the specific contribution of design for the advancement of knowledge appears less transparent, and the discipline itself, adaptable to any socio-technical change, seems to chase or undergo scientific and technological evolution rather than pursue an advancement of its own body of knowledge. The question that arises, therefore, is relative to the overcoming of disciplinary "borders": if on the one hand, in fact, many interesting things have recently developed right at the borders, or beyond these limits, on the other hand it is important to have a "centre"(which in design increasingly assumes the appearance of a dynamic polycentrism) and consolidates it by updating its response to contemporary requests.

On the other hand, unlike technical or scientific disciplines, whose research results are exact and reproducible, design mostly produces random and imprecise solutions, susceptible to subjective interpretation in critical judgment and use. This makes it difficult to evaluate the results of a design intervention, which always affects a variable multiplicity of factors: from those relating to technical reproducibility to those, above all, relating to individual or social use, fruition and consumption (Maldonado, 1961). The numerous interpretative filters that derive from it, in fact, inhibit any attempt at objective analysis of the entire universe of artifacts, material and intangible, attributable to the multiverse world of design, useful for distinguishing good practices from false myths, timeless masterpieces from snapshots meteors.

Probably the biggest obstacle is due to the "human" dimension of design. Beyond any push and temptation to move away from the human factor, in the direction of a virtualization and decontextualization of experiences, it still plays a central and strategic role in the design of products, environments and systems for collective or individual use. In this I am referring both to the physical and functional aspects, and (indeed I would say above all) to the cognitive and sensorial aspects, in turn connected to the social and cultural aspects. So it is

essential to take into account, for example, the elements of pleasantness that each individual looks for in the artifacts he surrounds himself with: the model of the "4 pleasures" (Tiger, 1992) reminds us that good design is such both when it interprets the culture, thought, needs and language of their time, both when it responds directly to the physiological, bodily, sensory, cognitive and emotional expectations and desires of individuals, as well as to social, identity and intellectual ones.

Furthermore, we recently discovered that humans are different: awareness of diversity as an intrinsic characteristic of individuals increases. Over the course of a few decades, we have gone from the myth of standardization and the search for the standard to the enhancement of individuality and personalization, aimed at the inclusion of all individuals in social life, with their limitations but also with unexpressed potential. And if in Nietzsche's Enlightenment vision the "human" attribute carried with it a sense of negativity, today, in the return to a neo-humanism of design (Germak, 2008) more and more attention returns to man, to his harmony with the environment and territories in which he lives, to the link with history and with the contexts in which he relates to others.

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Beyond people-centred design

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KEYWORDS | USER-CENTERED DESIGN, HUMAN-CENTERED DESIGN, IMPACT-CENTERED DESIGN, SOCIAL DESIGN

Abstract

People-centred design approaches (Human-Centred and User-Centred Design) have been the dominant paradigm in many areas of design. Its usefulness is undeniable, however, the major societal challenges we face, and which ultimately threaten life, make evident and urgent the need for its revision. Its almost obsessive empathic concern with users, too focused on human-artifact interaction, aiming to predict and measure the user experience often leads to a disregard of the impacts of design at the ecological and social level, as well as in other time horizons beyond the instantaneous. Many argue that this is undermining the designers' role as an agent of change who, it should be remembered, are ethically and criminally accountable for the consequences of their practice. What are the prospects for the future of people-centred practices and whether they will give way to others, e.g., impact/effect-centred, society/community-centred practices is an open question, which is important to discuss now.

Building a viable future

It is undeniable that the world faces problems on an unprecedented scale that threatens life on this planet, which opens up a whole new territory of action for design. Many in the broad design community have already taken a variety of actions, seeking to solve complex societal problems (e.g., Resnick, 2019, Tromp & Hekkert, 2019). However, disturbing as it may seem, these efforts may be insufficient if we do not recognise that many of these problems

were/are largely the result of design and that, if nothing is done otherwise, the design will be complicit in jeopardising our common future. This is evident in several aspects of design, regardless of the scope of action, namely, in excessive anthropocentrism, blindness to the unsustainability of human action and an almost dogmatic belief in the ability of technology to solve everything, as masterly described in Defuturing (Fry, 2020).

In this context, alongside efforts to address the wicked global challenges, it is encouraging to see efforts in improving the way we think, research and practice design (e.g., Stolterman, 2021).

People-centred approaches

There are several approaches to design inquiry and practice, but, after several years of implementation and dissemination, people-centred approaches, namely User-Centred Design (UCD) and Human-Centred Design (HCD) have assumed an undeniable reputation. An exhaustive analysis of design approaches does not fit in this text, nor its objectives, and should be done elsewhere. Yet, it is important to bear in mind that these are not methodologies, but rather philosophies of doing or researching in design. Thus, countless methodologies can be found under these umbrellas, as many as the fields of action of design, objectives, intentions, contexts and circumstances in which the projects are carried out (Fokkinga, Desmet & Hekkert, 2021). In general, these approaches aim to increase the quality of design, making the project more reliable, less risky and more predictable, producing results that "change existing situations into preferred ones" (Simon 1996, p. 111) and, as such, seek a better future. Recently, however, there has been a growing body of criticism of people-centred approaches, with arguments either for urgent review or simply for their abandonment. Unfortunately, with little or no practical applicability yet.

In common, the UCD and HCD adopt multidisciplinary approaches to embrace the entire user experience, advocating for iterative and participatory processes. Unlike other approaches, e.g., technology- or community/society-centred, people's limitations, needs and expectations are at the centre of the project. Although the difference between the two is tenuous and can be seen as synonymous, I would cautiously say that the differences go beyond terminology, they are also methodological, impacting the choice of methods and techniques, transforming both people's and designer's participation in the project. UCD, which has been very popular in ergonomics-human factors or human-computer interaction related disciplines, tends to focus on optimising human-artifact interactions and to be closer to research-led approaches, with expert mindsets and, therefore, more concerned with testing and validating solutions, in an attempt to avoid undesirable outcomes. On the other hand, HCD approaches tend to be design-led and adopt participatory/generative mindsets (see Sanders, 2006), therefore, with a broader scope, not only by replacing users with humans but also because their vision tends to go beyond the task and be more macro-systemic.

Future ways

According to Mediation Theory, artifacts mediate the way we experience the world and live our lives (e.g., Verbeek, 2011), resulting in a shared moral agency. Hopefully, designers will always seek that no harm shall result for users or society from their practice, and users will also act responsibly. But, assuming that each product, service or system created has an impact on human behaviour, with (sometimes unexpected) repercussions on society, that are irreversible (Stolterman, 2021), the fragility of the contribution made by people-centred approaches becomes evident, as well as the urgency of design practices that prioritise society and other elements of the ecosystem, besides humanity. That is practices whose design object, according to the four elements defined by Dorst (2008), is society. Practices that are community-driven and do not continue to emphasize the role of the designer as a "translator" of people's ideas, arrogantly imposing a colonizing vision, but instead promoting the creative involvement of communities in solving their own problems, locally. Practices that, alongside inductive and deductive thinking, promote abductive thinking and, as such, accept that not everything can be proven according to scientific principles. Practices that, beyond human-artifact interactions, are concerned with understanding the social impacts of design and, thus, understanding the conflicts/dilemmas that may arise when confronting personal and collective interest, or immediate versus long-term impacts and, still, find innovative ways to manage these interdependencies in an ethical way, as suggested by Tromp and Hekkert (2019).

The extent to which the criticisms pointed to people-centred approaches are fair or unfair, and whether alternative practices have the merits we seek/need currently, or if they fall under what many call social design, I cannot say with absolute certainty as this is still an ill-defined field, but I am more than willing to explore them with your help.

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
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A new Design Paradigm

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KEYWORDS | NATURE, NEW MATERIALITY, BIOFABRICATION, DESIGN

Abstract

The world has gone through 3.8 billion years of research and development, with failures and successes, in search of the most effective and affordable solutions. For this reason alone, looking to Nature as a source of knowledge and inspiration is something indispensable to do and which has in fact always inspired our species. In Art Nouveau, between the nineteenth and twentieth centuries, imitating Nature was limited to being inspired by its forms, organic and harmonic, but already in the mid-twentieth century the term "Bionics" was coined, to describe the search for the formal and geometric principles of Nature, transferred to man-made technological systems. In the following decades, Biomimetics inspired creatives and thinkers from all over the world, further pushing the relationship between Nature and the anthropized world and in which Nature was no longer just a morphological or technological reference, but a source of new methodologies and logical principles (Langella, 2003), seeking "the logic of training rather than the description of forms" (Legg, 2017).

Today, technology allows us to reproduce natural systems and bio-fabricate living systems, but is this really necessary? How can we avoid technological blasphemy? What role does design play in this?

The Earth has always represented our habitat and the symbiosis with it has allowed humanity to evolve. However, there are different types of symbiotic relationships: the "mutualistic" symbiosis, in which both species have an advantage; the "commensalistic" symbiosis, in which one species benefits while the other species is unaffected; parasitism, or

a kind of symbiosis in which one species (the parasite) benefits while the other species (the host) is damaged.

Currently our relationship with the planet is parasitic and the transition to a mutualistic symbiosis involves a radical change of perspective, impossible to achieve through incremental changes. A change of paradigm and perspective is needed. In fact, it is necessary to ask ourselves not only if it is possible to safeguard the environment but even if it is possible to safeguard life, in accordance with what was already defined in 1987 by the United Nations Commission on sustainable development, which is such if it satisfies the needs of the present, without compromise the ability of future generations to satisfy theirs.

The paradigm shift asks us to review the logic of extreme competition, and to oppose the law of the "strongest" - according to which only the largest, the most efficient and the most determined survive - the law of "adaptation." Adaptation implies in fact a relationship of interdependence between living beings, energy and materials of the place where they live (McDonough & Braungart, 2002) and interdependence, as opposed to independence, is a systemic concept resulting from the permeability between open systems and environment (Minati, 1998), with the aim of pursuing a new harmonious mutual relationship between humans and the environment. It is therefore evident that the human-centred or user-centred design approach fully reflects the anthropocentric perspective and how this today turns out to be an obsolete and destructive approach. As Caffo (2017) says, we must move from a "human-centric", or rather self-centred, approach to an allocentric mentality, moving from the centre to the margins and shifting our attention from individual and short-term interests to a collective, systemic vision. and long-term (Wilson, 1999). This is possible by re-appropriating our skills and collaborating with the other disciplines, but by designing first of all (Lucibello, Montalti, 2019). This is why design has moved on to reconsider the active collaboration with Nature, as the only possible solution for a harmonious and symbiotic coexistence, dissolving the boundary that for a long time had separated Nature and Artifice and even considering it as Co-worker, that is part active and circular design process. This does not represent a return to a non-technological era, but on the contrary represents a necessary re-codification and de-codification of the laws and structures of nature and matter, to push their properties towards increased applications and aesthetics (Lipps, 2019). Only in this way can design become a tool of repair instead of a tool of destruction (Paola Antonelli, 2019), although this obviously does not mean that design is the definitive panacea for all ills, but simply means that we can reformulate our priorities and to choose and plan the future we want for ourselves and for the planet (Mc Quaid, 2019).

After decades of environmental crisis, one of the possible and most interesting alternatives that we face for the survival of ourselves, is to embrace the concept of limit and not of overcoming it at all costs. The awareness of development in a limited world brings with it full awareness and acceptance of the extent of the environmental problem that has arisen and fuelled by problems such as the excessive and indiscriminate use of plastics and

microplastics, disposable products, fossil origin, planned obsolescence and electronic waste, pollution, synthetic dyes and the release of harmful chemicals into the environment.

The new generation of designers is therefore reinventing itself, proposing disruptive and radical approaches that reconsider the project in a circular way also through a particular focus on processes and on the "temporality" of materials (Agapakis et al., 2020), which paves the way for a future characterized by alternative production-consumption systems. Once we have discarded the idea that the world is a mine at our disposal from which to freely extract resources to the bitter end, finally today we can turn our gaze elsewhere, towards new materials and resources in pursuing an "alternative abundance" (Smiths et al., 2020). That is why it is now important to look at the waste of current production processes as a valuable resource, experiment with new types of agriculture with the cultivation of algae, fungi and other natural systems, and stimulate research to find a possible collaboration with microorganisms for the cultivation of materials organic or even more to colour them. The principle is to understand and adapt to the functioning of the natural world of which we are part, through cyclical and circular processes, thus establishing symbiotic relationships between social and environmental systems.

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Designerly Ways of Making

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**KEYWORDS | HOMO FABER, MAKER MOVEMENT, SOCIO-TECHNICAL SYSTEM,
ROBOFACTURING**

Abstract

Making is an important part of Design Cultures as it refers to the creativity that produces tangible objects. The Design Culture of Making, particularly for processes, manufacturing and post-industry presents a golden opportunity to share experiences about making. Afterall, creative processes are often experiential not just physical but also virtual. The introductory paper starts with a more generic view of Making as Doing: homo faber as the basics of human nature of creating, building and doing. From this, the focus progresses to a more systemic thinking, underlining the importance to consider that objects interact and create socio-technical systems of production in place. In the third part, considerations are sought for 3D Printing technologies that allow the Maker Movement to establish and create its communities, with an eye on what will happen next, through the final paper on Operating and Doing through robots that will accompany us for the next decade(s) of industrial making.

Making as Doing: *Homo Faber*

In the timeless and spaceless digital world of today, making still distinguishes the homo faber: Design is more and more seen as a process rather than a result, yet the result is the

product we use. In *Liquid Modernity* Zygmunt Bauman points out the formlessness of our life and becomes precisely "fluid", where time has been reduced to zero by the technical possibility of instant information everywhere and communication between entities around the world, which in this way also reduces the space to zero. What we have lived in the last two years shows exactly this phenomenon, e.g. you stare at a screen to meet people from the other side of the world and to discuss anything. Design has also shifted far into areas where immateriality is at the core of the project, such as services. However, we live in a material world, we sit on a physical chair and can touch the monitor that we are looking at. Obviously, the production of objects does not stop in a more digitalized world in which the ideas of Industry 4.0 are increasingly coming to fruition. In the Triad of Design, Craft and Maker, the common ground of creating by doing connects these three professions when designing relates to designing products. Handicraft is the oldest practice that is sometimes raised for manufacture when production requires a more complex system of realizing objects (e.g. glass, porcelain, etc.). Technologies such as the use of steam, mechanical inventions, and chemical discoveries enabled the industrial revolution to generate new modes of production. But today, in addition to craftsmen, we also have makers who make products. Both of these may be endorsed by designers to enter the market. And that makes a difference in the entire production chain.

"The shape of the twenty-first century's industrial structure will be very different from the twentieth century's. Rather than top-down innovation by some of the biggest companies in the world, we're seeing bottom-up innovation by countless individuals, including amateurs, entrepreneurs and professionals. We've already seen it work before in bits, from the original PC hobbyists to the Web's citizen army." (Anderson, pp. 31-32).

What Chris Anderson celebrates in his book "Makers" is the analogue revolution of the individual manufacturer who has the chance to bring about a change in the economy by producing "self-made" items. In terms of rapid prototyping technologies, he compares them to the spinning jenny of the cotton revolution in England (Anderson, p. 29). But here Tonino Paris is opposes, "that makers will not substitute the industrial production in order to satisfy the individual needs of many. At the same time, they are not the new craftsmen, those kinds of craftsmen who made the Industrial Revolution happen generating a new way of production and products" (Paris, p. 1).

The homo faber, who is understood as a designer, craftsman or maker, therefore remains beside the mass production and if possible, supplies the large production machines with new elements and ideas. New Technologies were meant to support mass customization as a great opportunity for makers, while as integrated, easier production for artisans. And for designers, the use of rapid prototyping facilities enables quick evaluation of new ideas, improved quality of company presentation and even, in line with Makers and Crafts together, realizing their own products for sale. In other words, Homo Faber is not only the one who designs, makes and uses a particular tool to do it, but also the one who structures knowledge and skills in this type of manufacturing intertwining that:

- constitute a new base of material manufacturing;
- constitute a progressive relation between man himself and the so-called product / tool;
- constitute an apparently immaterial fabrication that will form the core for others.

Homo faber in this seamless performative capacity is, in fact, the tireless builder of a parallel world flanked by a world apparently already given (Giannino, parte 3).

Regenerative Socio-Technical Systems of Production

Industries must reinvent themselves if we want to re-industrialize the cities. Digital fabrication is disrupting the local life cycle of products; transforming how people design, develop, produce, deploy, use and recycle. These disruptions, in turn, are transforming so-called linear processes into circular ones; creating new pathways for reducing environmental impact; and promising a return of renewed industrial production to cities. We need a paradigm shift from globalised, and centralised mass-production, to open, circular, local and distributed on-demand digital manufacturing. In such a paradigm, communities of production, understood as ubiquitous socio-technical systems of production (Nachtigall et al., 2020) can become key transformational agents for social, economic and ecological regeneration (Wahl & Baxter, 2008).

It is not only a design object that impacts society. How that object interacts with and creates socio-technical systems of production in place must also be considered. Being involved in the actions of conceptualizing, developing, sourcing, producing, distributing, selling and end-of-life of a Product Service System (Tukker, 2004) can have a profound impact on a city. This impact depends on who is involved in each step of the process: who finances it; or provides digital infrastructure; where materials are sourced; where the product is produced, sold and used; and where service touchpoints are deployed. Each of these actions can transform the physical space, the economy and the community in a neighbourhood. Socio-technical systems of production have the potential to reshape a city's infrastructure, identity and everyday life. They can support the transition from the current extractive economy to a more sustainable regenerative economy based on local, open, distributed and circular socio-technical production systems.

Situating prototyping and material explorations in a specific place can become a way to connect and integrate local crafts, resources, people, and infrastructures (Nachtigall, Tomico, & Wakkary, 2019). The stance creates sustainable material flows to reinvigorate a city's local production which can result in new redesigned local products, tools, or processes.

In many cities, local craftspeople rarely collaborate with other craftsmen, designers, customers, public institutions, companies or other entities in the neighbourhood in which they work or live. Thus, making them vulnerable to changes in society and in the economy.

Digital communication and fabrication technologies provide opportunities to establish local connections, collaborations and associated services when designing, producing, buying, selling, promoting, distributing, teaching, sharing knowledge, utilizing a space, or any other activity done in the neighbourhood.

Socio-technical systems of production can be combined, repeated or related to collectively transform a neighbourhood, a city, a country or the world from the bottom up. Mapping these ubiquitous socio-technical systems locally, can assist in reflecting on that city's emerging and future production possibilities, taking into account materials, activities, actions, infrastructure, spaces, organizations, institutions, companies and non-human agents.

3D Printing and the Maker Movement

3D Printing, also known as Additive Manufacturing, has grown from being only accessible by an exclusive number of manufacturers in the 1980s, to being adopted by a much more widespread manner today. This has happened mainly due to the shift from a focus on high-end industrial manufacturing to more user-friendly, accessible, low-cost and compact desktop printers. This occurred in 2005 when the RepRap or a “replicating rapid prototype” machine was developed by Dr Adrian Bowyer at the University of Bath in the United Kingdom, which was then followed by 3D Systems releasing the first 3D Printer that cost less than \$10,000. Around the same time between the early 1990s to 2000s, other layer-by-layer technologies gained traction, leading to seven main 3D Printing processes being developed by companies, including binder jetting, directed energy deposition, material extrusion, material jetting, powder bed fusion, sheet lamination and vat photopolymerization.

Fast forward to 2009, the patent for material extrusion, more commonly known as Fused Deposition Modelling (FDM) expired and the prices dramatically dropped from \$10,000 to less than \$1,000 with a wave of companies such as MakerBot and Ultimaker releasing desktop machines that are generally easy to use and maintain. As these commercial patents continue to expire year on year, they present an opportunity for the open-source community. In parallel, Computer-Aided-Design (CAD) software saw growth from the early 1960s where numerical control programming tools such as those developed by Dr Patrick Hanratty for General Motors. Moving forward, the graphic user interface became much more intuitive and simpler to use, capitalising on the availability of more powerful computers and processors. Moving forward, CAD vendors also embraced open-source 3D modelling software being free to use which helped to push the growth of the 3D Printer maker movement even further.

Looking closer inwards, the creative community has tremendously benefited from this maker movement. Today, these tools of trade are much more accessible, benefitting STEAM (Science, Technology, Engineering, Arts and Mathematics) and this will be further integrated within education. The paper by Friesike, Thiesse and Kuk published in Communications of

the ACM (2021) about 'What Can the Maker Movement Teach Us About the Digitization of Creativity?', interviewed makers about why they started doing projects. They found that these creative processes often start because of two reasons - through a problem or a curiosity trigger. More importantly, they found that the digitization of the creative process not only encouraged frequent interaction with others, but also leads to an incremental and iterative development process, resulting in a much better problem-solution-fit. As open-source digital technologies that support the maker movement become even more widespread through tablets and mobile phones, instantaneous interactions and frequent exchanges between people would benefit, supporting the notion of co-design and co-making. This is highlighted by Tosi (2019) who reported that participatory design and co-design are seen as enablers for product and service innovation.

What would be next for the Maker Movement? For this movement to thrive, communities play a vital role. For example, Cumulus as a global association that aims to foster art and design education and research, seeks to deliver a forum for partnerships, transfer of knowledge and best practices. The Cumulus conference Roma in 2021 has a specialised track for the Design Culture of Making, particularly for processes, manufacturing and post-industry and this presents a golden opportunity to share experiences about making. Afterall, creative processes are often experiential not just physical but also virtual, and the use of 3D Printers and CAD will surely stay with us for many years to come.

Operating and Doing through the Robots

Contemporary design has to deal with new problems, such as the use of new technologies resulting from the digital revolution and the transition from a phase of mechanization of production processes to a new human-machine relation. The binomial "human-machine" redefines productive collaboration models by migrating from the "task-centric" to the "human-centred" model, definitively revolutionizing the manufacturing industry; it integrates precision, repeatability and uniqueness thanks to robots with cognitive abilities of flexibility, dexterity and problem-solving capability belonging to the "human".

A new paradigm is introduced to the "robotfacturing" (Siciliano, 2021) manufacturing, and it is a rationalization of the time and of the cost of assembling the products by rethinking the whole process starting from the design phase, which must be studied in a different way between a manufacture, a robotfacture, or something hybrid.

The world of robotics attracts the operational dimension of the project through the convergence of mechanics, biology, and electronics. The human, in fact, returns to the centre of attention of the project with a different interest than in the past, which is aimed at always improving its conditions, to overcome its physical limits. Robotics, today, is an evolving science capable of combining by "operating" in applications belonging to different contexts - in which heterogeneous subjects cross each other in a fluid way, including design, linguistics, mathematics, psychology, electronics, physics, computer science, biology,

mechanics - through the development of complex devices capable of wide-ranging "sensitivity", tactile, visual, sound, olfactory, endowed with cognitive and decision-making abilities. The "sensory-motor" processes allow fluid communication between human and machine, so the behaviour of the robot is increasingly intuitive and interpretable.

Human-friendly machines, elastic and gentle to the touch and the contact with humans, capable of using our tools and furnishings. Equally promising is the use of these machines in medicine, as cognitive tools in diagnostics, surgery, in a multidimensional interactive relationship - visual and tactile - with the human body.

Flusser (2003) already imagined a future in which, thanks to robots, everyone would be connected to everyone, always and in all places, by reversible cables and through these cables (as well as through robots) they could transform and use what they would be able to find. Or even, he spoke of the robot-man of the future as a new homo faber who becomes homo sapiens, because it understands that producing is equivalent to learning, that is, to acquire, generate and transmit information.

The designer will be at the centre of "collaborative production" based on the design of interfaces and interactions, on the flexibility of robots and processes to develop and test the co-robots that will be placed side by side with humans.

It will be necessary to configure interactive technologies and solutions, in which robots can intuitively adapt to the human environment and can recognize gestures and expressions, objects and situations. To make these applications feasible, it is necessary to achieve a high level of performance in which the humanoid must recognize the user's intentions and use behavioural models to predict and avoid the contact when it is not necessary. (Cingolani, 2015)

This path, which may be considered inevitable, still requires a lot of effort from scientists and engineers in designing forms of intelligent robots equipped with bodies suitable for moving in complex environments, to interact with a world designed and organized on a human scale (Mazzolai, 2019).

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
JUNE 08.09.10.11, SAPIENZA UNIVERSITY OF ROME

Regenerative socio-technical systems of production

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**KEYWORDS | DIGITAL FABRICATION, PRODUCTION, CIRCULAR ECONOMY,
ECOLOGICAL REGENERATION**

Industries must reinvent themselves if we want to re-industrialize the cities. Digital fabrication is disrupting the local life cycle of products; transforming how people design, develop, produce, deploy, use and recycle. These disruptions, in turn, are transforming so-called linear processes into circular ones; creating new pathways for reducing environmental impact; and promising a return of renewed industrial production to cities. We need a paradigm shift from globalised, and centralised mass-production, to open, circular, local and distributed on-demand digital manufacturing. In such a paradigm, communities of production, understood as ubiquitous socio-technical systems of production (Nachtigall et al., 2020) can become key transformational agents for social, economic and ecological regeneration (Wahl & Baxter, 2008).

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Design Culture of Multiplicity. Through Gender, Pluralism and Diversity

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KEYWORDS | MULTIPLICITY, GENDER, PLURALISM, DIVERSITY, INCLUSIVE

Abstract

The paper analyses the meanings of the multiplicity concept and introduces how design works in the three aspects of Gender, Pluralism, Diversity. The notion of multiplicity has achieved close attention mostly through Gilles Deleuze's philosophy, which explored this concept and its ramifications also working with Félix Guattari on their famous book *A Thousand Plateaus* (1987). As the territories in which design is applied are growing, the radical changes – ecological, social, economic – that we are facing need interpretative and designing tools that only multiple and original points of view can provide. They need to balance the roots with the dispersions, fronting the emergencies.

Today, multiplicity is a concept closely intertwined with the very idea of design. According to the literal definition, the term multiplicity indicates a wide variety and has taken on a particular meaning since the exploration of the concept by Gilles Deleuze (1925-1995) and Felix Guattari (1930-1992). A multiplicity has porous boundaries and is defined provisionally by its variations and dimensions. The two French philosophers redefine as multiplicity many of the key terms of Western political theory, including race, class, gender, language, state, society, person and party, aiming to make political thought more nuanced and generous towards difference. A multiplicity is, in the most basic sense, a complex structure that does not refer to a previous unity, however to have multiplicities it is not enough to add

dimensions: instead, it is necessary to subtract the one that would give unity to the multiple.

We can recognize in this concept a radical paradigm shift with respect to the same idea of unitary and immutable Aristotelian identity, and it is a concept that we find again at work in those new directions that the practice of design itself is investigating today.

The global challenges that design is facing today - the climate crisis, social and gender inequalities, migration, pandemics — make it clear, to those who do not want to stop at a superficial and conformist reflection, the need to design a sustainable future by going beyond the established patterns: in other words, by appealing to different and multiple visions. As in the “Problem of the 9 dots”, the only solution in drawing a single line without removing the pencil from the paper is to get out of a limited vision and embrace a wider point of view.

The field of application of design in recent years has expanded considerably compared to traditional product and communication projects, think for example of the development of the design of intangible elements such as service design, user experience or privacy, making it clear the need for an increasingly multidisciplinary approach (Frascara, [2003] 2019). From an epistemological point of view, it may therefore be useful to connect research on the subject of design to a broader cultural debate, certain that this effort can profitably enrich, on the one hand, the culture of design and, on the other, bring the experience of design thinking to other latitudes of culture. It is the principle of consilience, a convergent vision of research across multiple branches of knowledge that consolidates the validity of its arguments by virtue of the diverse and independent origin of the contributed knowledge.

One of the most significant elements of this process is the opportunity to integrate a certain amount of “otherness” within a system that a traditional view would instead like to be absolutely impermeable. We have to consider alterity and alteration, says the philosopher Francesco Remotti (2010), as two values on a par with coherence and stability in the conformation of identity, and, with a model that we can easily transpose from the philosophical field to the design one, we see how more and more often we find examples of introduction of “external” elements into the design process, whether they are based on algorithms (generative) or on the contribution of non-experts (co-design, participatory).

In fact, as the professional boundaries of design continue to expand, the number of traditional design courses and activities such as fashion, industrial product, interaction and graphic design along with less familiar forms such as service and organizational design increases so that, says DiSalvo, “as new fields of design emerge regularly and the range of practices within the fields of design constantly change, more and more people identify themselves or are identified by others as designers. So what are we talking about when we talk about design?” (DiSalvo, 2012, p. 14).

The global markets assume design as a tool for their success. The design discipline includes a rich diversity of minds, including those ones considering design as a tool to address

contemporary emergencies. They are transforming the understanding of the relationship between nature and culture, building bridges between the various forms of knowing and ways of being embedded in the multiplicity of practices of social actors worldwide.

Today, faced with the realities of a world transformed by a changing climate, humans have to deal with the irrefutable need to tackle “the design disaster that development is, and hence to engage in another type of elimination design, this time of the structures of unsustainability that maintain the dominant ontology of devastation. The collective determination toward transitions, broadly understood, may be seen as a response to the urge for innovation and the creation of new, non-exploitative forms of life, out of the dreams, desires, and struggles of so many groups and peoples worldwide. Could it be that another design imagination, this time more radical and constructive, is emerging? Might a new breed of designers come to be thought of as transition activists?” (Escobar, 2018, p. 6-7).

As Arturo Escobar, along with many others, claims, design needs to be reoriented from its dependence on the marketplace toward creative experimentation with forms, concepts, territories, and materials, especially when appropriated by subaltern communities struggling to redefine their life projects in a mutually enhancing manner with the Earth (Escobar, 2018, p. xvii).

1. Gender

The concept of multiplicity is related to that of minority or majority. Generally, the majorities are quantitative multiplicities, while minorities can also be quantitative multiplicities if their properties are clear and distinct. More commonly, however, minorities are qualitative multiplicities. According to Deleuze, politics is always composed of a majority, minorities and minority-becomings (Deleuze, Guattari, 1987, p. 291). Democracy requires the government of majorities, but a politics of difference also welcomes and respects minorities, that is, ideas, actors, positions, practices and unfamiliar parties. The politics of multiplicity radicalizes liberalism by extending receptive generosity towards elements that perplex or transform social norms. Such an example can illustrate the stakes of Deleuze's project. Male and female are quantitative multiplicities, recognized by biological distinctions and by assigned roles and cultural norms. Deleuze supports the feminist project of making females equal to men while asserting that this duality hides much of the complexity of the gender. Gender is a qualitative multiplicity that encompasses genetic variation, parenting styles, social roles, cultural norms, charismatic friends, music and public policies (Tampio, 2010). Under a simplistic distinction between male and female flows a plurality of identities. A politics of multiplicity becomes important in this sense, and design contributes to the cultural scenario of these contents.

Here we can see how design has had a considerable amount of responsibility beginning with the existential contradiction that design brings with it. Born as a problem-solving profession

to support industrial production and product advertising, design has been actively involved in the construction of society's consumerist values and in propagating gender stereotypes and the values of a fundamentally patriarchal and machista society. The language of advertising has represented in this conservative politics of society one of the most characteristic elements of design as Sheila Levrant de Bretteville already pointed out in the early Seventies advancing the need for a design that includes the female perspective going beyond gender clichés: "In advertising, women are described as, or permitted to be, laughing, crying, doubting, making mistakes, hesitating: women alone are seen as nurturing or as providing emotional support for children and men. When, for example, a company presents itself in a service capacity or as particularly accommodating, it uses a female figure and reinforces traditional attitudes by this symbolic imagery. The iconography for men is equally rigid. Men in work situations are shown as serious, decisive, professional, assured. No emotions, no fantasy; the few moments of relaxation or emotion permitted to men are relegated to leisure and the home" (Levrant de Bretteville, 1973, p. 4).

Today we are aware of how design represents a powerful political agent able to activate, with its enabling tools, social transformation and innovation and that for this reason aspects such as sexism, classism or colonialism cannot be tolerated in any of their connotations within the same discipline. Designers have the responsibility, through their design choices and therefore political, not to perpetuate the oppression and violence of society against certain segments of the citizenry, aware that "assuming that the [white, cisgendered, male, European, etc.] gaze is "neutral" or "universal" is not only narrow-minded, but also profoundly reactionary" (Vieira de Oliveira & Prado de O. Martins, [2015] 2019, p. 377). Design alone cannot, of course, change society, but with its contribution to the visible construction of social values it is able to stimulate a shift in thinking about critical issues so, we can say, it's time for design to develop inclusion by going beyond binary identities.

2. Pluralism

The emergence of the social design discourse – with all its different conjugations: "social design", "social impact design", "socially responsible design", "design for social innovation" (Resnick, 2019), recalls the connection established by pioneers such as Papanek, Maldonado, Yona Friedman, between design, ecology and social development. This has brought to the attention of designers those instances of the research for an ethical and sustainable design path – as opposed to a vision aimed exclusively at commercial purposes – that has been spreading since the 1980s through those participatory and responsible practices that give rise to the ethical turn of design. Design strategies progressively include planning for the ecological and social implications of the entire life cycle of objects, from production to transport, distribution to consumption and disposal. Design assumes a role as the vector of a revolution in our lifestyle, capable of reversing the course of the current development model, based on permanent innovation: design as an anti-industrial project (Quinz, 2020). At the same time, with the spread of digital technology, the world becomes information, the

object becomes an interface, and service design is evolving. As Bruce Mau explains, “moving from product design to transition economies, from graphic design to information economies, design is reconfigured as an interdisciplinary, distributed, plural and collaborative activity” (2004, p.16). By defining infrastructures and interactions, design increasingly embodies a form of ‘plural’ design, which conditions our behaviour, shapes our consciousness, and defines the spaces and times of our existence and relationships.

In the “network society”, as defined by Manuel Castells, all social structures and activities are organised around digital networks and information flows. The social meaning of space and time is thus radically changed, transferring social practices of sharing from the traditional “space of places” to the “space of flows” (Castells [2010] 2014, pp. 472-473).

Thus, the enabling capacity of design appears decisive in guaranteeing pluralism and the very status of citizenship through access to information networks. In this process, DiSalvo clarifies, design cannot avoid expressing a critically agonistic component to the state of things: “the notions of agonism and agonistic pluralism provide grounding for the idea of democracy as intrinsically contentious and thereby also provide a basis for understanding adversarial design and what it means to talk about design doing the work of agonism.

Agonism is a condition of disagreement and confrontation – a condition of contestation and dissensus. Those who espouse an agonistic approach to democracy encourage contestation and dissensus as fundamental to democracy” (DiSalvo, 2012, p. 4).

These tensions reveal the character of the social practice of design, its symbolic impact, as well as its functional impact: more than a technique, design appears as a tool for a new political imaginary: “what is put forward here is a project of bringing plurality/difference to inform a theory and practice of transformative politics, economy, designing and culture centred on responding to the imperative of sustainment” (Fry, 2010, p. 164). In this way, by gaining visibility, they reveal a state of crisis in the discipline and push towards a definition of design that is both more inclusive and more pluralist.

3. Diversity

Diversity concerns the range of human differences, including race, ethnicity, gender, identity, social class, physical ability, age, religion, ethical values system, place of origin, political beliefs, professional, attitude and so on. Diversity means to recognize the individual differences, to understand that each individual is unique. Diversity involves moral reasons of equity and inclusivity. Diversity is about human welfare. Diversity allows having a transversal view, opening our eyes to several and various possibilities. It moves beyond simple tolerance to embracing and celebrating the rich dimensions of multiplicity.

It is a dimension, that of diversity and hybridity, which enriches the project: “we frequently find corruption more interesting than purity”, as Milton Glaser used to say provocatively (quoted in Heller, 2020). It is a design that becomes increasingly “relational”, according to Andrew Blauvelt’s definition. A design that tends “toward the reduction of subjectivity in the

design process or transfers the subjective to others in the network of relationships” (Blauvelt, 2008).

Diversity accompanies the transition processes of product design from large-scale industrial production to small, self-produced series, which are characterised by being continuous and fluid but always different. Similarly, diversity manifests itself in communication design with the transition from universal, static logo images to generative design, creating images that are always recognisable, and in a sense the same, but always different.

Lev Manovich with the concept of deep remixability introduces a revolutionary transformation in visual culture: hybridisation not only at the level of content, but also at the level of techniques. Through software and algorithms, media can share the same grammar, the same language. “The result of this hybridization is not simply a mechanical sum of the previously existing parts but new species. This applies both to the visual language of particular designs, and to the operations themselves. When an old operation is integrated into the overall digital production environment, it often comes to function in a new way” (Manovich, 2007, p.79).

Hybridisation is the process of including diversity within the project. The hybrid figure of the posthuman (Braidotti, 2013) — and related concepts, such as nonhuman, multispecies, more than human, transhuman — expands our understandings beyond the boundaries between the familiar binaries of human and nonhuman (in both meanings of human/animal and organic/inorganic) and poses the challenge for emerging design practices, to simultaneously pursue the same goal of equality and justice for both humans and nonhumans.

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New Normal

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KEYWORDS | HEALTHCARE, FUTURE, EDUCATION, SOCIAL TRANSFORMATION

New roles and responsibilities

An important role of design as discipline and for design education is to 'Improve the quality of life'. But what does this mean in a time when 'life' itself is in danger and what are designable qualities in this respect? What are qualities with a restricted freedom to travel, work, enjoy etc.?

As a discipline, design is unique because it is both: creative and exploratory, while also being pragmatic and innovative. The practice of design includes observing things, states of being and processes, and also means asking fundamental, clever, critical questions in order to arrive at unexpected solutions. Here, 'clever' means the ability to propose intelligent solutions by acting appropriately in concrete, individual cases, taking all relevant factors and the situation of those affected into consideration. In other words: it means taking into account the current state of the society, and acting accordingly to the circumstances at hand. The focus is here not 'just' on designing artefacts, information, services, etc. (though this continues to play a crucial role within design) but on designing quality of life, relationships and states of being.

In contrast to business-oriented design tasks, in these cases there are often no briefings, no clients, and no manufacturers with a market to satisfy. Even the 'use' of a design has to be re-defined here, along with society. Problem definitions and goals are thus often neither clear nor unambiguous. Designers who want to work in these fields have to learn to deal

creatively with these imponderables, separating the important from the unimportant, and developing successful methods on their own. They have to observe whether and how the quality of life can actually be altered. This also means engaging directly and personally with social conditions. Designers are often confronted with complex, multifarious global challenges that have a local impact, and therefore a design education, tackling these challenges is necessary.

New normal?

The last 1.5 years brought new ways of communication, of collaboration, of social interaction, new modes of teaching and learning, new formats of international and intercultural projects. Design creates future opportunities, and this particular evolution has led to remarkable results. Our community aims to share and discuss experiences and expectations about the opportunities we see for the future of design and the future of design education. The most important question: does this massive and global Covid Pandemic have an impact on our disciplines and the education, and what might that be? We face some drastic changes in everyday life, in our profession and education. Since that, we are somewhat humble with ourselves, our desires, needs and ambitions. Within the restrictions and limitations, Covid brought a sort of satisfaction and un-demandingness that occurred in many societies; making simple things valuable again. This could be also seen as an upfront for the design culture: comprehend the simple, the sustainable and the resilient as a quality for life. Undoubtedly: some aspects of design and design education will change forever after the pandemic has been mastered. And we are not only talking about digital and distant learning as the 'New Normal'.

The New Normal has for many highlighted global and regional inequalities that continue to exist; access to education, healthcare and basic human needs (or rights) have all been tested over the past 1.5 years with old established systems under severe pressure. The Covid Pandemic reminds us that no one is entirely safe from infection and risk, irrespective of privilege. But what is clear as we emerge from the pandemic is that wealth gives faster access to vaccinations, healthcare and a return to 'old normals'. After all of our learnings do we really wish for a return to systems that maintain global inequality and privilege of rich over poor?

One of the core tenets of 'good design' has always been about the 'democratisation' of products and product service systems, about realising sustainable futures for humankind and the planet perhaps it is finally time for these principles to really find their place in 'the New Normal'?

Perspectives on better life and design futures

But what exactly is a 'better life' in respect of the post pandemic era? And what are perspectives on design futures?

The fact that design itself often merely intensifies societal differences (or at least makes them clearly visible) than it balances these, has been a particularly painful aspect of this overall realisation. This critical assessment of global living circumstances and their impact led to an endeavour to change the state of things to achieve 'not more—just better.' Victor Papanek began to look at 'real world problems' from a design perspective, thereby demonstrating the necessity of not just thinking about what and how we design, but above all for whom (and for whom not). Lucius Burckhardt, by contrast, was concerned with what is 'invisible,' namely the social impact and the results of design. He argued that every act of design (both 'good' and 'bad') has an impact on society. It changes it, steers our behaviour, demonstrates structures of power and ownership, and can be more powerful than what is actually visible. Function and aesthetics are merely a thin, visible sheet of a surface, beneath which design exerts its impact on society and human behaviour. Burckhardt described how designers are either knowingly or unknowingly engaged in designing relationships and actions, not form or function as they tend to think; he also posited that they generally do this without reflecting on it.

This acknowledgement: designers contribute more than they imagine to our quality of life (in both a positive and negative way) is thus hardly new. Whereas the impact of earlier design generations was still limited, due to the political, financial and technological opportunities at their disposal, today's global flows of information mean they have access to knowledge about living circumstances and -conditions in real time. Awareness, discourse and action can all be triggered across a worldwide sphere of influence, using simple, cheap means. Conditions in the world—also seen from the perspective of individuals or small groups - can be experienced as something that can be changed, and thus also 'designed.' No large scale, centrally run campaigns are needed to exert a major impact; even small-scale 'injections' by individuals can achieve this.

The same is true of communication. The Internet carries knowledge, findings and new concepts to all parts of the world, where they are then used, adjusted, adapted and passed on. Many designers have made these hybrid strategies of action and communication their own. This often goes hand in hand with a rejection of any claims to authorship or copyright. Strategies for sharing knowledge and results are becoming ever more important, and the significance of authorship is dwindling. Innovative ideas are being 'shared' or are even made available as 'open source,' and are tested and further developed.

This easy access to information is often the beginning of a 'better life'. As a discipline, design is unique because it is creative and exploratory, while also being pragmatic and innovative. The practice of design includes observing things, states of being and processes, and also means asking fundamental, clever, critical questions in order to arrive at unexpected

solutions. This means the ability to propose intelligent solutions by acting appropriately in concrete, individual cases, taking all relevant factors and the situation of those affected into consideration. In other words, design futures means taking into account the current state of things, and acting according to the circumstances at hand.

The focus is here not 'just' on designing artefacts (though this continues to play a crucial role), but on designing quality of life, relationships and states of being. There is thus much which lies outside their sphere of influence, though some things are simple to change. The term 'human-centred design' describes the concept exactly - which is, namely, to make the human being the focus of one's attention in a given situation and in a given environment; 'social design,' on the other hand, tends to focus on designing social circumstances and conditions.

But neither 'human centre-design' nor 'social design' approaches are enough to successfully confront the uncertain challenges of the future. We also must recognize the need to orient design towards the common good of the planet, promoting in its community the skills and values that allow future designers to become agents of change and transformations, with the aim towards more sustainable and inclusive horizons.

The future of design education faces the challenge to develop new tools, knowledge, methods and practices that allow to lead the transformation for more sustainable and equitable futures, and recognize that we live in a fast changing world, where complex problems must be solved under different logics and perspectives from those that have created those problems.

The traditional system of references provided certainties to societies - and that informed the discipline of design - are currently challenged by increasing the levels of complexity and uncertainty in interrelated areas such as the environmental crisis (Antropoceno), social transformations (inequality, crisis of democracy, institutional distrust, etc), digital and technological revolution (artificial intelligence, nanotechnology, quantum computing, biotechnologies, internet of things, robotics, datification, etc.) among others.

In order to face these planetary challenges we should ask ourselves: what roles are schools of design called to fulfil as a space for training, transformation and generation of knowledge? How can the practice of design become a catalyst for social- and environmental transitions that contribute to co-designing more sustainable and fair relationships, products and worlds? What necessary knowledge and tools that the practice of design can make available for the construction of new ways of relating in and with the environment, opening paths towards more ethical and responsible futures?

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New Communities

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KEYWORDS | MATERIAL CULTURE, TERRITORY, COLLABORATION, EXPERIMENTATION, EXPANDED WORLD

Abstract

Design for territory is evolving beyond local realities by taking up an expanded world that is to be reinvented through a multidisciplinary discourse on sustainable ties with resources, the material culture linked to them, and the real dimension of our presence on the planet.

The relationship between design and territory is gaining traction in scholarly debates worldwide: arguably, the notion of territory has moved forward and, though still keeping a local foothold, it has expanded in a considerable way. In particular, it has blurred physical and cultural borders and taken on an expanded world as a field of action, to be rediscovered and reinvented through the agency of "several hands" (designers, artisans, anthropologists, philosophers, ...) on issues that include the relationship with resources, material culture, and the very dimension of our presence on the planet.

Through these various activities (seminars, workshops, participatory planning activities, design competitions promoted by local authorities ...) the "Community" is strengthening itself as the future dimension of a "new form of craftsmanship", no longer upholding common territorial roots. Rather, it aspires at establishing a physical or virtual platform in which to "make" and "create" underpinning a shared past and mapping out a sensible vision for the future.

In this vein, ancient material culture becomes an opportunity to rediscover, for designers and non-designers alike, forgotten "ways of doing." These, fusing in turn with new practices

in a spontaneous and uninhibited (but sustainable) way, bring to bear design discourses with multiple voices and multiple languages, spanning different fields and technological paradigms, and ultimately generating complex, unexpected blends worthy of further research.

Thus, the dimension of experimentation and sharing of experiences is the pre-requirement for projects that build on love for the land and its culture in ways that are replicable, exportable, and applicable to a new sense of concern for our planet and its endangered resources.

Designing and producing as parts of these Communities are both acts of love for one's land and for the Earth writ large, as they unlock collaborative protocols of shared rediscovery and reinvention of traditions that unite us for the future.

In this context, frail new traditions look at the past with respect and seek to revive old practices from oblivion, renewing languages without renouncing the seduction of repetitive perfection. These new traditions are the result of the work of meta-territorial communities born for mission (Universities), for opportunity and for the occasion (a competition, for example); they often work online and are "live" for practical activities in the field, be it workshops open to all, or workshops or summer schools involving "people", resident communities, experienced seniors, students, enthusiasts ...

Further, Design has the advantage of connecting and coordinating the needs, even unexpressed, of different actors and territories as well as drawing on the opportunities of reinventing with artisans - the upholders of ancient knowledge and material culture - a new currency of common objectives and languages with which forgotten heritages, even the most dormant, can return to express themselves. In so doing, this same currency creates new conditions for reviving and perhaps, with the support of institutions, imbuing new lymph into communities and knowledge almost lost.

These are "extreme" challenges that today some designers, visionaries or a bit utopian, face not alone: with modesty, sensitivity and mediation skills, they make use of new strategies, advanced technologies and unexpected materials (rediscovered or of the latest generation, or experimental ones), combined or replaced in complex creative acts that address, in a systemic way, design and re-design of typical (and not) products, up to define protocols for the recovery of rural architectures in territories to be repopulated, bringing to light their uniqueness and cultural signature.

A common condition of these experiences is their "open source" character. Rediscovering, preserving without jealousy, and divulging the obtained results through shared research methods, so that knowledge can reach other communities and future generations, are key objectives for new ways of designing and producing in/with/for communities. Ultimately, these practices gesture at the best ways to live together in the "global community" to which we all belong.

A fair warning to designers: even in a plurality and complexity condition, the responsibility for driving this change is still yours.

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Hybrid Proximity

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**KEYWORDS | PANDEMIC, HYBRID PROXIMITY, REAL-DIGITAL,
BEYOND THE HUMAN-CENTRED**

Abstract

The hybrid nature of proximity in the pandemic was - physical-virtual; with the other; beyond the human; local and global; between cities and territories: a challenge for the Design.

In March 2020 the world has changed.

The approach of those who interpret the pandemic as a consequence of our mistaken relationship with nature is correct; thus Pope Francis: "I don't know if this crisis is nature's revenge, but it certainly is its answer." (Pope Francis, in Cozzolino, 2020). For Jeremy Rifkin: "the error [...] is called climate change. Extreme events [...] always involve the escape and disordered migration of men, animals and viruses" (Rifkin, in Various Authors, 2020).

Everything is interconnected. The Goals of the 2030 Agenda for Sustainable Development of the United Nations are there to remind us: the objectives include the world's health, yet all points are closely interconnected and cannot be addressed individually.

For this reason, I think it is important to try to understand if (and how) the concept of proximity has changed in the pandemic era.

We are living in a paradox: we must keep our distance but, at the same time, proximity is increasingly important. It is important to reflect on the importance of shops in neighbourhoods especially from fragile users' point of view as well as on "shared of

spending” concept that starting from the neighbourhoods has helped families in economic difficulties, and above all to Healthcare: in the territories where the local service has been dismantled, the pandemic has hit harder.

Today we can say that proximity is increasingly hybrid.

It's in fact physical proximity, with respect for protocols that have redesigned a new proxemic of distance: we are separated by closures, screens, masks, not to mention journeys, which are increasingly difficult and rare. A distance that is perhaps open, as in, *Here comes the sun* by Paul Cockledge, but always present. And, in part, we have recovered the importance of proximity. It is sufficient to think of the many initiatives that, thanks to proximity, have tried to overcome many problems generated by the pandemic. The project *Neighbours helping neighbours* of Territorial empathy comes to mind, with an English and Spanish communication system placed outside the door. In this case, people can download and print the communication to advise neighbours that they are available to help them with their daily chores during the lockdown.

But proximity means also virtual proximity, starting from home working. All with obvious advantages – just think of the theme of reduced transport, cost reduction, possibility of reaching places and people faraway – as well as risks that we know well - the danger of everything to/from home, the loosening of relationships, less empathy and, sometimes, a nasty relationship and, more generally, the risks of surveillance capitalism. (Zuboff, 2019). "A continuously connected life erodes our ability to feel empathy." (Aime, 2020, pp. 68-69). We live the relationship with friends in a shallow way, we practice bonds without consequences. Regarding digital proximity, Giorgia Lupi's *Dear New York* project comes to mind "as born out of my desire to find a way to memorialize the city's identity before Covid-19, and create a type of vessel for hopes about its future." (Lupi).

It's proximity *towards the Other*, also because, in recent months, *We have become the Other*. Thus, for example, it was for the Italians in last spring, in which, for the first time, we appeared as "plague spreaders" in the eyes of others. And, at the same time, because of the pandemic, we are all more similar - near and far, poor and rich, young and old. Thus, Federica Fragapane's project *The Stories Behind a Line*: the story of six migrant through data, an example of "data visualization as a tool not only to communicate to people but also to give voice to those who do not have the tools to do so." (Fragapane).

And again, it's a proximity that also goes beyond the human, in the name of overcoming anthropocentrism that through the ages has created numerous problems, in the name of a new accord, in harmony with nature as a whole. "Until today, most of the design was a powerful tool of the Anthropocene, with the human species solidly placed at its centre and human interests at the core of its objectives [...]. Design should be centred not only on humans but also on the future of the biosphere." (Antonelli, 2019, pp.19-38). From the point of view of the projects undertaken, it is worth mentioning Francesco Faccin's Honey Factory, a structure for producing honey in the city, with the "bees" that are "sentinels who keep

watch over the health of the planet, since their presence guarantees environmental well-being." (Dardi, 2015).

And in this hybrid nature of proximity, design, traditionally mediator of different dialectics that characterize contemporaneity, by vocation, training, methods, can play an important role, as long as it knows how to recognize and manage the complexity of reality, with a medium-long term vision, ready to change strategy, without losing the goal, "like sailing [...] with a sailboat [...] as result of a co-generation: made by us, by the boat, by the wind and currents" (Manzini, 2021, p.146).

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Design culture (of) resilience. Social innovation, circular economy, sustainability

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**KEYWORDS | SOCIAL INNOVATION, CIRCULAR ECONOMY,
SUSTAINABILITY, PRODUCTION**

A sudden acceleration ¹

When this conference was launched and this track was proposed, resilience was already a relevant topic in the debate about sustainability, or in several projects working on different topics. No one, however, could imagine that the term would rise to the frontstage in any occasions for public debates and even being in the headings of public policies and plans for the development of most countries in the next few years.

Resilience is the capability of a system to recover after major difficulties, in nature, or in certain materials, it indicates the capability to return to the previous state after a turbulence, to spring back to the initial state. This is in fact what most actors participating in public debates are expecting from the present socio-technical system, after the shock of the pandemic, and this is a common and reassuring expectation that many people have, to come

¹ Nicola Morelli

back to the way we were living. However, this is not what the resilience should suggest to us in this very moment.

If coming back to the previous order of things means to keep using the same lifestyle that have brought this planet to the edge of an environmental catastrophe, we should consider whether this is the moment in which we can really and substantially think of another way of living, interacting, organising our society and our production and consumption systems. The pandemic crisis has been in fact considered as a clear sign that the limit of sustainability has been touched and we have reached that point thanks to the lifestyles and the socio-economic behaviours we would like to restore through resilience. What was normal at that time cannot be the normal in our coming future, we need to re-invent the normal, and this crisis, that has not been a mere healthcare crisis, has forced us to think of new ways of organising our daily life, our work and our human and social relationship. We may not like what we learned in the past few months: that we can work remotely, without any real personal interaction with our colleague, that we can see our friends and family through a screen, that we can order the goods we need for our survival online, without walking to a shop and talking with the people around us, while shopping; however we learned that a radical change like the one we have been forced to is possible, and since the need for new ways of organising our life is still urgent, we must observe our capacity (that means the capacity of our society) to imagine new possible futures, and possibly propose new scenarios, figure out new opportunities, explore new configurations for the environment we live in.

The effort required in this very moment is therefore a typical design exercise: devising a course of action that leads our present condition to a better one (Simon, 1969), but the exercise can no longer be confined to design studios or academic contexts, it needs to be extended to social contexts, it needs to trigger public debate, open participation and to activate design capabilities that are diffused and intrinsic in the way we, the people, organise our society.

The process of change that academic studies were slowly and hardly provoking are suddenly accelerated, fuelled by the unexpected, but at this point the opportunity cannot be missed and design is one of the most critical capabilities that this acceleration requires.

People have the answers ²

The culture of resilience passes through a system of knowledge, opinions, customs and behaviours that characterise knowing how to react to the unexpected to create new balances. When applied to social innovation, the solutions that support it are to be found in people, not so much in individuals, but in how they group in forms of cohesion, in

² Davide Fassi

communities: associations, informal groups, circles of friends, inhabitants of the same block of flats, the same neighbourhood. This way of being together, especially today, several months after an extraordinary event such as a pandemic, finds forms that result in collaborations to counter the unforeseen, respond to the existing, and imagine the future.

Many of the responses that people make to what they are facing now refer more to the places where they live, work, spend their leisure time and their quality. Several examples show that today's neighbourhood dimension in cities is the most active and promising concerning resilience solutions in social innovation (Fassi, 2020; Manzini, 2021). When local communities are prepared to participate in collaborative actions, it is much easier to design, produce and activate solutions for a better life. There is, in fact, a level of proactivity that facilitates their creation: from small events more related to entertainment or cultural dissemination (festivals, weeks) to actions more responsive to particular needs of neighbourhoods that affect public spaces that are often residual (urban gardens, improvised play areas), up to real micro-transformations of spaces waiting for a structural change that takes on the character of temporariness to test their validity, effectiveness, proper use and the benefit induced on people (tactical urbanism, emergency solutions).

If involvement is around a project, it takes on the characteristics of infrastructure, i.e.: leading to creating the physical, social, cultural and economic conditions that allow other projects and activities to emerge and flourish. Some recent documents from the European Commission (Montalto et al., 2020; OECD, 2018) highlight how this occurred even more during the pandemic as a response to it by strengthening community building and identifying successful innovative solutions.

Design is increasingly at the heart of this process of activating, supporting, facilitating bottom-up initiatives with its project culture, methods and tools. These are not just isolated episodes, but a network facilitated by the governance of the territory, which we find today in virtuous cases such as Milan, Barcelona, Paris, to name a few prominent European cities that now place people at the centre of the city's development.

A necessary change of the normal ³

The ideas of sustainability and sustainable development were emerging when the situation and progress have been clearly and seriously unsustainable, leading a negative vision in future. The issues on resilience have been widely discussed in the last years when it was well recognized that current human society system is fragile. The pandemic crisis exposes severe fragility of human society and it has generated dramatic changes in all aspects, from macro international politics to micro everyday life, no doubts, which calls for new ideas of sustainability and new design responses.

³ Miaosen Gong

If resilience means to return to the previous state after a turbulence, can we come back to the ways of being and doing before? So far, all over the world, the pandemic is still spreading fast, and we can't foresee the end of it in near future. Therefore, there is no way to intend to return the normal probably in a long period as before. One day, if the pandemic is ended, when it's time to move towards the normal, we have to face a reality that there would be no objective conditions to recover the normal as it was, because of historical huge damages during the crisis. If we define the previous normal as the Normal A, what we could reach is a normal A- (less quality of the normal A) simply because there would be not enough resources, conditions and forces to do so as before.

Whether the COVID 19 is from the nature world or mixture between natural and artificial operations, we have had enough lessons to know that the previous normal (A) is not sustainable at all. Should we come back to the previous way of being and doing? As mentioned above, why don't we re-invent a new normal, the Normal B, which could be a more sustainable situation by radical changes of the ways of being and doing? If this could be the vision of our future, the ongoing pandemic crisis is not only a challenge, but also an opportunity that can be utilized to re-invent and construct a new normal. Shifting the normal from A to B will not happen if the structure of normal A is still solid. While when the old and solid infrastructure and system are destroyed by crisis, it opens a door to construct the Normal B.

Although it's necessary to change the normal from A to B, there are further questions. Since the normal B could be invented, so what could be a best normal B? if there are many kinds of the normal B invented, how can we insure they are better than the normal A? How can we reinvent the normal B that is sustainable and resilient enough? To think about those questions, it's not an issue of a new normal, instead, an issue of a new idea of the normal, which opens a cultural space to designing studies.

Industrial symbiosis as a resilient practice ⁴

In the long-term reflection on the concept of resilience, the focus deals with those manufacturing sectors such as Fashion and Textiles where an innovative approach is needed.

Referring to the implementation methods and tools, the differences between Italy and Brazil are representative of approaches to design research and development based on the similar elaboration of criteria and data. Relevant methodologies of production processes and development of new materials are known and discussed and where the comparison is twofold. On one hand, the first is based on the capacity to absorb externalities in the industrial cycles, that is, to measure resilience capacity and effectiveness of resilience-oriented production; on the other hand, the second one is based on the industrial symbiosis

⁴ Regina Aparecida Sanches, Maria Antonietta Sbordone

related to the integration of the production processes of second-cycle raw materials that tend towards circularity. Either, according to the process and product systems that reflect the theories of Industrial Ecology (IE) in combination with the implementation of Sustainable Product Development (SPD).

From the prevailing logic of production and consumption in the Fashion system, environmental and social problems on a world scale have emerged. Based on productive systems of linear economic orientation (extract-transform-use-discard), the textile and clothing industry is one of the main responsible for large-scale consumption and misuse of natural resources (Clark, 2008; Fletcher, 2014; Roy Choudhury, 2014).

Faced with this scenario, we are driven to seek solutions for the textile and clothing sector that can subsidize not only new patterns of production and consumption, but also more efficient textile waste management systems, based on a circular economy model. By definition, the circular economy is related to a sustainable cycle, from production to the reinsertion of the raw material for the manufacture of a new product (Avila et al., 2018).

The fashion production chain, unlike other value-added chains, has a large number of stages in the process, carried out by different successive industrial units.

Several of these units operate in a disintegrated manner, with different stages developed by different companies (Tobler-Rohr, 2011a). The complexity and fragmentation of this supply chain thus inevitably leads to a lack of transparency about the various stages involved in the manufacture of products and their potential environmental and social impacts. (Roy Choudhury, 2014).

Lorenzetti (2018) reports that the textile sector in general produces little material waste in relation to its production, with many companies already reprocess intermediate and final products. However, the manufacturing stage discards an average of 10% of all fabric used only in the cutting process.

When the product is in use, one of the most critical issues is its premature disposal, either due to its low quality, or because it no longer meets consumer requirements, for example, those motivated by fashion trends (Slater, 2003). Studies carried out in recent years show that for the fast-fashion model to support itself, the production of clothing has doubled in the last fifteen years and the average number of times each item is used has decreased by 36 %. The productive process of the circular economy model contemplates the reduction, reuse, recovery and recycling of materials, in a sustainable cycle from production to the reinsertion of second-cycle raw material for the manufacture of a new product (Avila et al., 2018).

Recent developments in the fashion system, in terms of the organizational or diffused value network, highlight the importance of collaboration, vice versa, of competition enhancement mechanisms. The highly innovative and creative skills and tasks concentrate much of the value in the creation phase, characteristic of emerging sectors such as creative ones.

A new approach to value processes requires a common effort in understanding the turning point: the transition from the co-produced value (supply chains) to co-creation value (value networks, constellations, corporate ecosystems), as reported and identified by Galateanu and Avasilcai (2015). Creativity-centred production models put in place by companies focuses on creating or re-creating, improving or optimizing an existing product or service; in most cases, companies incorporate disruptive creative thinking into their activities to obtain proposals that have a distinctive competitive value. The real challenge facing the fashion system today is to ensure the sustainability of production and processes.

A new dominant social paradigm (LeHew, 2011) for the fashion industry would certainly include an expansion of the production system to foster this kind of collaboration and cooperation. The partnerships aim at the inclusion of organized industrial, manufacturing and services systems external to the own fashion system, which already has skills in the field of sustainability, and have expertise in materials or environmental impact assessments. Furthermore, the saving of resources and the scarcity or low availability of virgin materials will determine the need to form partnerships with unrelated industrial or manufacture sectors and could cooperate for the collection of waste to be used as secondary raw materials, or with companies that can reprocess or redesign second-hand clothing.

According to Armstrong and LeHew (2011), "a new dominant social paradigm (DSP) would focus on creating apparel products that are more efficient in material use, production and consumer utility, as well as better meeting the human needs of the consumer base, inherently more social than material needs. Similarly, clothing education in the dominant new social paradigm would promote the development of skills that would most likely include understanding human needs and ecosystem limitations, working collaboratively with the market rather than trying to dominate it and an understanding of local culture and tradition".

The development of collaboration and cooperation skills among future apparel professionals should lead to industrial symbiosis with unrelated companies. Furthermore, this new DSP probably requires a more interdisciplinary, or even transdisciplinary, approach to the training and preparation of clothing professionals, therefore a greater commitment of the Academy in creating interactions and interrelationships with even very different disciplinary sectors.

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
JUNE 08.09.10.11, SAPIENZA UNIVERSITY OF ROME

Revolutions?

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Introduction

As a result of discussions that took place across time zones over several weeks in early spring 2021, we - the co-chairs of the track REVOLUTION, Alastair, Betti, Hélène, Stefano – wish to propose a collective/collaborative intervention as our contribution to Cumulus 2021.

Our four positions can be found on the Miro board here:

[https://miro.com/app/board/o9J_IEUQtKI=/]. Password: summer21.

We would like to offer these initial propositions emerged from a number of zoom conversations as the starting point for an ongoing dialogue.

This is therefore an open invitation to take a look, take part, respond, critique, connect. We see this as a space (a roundtable of sorts) where our four individual, autonomous, yet connected positions have begun to respond and grow through each other. We have enjoyed this collective germination tremendously and seek to extend it further with your input, your views, your divergence.

Your generosity.

We all share the view that no discourse, certainly no discourse around revolution, can be offered unless matters of positionality are first acknowledged. Positionality in this context is not only the specificity of our situatedness - as design thinkers, practitioners, educators,

change-makers belonging to the Global North and informed largely by Anglo-European tradition who are privileged to be given a high-profile platform for sharing and shaping ideas. Positionality concerns also our individual unique connections to the people we come from, the places we live and the communities and beings (human, more than human) that we live with.

Most important, we believe it is design's own positionality that must be addressed as a matter of urgency. For us, this means to be ready to act, striving to uncover the many complicities design finds itself implicated in; ready to illuminate (partially, always partially) spaces for potential *design re-orientings*, speculative-pragmatic and able to feed into tangible, value-rich, world-building propositions. No revolution can be suggested, let alone instigated, unless the modes of thinking that tacitly scaffold many (albeit not all) of the existing design identities in circulation – each with their own practices, audiences, cultural legacy, champions and idiosyncratic epistemic tradition – are made to think first about how to unmask their own position.

This manoeuvre would require care and attention paid to the voices of those who speak, and the voices of those who remain voiceless still. It would demand to think about a design for the more than human, and for the non-human, a designing in fact that no longer narrowly places the human at its core, but that instead has the courage to attend to wider *hybrid ecologies*.

Every time we - design thinkers, practitioners, educators, change-makers - recognise our position first, what we are saying is that we don't wish to take a situation for granted; we are saying that we acknowledge each situation's inherent partiality; we are saying that we don't believe in the fiction of neutrality or objectivity. We are saying that a situation, every situation, has politics, and politics take centre stage.

Design is the making of the world, through a continuous process of imagination, prototyping and intervention in the not yet. As such, it is always engaged with the crafting of futures through the building of present worlds – the material, tangible, messy manifestation of values.

This is why we must pay attention to which values and which ideas of futures become world. We must pay attention to whose values and whose futures are evoked, celebrated, neglected or denied each and every time something is imagined, prototyped, and made – whether objects, systems, experiences, technologies - every time the word 'innovation' is used to catalyse future-making.

How to do this demands care, slowness, listening, honesty. Most of all, it demands of us that we stay open, not only to acknowledge the position we are in and we speak from, but also to be contested, to host differences without wanting to erase them, nor to assimilate them into a coherent whole. This means staying - always - with divergence, friction and collision, especially when they shake our assumptions, our established paradigms and any semblance of normality we cling to. Especially when they make us uncomfortable.

If there is revolution, this is it. And it starts here.

Some initial questions to get the conversation going:

What is design revolution? Really?

Design culture of revolution or the (r)evolution of design culture?

What does design need to take on to be revolutionary?

What do we need to do to design revolution?

How can a design revolution be sustained?

We look forward to hear from you.

Polyphonic citizen assemblies (...beyond the Capitalocene) ¹

Enmeshed in the web of capitalism, citizens struggle to connect to the web of life (Capra 1996). This disconnect consigns humans to a narrow monolithic anthropological condition as “consumers”. Citizens are encouraged by their national governments to support the creed of continuous economic growth which Felix Guattari identified 30 years ago as Integrated World Capitalism, (IWC), a capitalism that is deterritorialised, exploitative and dangerous (Guattari, 2000 [1989]). The roots of this capitalist ideology extend back to the beginning of European colonialist expansionism, identified recently by Jason Moore as the Capitalocene, ‘a multispecies assemblage, a world-ecology of capital, power and nature’ (Moore, 2016). Design, a relatively new knowledge domain and profession that was birthed in the Renaissance and bloomed in the Enlightenment, continues to facilitate expansion of this exploitative capitalist ideology and its ontological effects. Paradoxically, while design aims to be a genuine improver of well-being it sedates consumers while generating toxins for our wider social, environmental and cultural landscapes. Design becomes a pharmakon.

To escape the mesh, or at least to negotiate fresh critical paths of exploration, we need to collectively grow beyond the constraints of capitalist ideology, power and (infra)structures or, at least, subvert the latter to new visions. The rhizomatic design approach offers a means to grow in new directions, develop new nodes of (socio-cultural) production through building new alliances that demonstrate the collective making of alternative worlds. Yet, these worlds must embrace a notion of “social” to include the more-than-human, other-than-human and non-human things that have always, been re-making the world with us, humans. In short, we have to adopt a position of relational design where actors, actants and their assemblages co-constitute and co-construct each other (Fuad-Luke, 2014).

¹Alastair Fuad-Luke

Relational design demands that we engage with polyphonic voices, that we embrace professional, scientific and situated knowledges. Open, participatory and co-design processes and methodologies show that relational knowledge-making is possible. But, where do we come together, where do we assemble for quiet (r)evolutions? We need “mootspaces” (Fuad-Luke, 2009) to develop anticipatory democracy where we re-conceive, re-envision and re-enact pluralist modes of being, experiencing and making together. Moot is a 12th century Old English word for an assembly or meeting where freemen met to discuss and dispense justice. Today, we might better recognise the concept of citizen assemblies, because, as Hannah Arendt noted the world is made between us (Arendt, 1993 [1955]).

Rhizomatic relationality ²

In times of hyper-connectivity, platform-based interaction and the simulation of sociability they perform, it is wise to be reminded of the **rhizome** as an image to think with and, in the context of our track Design Cultures of Revolution, an image that interrogates, dismantles and reformat the very idea of revolution.

As an image to think with – as introduced by Deleuze and Guattari (1988) – the rhizome is a tremendous figure of thought. It affords the imagination of a kind of relationality, knowledge-making and interdependent growth, which offers **an alternative from the hierarchical and disciplinarian, without levelling heterogeneity and divergence into flat horizontality** (Stengers, 2019).

A rhizome is the stem of a plant (e.g. ginger, iris, violets, hops) that sends out roots and shoots from its nodes. It is a ‘method’ of plant growth and reproduction where the plant grows (usually underground) by horizontal propagation away from the plant’s centre. All the genetic material necessary to grow a new plant is contained within the rhizome stem: a cut rhizome can be taken to an entirely new location and a new plant will develop.

While the tree is taken conventionally as the symbol of a knowledge that proceeds by logic and straight deduction, with a fixed point of origin, development schema, and rigid hierarchical form, the rhizome, devoid of a recognisable centre, stands for a non-hierarchical field populated by a distribution of multiplicities where each node can unfold into new shoots.

Cultures of Revolution should be taken literally as the cultivation of rhizomatic relationality, node-making and transversal journeying from node to node. It describes ways to incubate new questions, to refrain from wanting to produce ready-made solutions and be prepared instead to diverge while recognizing each other’s divergence.

²Betti Marenko

A new routine³

A note from the west coast of Turtle Island

I am not of

this place

born on the eastern side of this

continent

of parents who come from another

child of the prairies flat

and (and!) endless skies.

also of black seas and island scapes, salt, warm water rain, big leafed vegetation under a different (southern) sky

of an old island (too) mired in

rock + rain

adult of the city scape/pace

fast.

of slow also

fermented, aged, testified ways of knowing.

of one language (learned) and another (found).

being who returned to

an unfolding/ unfurl

where everything is

up

for question

where nothing

is as was except

³Hélène Day-Fraser

for space + time that gives
and beings (a multitude of)
that do not play the
game of keeping pace
but rather
stay
are.
be.
and remind me
to
take care.

My name is H  l  ne. I am writing this in Vancouver - Canada. I am a first generation Canadian - my parents left the UK - intentionally for Canada in the early 1960's. Transcultural - I am not of one place. Beyond being Canadian of English and Welsh descent and with a French name, other places have formed me. As the string of words above hints at, I am of: the flat of the Canadian prairies, an island in the southern Philippines, a cottage garden in the middle of England, big city Toronto, Canada, Paris, France and many other places. In all of these places I have spent a lot of time walking and thinking. For the last 19 years I have lived on the edge (literally) of suburbia. A five-minute walk from my home is a ravine with steep canyon walls that the black bears come down. To the north 100's and 100's of kilometres, without roads, without buildings. **But it is not empty** (the bears are evidence of that!). It has belonged to others for millennia.... Indigenous people have been living in the "Vancouver" area for over 8,000 years. This is the land, unceded territory of the **Coast Salish peoples** of the S  lilw  ta   (Tsleil-Waututh), Skwxw  7mesh (Squamish), xwm   kw  y  m (Musqueam), and St  :l   (STOH-lo) nations. And I - as a first generation Canadian - am a guest here.

Being an **uninvited guest-dweller** in the land that I was born on and coming to realize this as an adult has entailed/encompassed a **radical reorientation** of everything I used to assume. (r)evolution - the world has turned on its head. As a designer I have been recalibrate (gradually). My framing of design objects has shifted from **products** for mass consumption, to **markers of experiences** and more recently to **companions** with the capacity to upend assumed perspectives and relations with the world around us.

I have increasingly questioned and pushed back against neoliberal, capitalist agendas. I have come to use and apply ambiguity, conversation, the vaguely familiar/ not familiar (uncanny?), and embodied practices as a mode of disruption and insight - a means for the

industry collaborators I work with to see new alternatives outside of the assumed status quo. I am slowly building up strategies and, with the peers and students I work with, passing these on to others (shared, porous mentorship) - as a means of disturbing the present. "Quiet rebellion" one of my colleagues recently observed.

I am intent on contributing to transformation - **WAY finding**: to learn new languages (word, gesture, form...), to develop/ celebrate multi-shared-positionality and responsibility, to apply non-rational/ non-extractionist / non-efficient processes as means to redefine the systems that I see as dangerous for the world we share with many other beings of many other experiences and orientations.

If I asked you to - would you join me?

Far from the comfort dictatorship ⁴

There is a very famous time-lapse in the film *Koyaanisqatsi: life out of balance* by Godfrey Reggio (with a beautiful soundtrack by Philip Glass).

It is about the demolition of the *Pruitt Igoe* (the Wendell O. Pruitt Homes and William Igoe Apartments, a famous urban housing project in St. Louis, Missouri), one of the symbols of modernist architecture (and thought). In this destruction, Charles Jencks (1984) saw the failure of the rationalist idea that the real world might be entirely designed.

The film recounts with admirable anticipatory vision (it was shot in 1982!) and visual synthesis the extractivist vision of capitalist society.

The pandemic makes us reflect on the "...walls come tumbling down..." of our post-capitalist society with its vast impact. Like *Koyaanisqatsi* tries to narrate, everything is connected: like a *mycelium* (Tsing, 2017), our society is a complex network, tangible and intangible invisibly linked.

Latour (2018) says that we live in a *new climatic regime* where we can no longer see the world and its resources (biological and inorganic) as an inert object that can be exploited without limit. The myth of markets and technologies as the solution to every challenge has created forms of non-inclusive globalisation.

Latour calls it *Out-of-This-World* exploitation of our world, putting at risk the rights of future generations.

Nature demands its toll, which manifests through the phenomena emerging from the climate crisis.

⁴Stefano Maffei

He claims for a *transformative terrestrial attitude* to try to include all this not only in the rational form of the circular economy. We had to move from a disciplinary perspective focused only on a human perspective to a *more-than-human* one: including the *terrestrial* means attributing to nature, to the inorganic, representativeness – in short, an agency.

Nevertheless, to do this, we need first to reimagine our life as humans. We could not change anything if we discuss a lot without doing anything: we need a revolution against our daily status quo. We cannot change anything if we do not want to *fight the comfort dictatorship*.

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Hélène Day Fraser is an Associate Professor of Design at Emily Carr University of Art + Design. She holds a Masters of Applied Arts in Design and a Bachelor of Applied Arts in Fashion. Prior to arriving at Emily Carr Hélène had fifteen years of professional experience in the garment trade with mid to high-end prêt à porter lines and custom /bespoke clothing. Her work encompassed responsibilities in clothing design, materials sourcing, pattern development, and production management.

Alastair Fuad-Luke is a sustainable design facilitator, educator, writer and activist exploring emergent, hybrid design practices. He is Professor at the Faculty of Design & Art, the Free University of Bozen-Bolzano, Italy. Between 2011 to 2016 he was Professor of Emerging Design Practices at Aalto ARTS, Aalto University, Helsinki, Finland and a Visiting Professor at the University of Aveiro, Portugal, 2014-2016. His recent work embraced co-designing with communities in Finland, Mexico, and the UK, a European Union project on eco-innovation (SHIFT), open fashion design with Mode Uncut, and the not-for-profit organization Agents of Alternatives.

Stefano Maffei is an Architect and Ph.D. in Design. Full Professor at the School of Design, Politecnico di Milano. He's the Director of Polifactory the new makerspace of Politecnico di Milano and also the Director of the Service Design Master and of the Service Innovation Academy, Poli.Design, Politecnico di Milano. He also directs the Design Policy Lab at Politecnico di Milano.

Betti Marenko is a transdisciplinary theorist, academic, educator and curator working across process philosophies, design studies and critical technologies to investigate the relationships between design, society and culture, and their role in shaping futures. She has a background in philosophy, sociology and cultural studies, over two decades of experience in education, and proven leadership and senior management skills.



DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Design Culture (of) Thinking. Design Thinking VS Design Research. Reaffirming Design Cognitive Nature

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KEYWORDS | DESIGN THINKING, DESIGN RESEARCH, META-DESIGN, CRITICS

The intrinsic nature of design, sourcing different knowledge domains and blending theories and practices, seems to be particularly relevant today, when the ‘silos centred’ vision of knowledge, still typical of the 20th century, is no longer able to respond to the needs of our world. In particular, there are three aspects of the contemporary paradigm shift which are opening up to a more established recognition of design specific “way of thinking”. They relate to: (1) the nature of today's technological innovation; (2) the nature of issues characterizing 21st century economic, social and cultural environment; (3) the peculiar structure of contemporary organizations.

(1) The nature of technology within the so-called Fourth Industrial Revolution, is dramatically different from the past. From being a “black box” conceived by experts within the closed boundaries of R&D departments and laboratories, it is increasingly becoming an open asset in a networked world (Castells, 1996) and innovation arenas are placed in a larger ecosystem (Rosenberg, 1983; Rifkin, 2011). The digital revolution and miniaturization transformed technology into a multipurpose flexible asset (Brynjolfsson and McAfee, 2014), accessible in terms of information (Star and Ruhleder, 1996; Rifkin, 2000) and open in terms of potential applications, also blurring the boundaries of knowledge domains characterized by a fast process of convergence among organic, inorganic and information sciences (Loveridge et al., 2008). This has changed the very nature of research both in academies and industries in all fields (Etzkowitz et al., 1998), and design, being a purpose driven discipline by nature, empowered by its culture and user centred approach, is able to envision new domains of

applications, emerging as a powerful lever to guide more meaningful technological innovation (Verganti, 2006; Maffei et al., 2015).

(2) The complexity of contemporary economic and societal organizations, resulting from phenomena such as mass urbanization and consumption dynamics, large and global migrations, frictions and conflicts among religious and political systems, is rising complex issues to be faced through systemic and collaborative approaches (Sassen, 2004, 2011), whereas design culture and practices are particularly developed. Therefore, design is seeing a progressive broadening of its traditional domains, affirming itself as a powerful driver of innovation in new application domains such as services, healthcare, public administration, policy making, urban and territorial systems (Bonsiepe, 2007; Deserti and Rizzo, 2014a; Mortati, 2015).

(3) As a consequence of the shift from the industrial to the knowledge economy, organizations are increasingly characterized by parallel, transversal and open processes, where multidisciplinary competences are mostly required (Rifkin, 2011). In particular, companies' operations are often project-based, so that professionals who hold both design and managerial skills are highly demanded (Florida and Goodnight, 2005). This has been leading to an increasing focus on design skills and practices within strategic and decision-making processes (Souter, 2007; 2016; Deserti and Rizzo, 2014b), and on "Design Thinking", intended as a creative attitude to filter, transfer and connect different bodies of knowledge to envision trajectories of change and drive innovation processes (Kolko, 2005; Martin and Martin, 2006; Brown, 2009; Cross, 2011).

Unfortunately, possibly due to its immature academic institutionalization with respect to other disciplines, as well as to its practice-project based culture, this ongoing recognition of design didn't bring to a real recognition of "design cognitive" potential. As a result, during the last decade, we have been assisting a process of commodification of "design thinking", interpreted as a "soft skill" which can be extrapolated from design culture and transferred into other professional environments (Georgi V. Georgiev, 2012). This approach, especially developed within the north American context, is clearly shown by the fact that major institutions devoted to research and innovation, such as for example Stanford or MIT, did not launched post graduate programs within the area of design to better develop its "thinking" and "cognitive" dimensions, but transversal courses and short programs to spread "design thinking skills" into other disciplinary contexts.

As design researchers and academics, we should be able to twist this trend if we do believe that design "culture of thinking", intended as a specific cognitive culture belonging to design expertise, has unexplored potentials in orienting innovation trajectories within several domains of application, deeply connected to the urgent challenges characterizing our contemporaneity. For doing so we should quicken the process of building shared "design ontologies", able to better explain and legitimate design "culture of thinking" as a highly professionalized practice. Within this path, two dimensions are particularly important.

(1) To codify domain specific methodological approaches, which clearly identify “design thinking as process” in its complexity and professionalized expertise, marking a clear distance with the “use” of “design thinking as a tool”. And also escaping from homologating it to science-like methodologies, an attempt which has been characterizing design discipline formalization since its roots, and still alive (Friedman, 2003). On the contrary, being able to embrace “meta-design” as the specific methodological dimension for an original design ontology, which offers a framework for “discovering” and “unveiling” the design research process itself (van Onck, 1965) as a systemic and open process (Deserti, 2003; Giaccardi, 2005). And which requires methods and techniques that are fluid rather than prescriptive and environments that can evolve.

(2) To continue exploring the unique nature of “design thinking” as “materialization” of knowledge into visual artefacts, escaping from the simplistic conception of visualization and prototyping as “tools” to test new solutions. On the contrary interpreting prototyping artefacts in the wider sense of their ontological meanings (Buchanan, 2001), able to envision and explore alternatives even in the early front end of the design research process (Sanders, 2005), and conceiving them as “epistemic objects” (Mareis, 2012), artifacts that can be seen as “the solid form of knowledge to be disseminated” (Bang et al., 2012, p.7; Harman, 2018).

Only pursuing this path we can truly legitimate design as a “thinking discipline”, stopping its downgrading into a simplistic “thinking tool” to be borrowed by other disciplines, and finally enable the growth of design research professionals as protagonists in research and innovation processes within future organizations.

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
JUNE 08.09.10.11, SAPIENZA UNIVERSITY OF ROME

Tracing the origin of sustainable design: the role of design organizations

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**KEYWORDS | SUSTAINABLE DESIGN, DESIGN ORGANIZATIONS, HISTORY,
SYSTEMS THINKING**

For at least 15 years, environmental sustainability has been one of the totem words that recurs most in the papers of the scientific community of design. Parallel to this citation success, the rhetoric around the concept of environment has also grown and the word has gradually expanded its meaning, losing sense and etymological clarity.

The number of mentions containing the word sustainability has risen dramatically since 2015. In particular, this figure has grown since September 25 of that year, when the heads of state and government of the 193 countries that are part of the United Nations recognized the current unsustainability of the development model. They then signed the 2030 Agenda, a document somewhat pompously entitled *Transforming our World: the 2030 Agenda for Sustainable Development* with the aim of taking action soon to save planet Earth. Certainly, a strong impact was also caused by Pope Francis' publication *Laudato Si* in May of that year. This is a fundamental document that puts pressure on politics and environmental sustainability suddenly became a central topic in international debate.

The relationship between design and environmental sustainability, understood in the most modern conception of the term, already took place in the second part of the 20th century. In this period, in fact, there is a clear perception that the environmental issue, by definition systemic, cannot be resolved through a reductionist method of investigation: it is essential to adopt an approach based on systems thinking, that is, thinking in terms of relationships, through the study of systems, subsystems and the relationships that exist between them. The earth, in fact, begins to be understood as a set of configurations of constantly changing

behaviors, as recalled in the first report to the Club of Rome entitled *The Limits to Growth* (Meadows et al., 1972).

The design project towards the end of the 1960s thus broadened its meanings by incorporating environmental issues and confronting some of the *topoi* of that era. First and foremost, the theme of the acceleration of history that goes hand in hand with the acceleration of technical progress and consequently the growth of the technological gap between countries.

One of the most effective metaphors to explain the impact of anthropic flows on the environment is the one that since the late sixties represents our planet earth as a spaceship. The economist Kenneth Boulding, and above all the architect and innovator, Richard Buckminster Fuller, introduced, in two key essays of the environmental movement in the United States, the concept of fragility of our ecosystem and the need for humankind to operate compatibly with the ecological constraints of the earth in which we live (Boulding, 1966; Buckminster, 1969) This concept is also taken up by Stewart Brand through the iconic image of our earth, "a photographic manifesto for global justice" (Poole, 2008) as the English historian Robert Poole writes. The image of the spaceship Earth imposes at least two reflections: we are all on a means of transport that appears fragile, vulnerable, as finite in size as our eye can perceive, with limited resources at our disposal. The second issue is that we have to operate on this spaceship not as passengers, who in a detached way are transported from one place to another, but as crew members who take care of their spaceship.

In the 1960s, the foundations were laid for a debate on design oriented by ecological criteria that looked at the idea of the environment as *umwelt* (literally: the surrounding world). Not only natural environment, therefore, but also socio-cultural environment strongly influenced by the contribution of systemic thought. In addition, in this period are published some founding texts of the debate including *The Chasm Ahead* (1969), *Design for the Real World* (1970), *The Sciences of the Artificial* (1969), *Future Shock* (1970) and *La Speranza Progettuale* (1970). Equally important appears the contribution of thinkers such as Niklas Luhmann, Talcott Parsons, Ludwig Von Bertalanffy, Erich Jantsch or Lewis Mumford and the publication of frontier magazines and journals such as, just to give an example, *The Whole Earth Catalog* by Stewart Brand.

However, in order to historically understand the genesis of the relationship between design and the environment, which still has many areas to investigate despite some specific contributions on the subject¹, it is necessary to study the documents in the archives of some of the protagonists of that debate and of some design institutions, such as ICSID/WDO (International Council of Societies of Industrial Design), founded in 1957, and the VNIITE (All-

¹ Kjetil Fallan (edit by). *The Culture of Nature in the History of Design*. Routledge.2019; Tania Messell, *Constructing a 'United Nations of Industrial Design': ICSID and the Professionalisation of Design on the World Stage, 1957-1980*; Doctoral Thesis, University of Brighton, 2018.

Union Scientific Research Institute of Industrial Design), a Soviet design research institute formed in 1962 and closely related to the Council of Ministers of the USSR.

In particular, congresses and general assemblies were the main places that, already in the sixties, marked some fundamental moments in the cultural debate on design and the environment. For example, we will notice the circularity of some cultural *élites*, the clear awareness of some leading figures, the absolute transversality of disciplinary contributions that can embrace economics, cybernetics, biology, behavioral science and design.

It would also be worth analyzing in depth the ICSID program entitled “Interdesign”, created in 1971, whose first fifty years are being celebrated this year. These are innovative workshops in terms of content and participation, lasting two weeks in which designers from all over the world come together to develop solutions to local problems of global relevance. Since 1971, 38 Interdesign in over 25 countries around the world has covered a broad range of topics including design for the environment. The theme of the first workshop held from 23 May to 6 June, 1971, in Minsk, USSR (currently Belarus) is emblematic: “The Production and Distribution of Bread”. On that occasion thirty professional designers spent two weeks working together in projects of social value. Nine years later (October 6-8, 1980), the URRS is still the protagonist with an Interdesign on the theme “Design for City Environment”. The city hosting the workshop is Tbilisi (currently Georgia)². The objective is to develop methods for designing the environment of large cities, in the face of uncontrolled urban growth and population increase worldwide. These workshops have accelerated the entry into the fourth era of Modern Humanity defined as the “Shift Age” by the American futurologist David Houle. If tools were the pillar of the Agricultural Age, machines supported the Industrial Age and technologies the Information Age, now consciousness is accelerating this last epochal change (Houle, Romage, 2015).

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² Please see wdo.org

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DESIGN CULTURE(S) | CUMULUS ROMA 2021
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Design Culture (of) Thinking. Design Capitalism under Scrutiny

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**KEYWORDS | UNSUSTAINABLE POSTHUMAN CONDITION, DESIGN CAPITALISM, NEW
RADICAL ENLIGHTENMENT, DESIGN FOR DECLINE, EMERGENCY ART**

Abstract

In the age of unsustainability, theory, criticism, and history writing are not only about reflecting upon, but of changing the world in practical terms. Design Culture studies amalgamated with critical theories, humanism, and existentialism could provide a new context of such an endeavour in the age of new radical enlightenment.

“In the age of unsustainability, theory, criticism, and history writing are not only about reflecting upon, but of changing the world in practical terms” – I wrote last year as my motto to Cumulus Roma. Let me explain what I meant by it.

In the birth of our current lamentable posthuman condition design capitalism has played a pivotal role. Corresponding unsustainability has been an inevitable result of the total aestheticization apparent everywhere in contemporary neoliberal design cultures and in societies where the hegemony of consumption prevails. These cultures have been rising as complex constructions of new spectacles embodied in and by design transforming human beings into virtually *one dimensional* and *sublimated slaves* in a totalising way Herbert Marcuse and Guy Debord could have never imagined. Exploitation, alienation, and the forgetting of being is so astutely designed today in the virtual world of neoliberal sensorium and digital surveillance that the lingering abandonment of humanist and enlightened values is a commonplace among the intelligentsia, spin doctors, businesspeople, politicians, and

other decision makers as well as everyday people alike. Against this Julien Benda like treason first led by postmodernist intellectuals and now by many of their posthumanist successors, a new radical enlightenment seems to be the effective antidote. Marina Garcés understands this in a Kantian way as being a critical attitude that fosters the betterment of human conditions in general and human dignity in particular. With respect to this new radical enlightenment designing understood not as a profession, but an attitude in László Moholy-Nagy's terms of design for life as introduced in his late *Vision in Motion*, is of high importance, even though philosophers are seemingly unaware of this fact. This is completely acknowledgeable, after all, since as Karl Jaspers convincingly argued in his *Philosophical Autobiography* implementation is not the task of the philosopher who is acting much more like a *gadfly* or spur (Greek: μύωψ, *mýops*) to use Plato's term for Socrates' social role, to steer innovative and creative thinking often subverting mainstream thoughts readily nurtured by those in power. This attitude has close family resemblance with what is called *risky thinking* by Hans Ulrich Gumbrecht which is capable to produce complexities that continuously supply a reserve of useful alternatives to prevailing thoughts and practices, which is especially useful during crises.

Here, I intend to emphasise that projects influenced by a new radical enlightenment should be based on the strategies of design for decline or degrowth, and on emergency art that embodies and so sensitises us to the circumstances of our *decent decadence* in Santiago Zabala's mind, since both sociocultural tactics deals with real needs and true emergencies of our unsustainable posthuman condition. To my mind, critical, humanist, and existentialist Design Culture studies that is "historically grounded" (Julier, Anders et al., 1) and simultaneously oriented clearly towards designing our future, could realise best the above and might provide a valuable alternative as well to the new curricula of posthumanities offered by Rosi Braidotti. This postdisciplinary approach is critical because it regards criticism as of the operations of human culture and society and especially of human reason, in the footsteps of the French encyclopaedists. It is an enlightened humanist endeavour since in the centre of its interests still stands the life of human beings in the mentioned critical perspective, and in an existentialist sense alike. This means that it works more by lived and potential future life experiences and less by abstract or detached notions and understands the fundamental absurdity of our life as Albert Camus did in his famous *La crise de l'homme* claiming, nevertheless, that we should make life reasonable and meaningful. Adopting the existentialist assumption that only human beings exist does not mean, however, to question the rights of the living environment of humans understood in Luc Ferry's terms. It is simply a useful attitude of avoiding such situations when the tragical aspects of our unsustainable posthuman condition are viewed rather recklessly by so called posthumanist, dispassionate or even humanly irresponsible attitudes so much resembling postmodernist irony and relativism that paved the way intellectually to destructive neoliberalism as Ulrich Beck so wittily explained decades ago.

Today truly critical, humanist, and existentialist Design Culture studies is trying to better understand and consequently change the troubling conditions of contemporary design

capitalism that is served by governments which “prefer immature subjects to independent citizens” according to Susan Neiman. Expressions of this “preference range from the growing practice of keeping us all under electronic surveillance, or industry’s ability to keep us dazzled by a bewildering number of choices of automobiles or breakfast cereal – while keeping the far more important choices out of our hands.” To Neiman’s mind today there is no more need for direct force intervention of totalitarian kind to achieve this immaturity of citizens since our natural inclination for laziness can be triggered by the “indirect control” of neoliberal design cultures in which smart “toys” are promoted and perceived as indispensable. Meanwhile, values of a “more just and humane world are portrayed as childish dreams to be discarded in favour of the real business of acquiring toys” and finding our steady “place in the consumer economy. It’s a perfidious reversal that leaves us permanently confused.” (Neiman, 32-33.) Marina Garcés describes our confused world in terms of “projects of delegated intelligence” according to which living in design capitalism we could become “as fools as humans can be, since the leaders of the world will be intelligent instead of us. This is a *smart* world for incurably idiot inhabitants.” (Garcés, 10-11. My translation.) Unless we act otherwise.

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ARTIFICIAL ARTIFICIAL
LANGUAGES LANGUAGES
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MAKING MAKING MAKING
NEW NORMAL NEW NORMAL
MULTIPLICITY MULTIPLICITY
PROXIMITY PROXIMITY
RESILIENCE RESILIENCE
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