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EXPLORING A LESS TECH-DEPENDENT SIDE OF COLLABORATIVE CREATIVE DESIGN

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Abstract: The purpose of this paper is to explore a less tech-dependent and more relationship-oriented kind of collaborative creative design. We start by building a reference framework through analysing social creativity, participative design processes and collaborative solutions. We explore these areas to identify how collaborative creative design is being practiced and discussed. We focus on the shift in the object of design from tangible to intangible elements, to then introduce the idea of connectivity as one element that needs to be considered and designed when dealing with complex systems. We propose the idea of connectivity as one focus in collaborative design. Finally we discuss the future directions of this new potential area of interest in collaborative creative design.

Keywords: *collaborative creative design, social creativity, participative design approaches, collaborative solutions, connectivity*

1. Research framework

The paper explores a less tech-dependent and more relationship-oriented side of collaborative creative design. The investigation considers a research framework based on three main areas: creativity, design process, design solution. In the first case, collaborative creative design is represented by the social side of creativity that expresses the need of interacting with other people and the context. In the second case, collaborative creative design is especially evident in participative design approaches based on user involvement. In the third, it is expressed in collaborative solutions characterised by bringing together large numbers of interested people.

In order to understand the framework, we analyse social creativity in the design field, and we explore the current collaborative and participative approaches in design, aiming at investigating the topics within collaborative creative design. We explore the existing collaborative and participative design approaches to identify how a less tech-dependent kind of collaborative design is being practiced and discussed. Finally we argue upon the emergence of collaborative behaviours as one of the factors in defining complex design solutions.

In this framework characterised by the shift in the object of design from tangible to intangible elements, we propose the idea of connectivity as a relevant focus in collaborative design processes. We argue that this is one of the main elements that needs to be considered and designed when dealing with complex systems. Finally we make few considerations on the implications of this new potential area of interest in collaborative design.

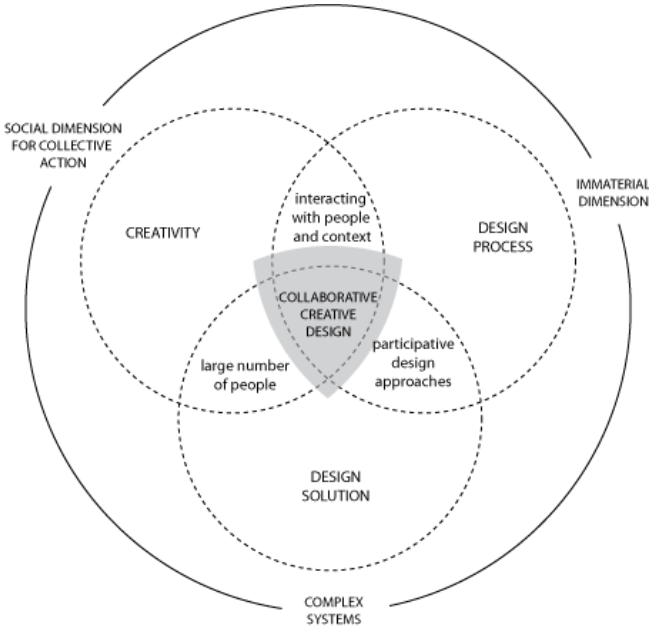

Figure 1. Research Framework

1.2 Social creativity in collaborative creative design

Creativity is generally regarded as an inherent factor in a design project, it being a new product/service, a new strategy or identity. It therefore receives attention from many different perspectives in the design discourse, encompassing the cognitive mechanisms and techniques useful to enhancing it, the policies that underline its importance, and the methods useful to leveraging its potential. In the design discourse creativity has been mainly studied in cognitive terms, that is, trying to understand the cognitive processes of designing. Here creativity has been for a long time regarded as a solo attribute: during the XXth century it was diffused the idea that creativity pertained to special people working in special places, such as artists, inventors and so on (Howkins, 2001). Schön (1983) described creativity referring to the iterative process of conversating, acting, reflecting through which the designer refines the problem and builds a mental representation of the situation. Cross (2006) intends creativity as the effective process that guides the designer to generating an *apposite* solution to the given problem, independently from any sudden flash or illumination. Both these positions refer to the process of designing in a problem solving paradigm. Taura & Nagai (2010) argue that this mode for defining the link between design and creativity is strictly related to an industrial society, where design was mainly understood as an engineering-based process.

However, design creativity research has developed a more nuanced understanding of how creativity manifests, highlighting the importance of social interactions and collaboration (Mamykina et al., 2002). Csikszentmihalyi (1997) has described creativity as a systemic phenomenon, mainly happening in the interaction between the thoughts of an individual and the underlying socio-cultural context. Creativity derives from human relationships, therefore from the exchange of thoughts applied to the constraints of the given environment (Engeström, 1987). Seemingly, Fisher (2003) points out that an individual mind is highly overrated, while intelligence and creativity both result from interaction and collaboration. An individual has a collection of matrices in a specific domain of knowledge, thus people exchanging knowledge can externalise their matrices building on them in the interaction with others. Scientific and artistic innovations thus emerge from exchange of thoughts, struggles and ideas, that is the social dimension of creativity. Creative design can then be thought of as the consequence of a series of social interactions, not programmed and capable of changing the value systems of interactees (Gero, 2010). The importance of social creativity is also strongly related to the field of Human-Computer Interaction. The last intends the topic as driving collective design and crowd sourcing creativity, while building on social computing tools to motivate individuals in participating voluntarily and actively to collective projects. Here collaborative creativity emerges through a distributed, self-organized and potentially infinite number of people sharing ideas and interacting

(Maher, 2010; Mamykina et al., 2002). In this framework connected modes seem to represent the most effective means to maximise ideas (Johnson, 2011). Social sharing and networking tools (especially referred to the ICTs) have in fact dramatically increased the benefits of social creation, thus leading to the rediscovery of the natural human mode of the creative endeavour.

Besides the importance of social computing tools, the mentioned scholars arguing for social creativity focus on the central role of human relationships and interactions between people and people/context. Although ICTs based tools are a very important focus, they refer to specific aspects of social creativity. Social computing tools enter the picture when looking at maximising and/or managing the number of participants, as they allow the involvement of greater numbers of people, thus ideas. Nevertheless the scholarly positions underlined above, point out the centrality of human relationships in social creativity. Here lie our research interests, to understand that what from a creativity perspective is called social becomes participatory in terms of design process, and collaborative in terms of design solutions. In the following paragraph we try to understand how the relationship-oriented practices of social creativity are evident in the design process.

1.3 Participation in design approaches

The relationship-oriented side of Collaborative Creative Design that we are investigating in this paper, refers mainly to participative design approaches when looking at the design process. These concern user involvement as a way to include a wider community to stimulate creativity, both in designers and non designers. In the following sub-paragraph we briefly describe the three main design approaches that highlight the importance of people interaction and knowledge exchange when designing, User Centred Design, Participatory Design and Co-Design. These all use implicitly an idea of social creativity as a key point for the design process.

One of the first references when talking of participative design approaches is User-Centered Design (UCD), a methodology and philosophy that places users and their goals at the center of the design intervention. User participation is stressed through four main principles in UCD, highlighting the relationship between people, context and artefacts: (1) appropriate allocation of functions between users and systems; (2) active involvement of users; (3) iterations of design solutions; (4) multidisciplinary design teams (International Organization of Standardization, 1998). The idea of user involvement characterizes the UCD process in a double perspective, that includes direct involvement (real work with users) and indirect involvement (activities without users). Even when users are not available, UCD uses scenarios built on simulated observation, that are either created by the design group and/or by external experts. In UCD users are mainly involved in the first part of the design process to understand their specific needs, and at the end to have feedback and share solutions.

The focus on user involvement is the main element of the other important reference for discussing participation in the design process: Participatory Design (PD). This revolves around three main themes: (1) degree of user participation, (2) co-operation, and (3) emancipation. PD considers the user an important actor to be involved in the whole creative process, because he stands in a unique position to understand how to best address his needs/desires. The idea of participation is therefore central to this approach, because users are intended as knowledge recipients on the investigated practice or environment (Bjerknes, Ehn & Kyng, 1987; Greenbaum & King, 1991; Schuler & Namioka, 1993; Kyng & Matthiassen, 1997). In the tradition of PD, end-users and developers are considered at the same level, because they all contribute to developing a design solution with their specific knowledge. Moreover in PD the design action takes place in a real context rather than in a closed off studio. Therefore the final solution derives from a process of sharing insights between all those affected by the design itself (Reich, 1996).

Another interesting participative approach is Co-design. This is centred on people and it focuses on large and complex social challenges, while considering the necessities of multiple stakeholders. Moreover, it focuses on enabling users' creativity, it being often applied in creative sessions where participants are prompted collective exercises by designers (Binder & Brandt, 2008; Mattelmaki, 2007). Co-design is based on the idea that designers should not only understand people desires and needs, but enable stakeholders to express themselves through creative problem solving exercises. The social dimension of creativity is also affected by this principle, becoming co-creation, that is, it

involves a multiplicity of stakeholders as agents of change. Sanders and Stappers (2008) highlight as well this concept by considering co-design a kind of collective creativity that should be applied to the whole design process as a declination of co-creation.

In co-design the role of users is moved at the beginning of the process. Participants are co-designers themselves. Designers/facilitators and users feel equally involved in developing and maintaining a solution. Participants are empowered in taking active ownership of the outcome, therefore becoming active agents before, during, and after the design process.

The main difference between these approaches concerns the degree of user participation: UCD mainly observes users in context (passive role); PD includes users in decision making (active role); Co-design emancipates users to own the solution. Nevertheless they all refer to a social dimension of creativity, where the last derives from the passive or active interaction between user/designer/context. Human interaction and the social dimension are the main concepts around which these approaches revolve. Moreover there is a double layer to the object of design: the process and the final solution. The first needs also designing to achieve a good result. This underlines the importance of intangible elements as key factors in a design, such as negotiation, conversation, trust, reciprocity, etc. In all three approaches therefore is already evident the need for facilitating an immaterial dimension when designing. Finally Co-design enlarges the scale of intervention to wider social challenges, thus witnessing a relevant shift in the object of design. In the following paragraph we will describe how this focus on complex societal issues further develops in collaborative solutions and behaviours.

2. Collaboration in design solutions

Collaborative Creative Design is strictly related to the topic of collaboration, and to an understanding of how this is depleted in current design solutions. Collaboration is very important to face the current complex problems, as it implies a wide and cross-sectoral participation of experts and disciplines (Fisher, 2000). Its centrality is thus provoking new practices: production, distribution, consumption, governance are looking at introducing collaborative behaviours and participative tecniques to become more democratic. Evidences are collaborative solutions chosen over traditional consumerist options that are concerning all levels of the society, as we will further explore through highlighting few scholarly positions.

One of the authors that introduces the idea of collaborative, open and connected solutions is John Thackara (2005). He argues that the world should be based less on objects and more on people, describing collaborative design as an approach that should involve all stakeholders in taking decisions and owning a solution, that in this way becomes collaborative. When looking at governance, Geoff Mulgan (1997) talks about the importance of introducing collaborative and systemic approaches to designing new governmental systems and policies. He points out that in a world dominated by connectedness, the idea that nations, citizens, and politics are separate is no longer suitable. Governance structures need to adapt to the character of systems, connections and feedback loops enabling a multi-faceted participation of everyone involved in the political, social, economical life of a country. The project “The London Collaborative”, led by The Young Foundation (2007-2008), has reflected on key challenges for the future of London, underlining the importance of collaboration and inclusion of all stakeholders in the public decision making process. The network brought together over 400 people who make decisions, plan and deliver key services and policies that shape the city. The main activities developed have been: future scenarios for the city’s main challenges such as “worklessness” and “beaviour change”; a programme to redesign the shape of public services, called “London Futures Challenge”; face-to-face events for the London Leadership Network. The project has therefore tried to collaboratively rethink the public sector in London, facing three main challenges: the necessity to sustain dynamism in economics, ideas and people; the need to increase resilience and adaptive capacity to ensure quick response to shocks; the vision of the city as an interwoven system of connected actors.

Another interesting point of view is the we-thinking idea proposed by Charles Leadbeater (2009), who argues for collaboration (in terms of mass creativity enabled by the internet) as a way to innovate. In

the author's idea, the concept of we-thinking is represented by crowd sourcing, social networks, and other kinds of online platforms that are enabling everyone to amplify the visibility of their ideas.

Moreover these concepts are linked to emergent innovation models driven by collaboration. These build on concepts like mass innovation, democratised innovation, social innovation, wisdom of the crowd, and so on (Surowiecki, 2005; Von Hippel, 2005; Shirky, 2008; Murray et al., 2010). People are called to design their neighbourhood, their business, the way they live, thus producing "a mesh of designing networks: a complex system of interwoven design processes, involving individual people, enterprises, non-profit organizations, local and global institutions who imagine and put into practice solutions to a variety of individual and social problems" (Jégou & Manzini, 2008: 41).

An Italian example of overlapping/designing networks is Radiomamma, a Milan based initiative that connects the idea of family-friendly to rediscovering a way to live in, and influence the city, while producing social and economic value. Families are the core of the community, that becomes the main social innovator and entrepreneur through enabling the connection between citizens, urban issues, neighbourhoods, public administrations, and local businesses. A complex innovative systems emerges for governing/regenerating urban spaces, while representing a balance between online/offline connections.

Collaborative solutions thus evolve the idea of user involvement beyond the design process itself: not only co-creating something, but co-producing a complex solution. Co-producing means developing, refining, sustaining a system that can be constantly adapted to the underpinning environment. When thinking of examples in this category, a first reference is the open source movement, thanks to which a first understanding of distributed systems and the potential of co-creation and co-production have emerged. Our interest goes beyond the web-based trend, to embrace multi-faceted systems that encompass a mix of online and offline environments. The core of the designed is the relationships between participants and between people/places/organisations to allow the solution to work and evolve through both online and offline tools.

3. From tangible to intangible

The analysis developed thus far has explored collaborative creative design through three major areas, social creativity, participative design processes, collaborative solutions. We have focused on a less tech-dependent and more relationship-oriented collaborative creative design, identifying three topics. (1) The importance of a social dimension for collective action, which from the perspective of social creativity pinpoints the importance of human interactions, in the design process introduces the topic of co-creation, when looking at collaborative solutions emerges as social sharing platforms (online and offline). (2) The importance of a immaterial dimension characterised by the exchange of ideas and knowledge in creativity, the design of trust, reciprocity, negotiation, conversation as elements of the process, the participative and democratic access to design solutions. (3) The centrality of complex systems, that raises the issues of a diffused creativity, of co-production as an interesting design process, of collaborative platforms both online and offline.

These elements help define an emergent design focus that could be further described by what Benkler (2006: 2) defines new "cooperative and coordinate actions carried out through radically distributed, nonmarket mechanisms that do not depend on proprietary strategies". This evolution is more than the old passage from products to services as design object, on the one side because "creative collaboration between diverse players needs sophisticated management" (Kahn, 2009:44), on the other because we are facing a complex design system that is not depleted by practical evidences (product and/or service). As Thackara (2005) underlines, design is no longer about the form and function of things, thus it is no longer deliverable in a fixed form. "In today's unltranetworked world, it makes more sense to think of design as a process that continuously defines a system's rules rather than its outcomes" (Thackara, 2005: 224). Another evidence is the emergent approach of Transformation Design that stresses the complexity of current design issues: in order to face a complex context it proposes a close collaboration between different disciplines, the use of bottom-up and participatory design techniques, the emancipation of users, the open-ended nature of a design solution (Burns et al., 2006; Sangiorgi 2011). The focus considers both the engagement of users during the design process,

and the impact of the intervention to point out that a good solution should leave behind tools to keep adapting to the situation. Finally it asks designers to shape not only forms, but also behaviours of people, systems and organisations, claiming for a high level of systems thinking in a design project. Furthermore design is trying to incorporate more complexity in its techniques by adapting principles coming from systems thinking. This is aimed at grasping, embracing and mirroring the complexity and wickedness of real life problems to derive innovative solutions (Sevaldson, 2011).

The interests of design are going beyond the "thingification" of people's desires and needs. Its domain (both as a discipline and as a profession) is moving far away from its traditional dialogue with innovation, involving approaches that study how human relationships form and evolve, and how citizens might participate in developing products and services together with companies and/or local institutions. This has great implications also in the design practice, mirroring changes in creativity and production traditionally seen as the province of professional design but now driving new ways to work, socialise, be creative and live across society. This is informing the emergence of novel design scenarios to create products and services (e.g. personal manufacturing, peer production, fablabs, crowd sourcing) on many levels: people, companies, organisations, institutions, communities, underpinning new ways to manufacture and design products and services.

This is an ongoing discussion, so much so that the European Commission has just recently launched the first European Design Innovation Initiative to bridge policy makers and design (European Commission, 2009). In addition it is working on Social Innovation as an emergent field of interest for societal growth. This sets an evolving framework that describes design as interested also in giving shape to relationships and collaboration, while putting complex systems at the centre.

3.1. Connectivity as an object of collaborative creative design

The designerly shift from tangible to intangible draws the attention to elements that are usually not designed, such as trust mechanisms, gratitude, beliefs and personal interests. This means that the design intervention is also concerned with the links, interactions and relationships between people/context/artefact, informed by the social, immaterial, and complex dimensions described above. The sum of this introduces the concept of *connectivity*, as our proposal for reading the framework. This idea indicates one of the issues we are exploring in collaborative creative design.

Few key concepts can be summed up from our analysis, to explain the points from which connectivity emerges as one object of collaborative creative design.

(a) from the perspective of social creativity it is represented by the concepts of:

1. leveraging collective creativity for solving complex problems,
2. exchanging immaterial elements, like knowledge, competencies, information,etc.,
3. creating interdependence by linking ideas and meanings,
4. building network structures to stimulate diffused and shared creativity;

(b) from the perspective of the design process it emerges in the concepts of:

5. looking for co-created and co-produced collective meaning and action,
6. considering the tangible and intangible elements of a design intervention (designing both the process and its outcome),
7. focusing on the organizational process through which the solution is built and especially regenerated/adapted,
8. centering the design activity on collaboration and co-production, actively involving all interested stakeholders (people, companies and places);

(c) from the perspective of the design solution it means:

9. considering an effective collaboration as an important part of the design outcome,
10. achieving the emancipation of users through owning the solution,

11. building effective relationships (between all elements of the system) to make solutions resilient,
12. managing relationships and triggering mechanisms for knowledge/skills/resources exchange,
13. developing collaborative and social sharing platforms for collective action.

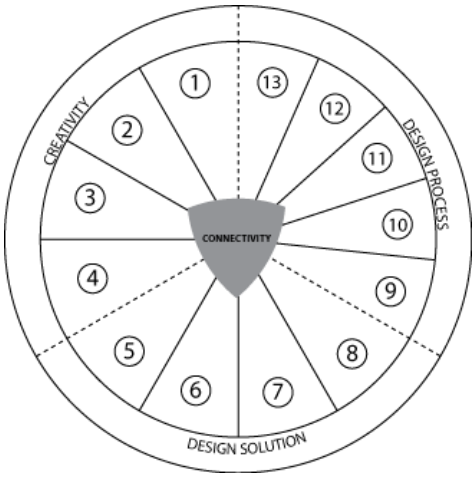

Figure 2. Connectivity key concepts

Finally our idea of connectivity is related not only to the possibility of connection through the ICTs, but it stresses the idea of creating effective interactions between people, and between people/places/artefacts. Such a transformation needs to be investigated further, as it needs to incorporate a paradigmatic change that is not yet fully understood. Nevertheless this is a journey that will take time to develop.

4. Final considerations

Collaborative Creative Design emerges as a complex area of investigation with many levels of analysis. In our discussion, we have tried to unfold this topic by exploring it through three areas, social creativity, participative design processes and collaborative design solutions. The results of this analysis have led us to identify three characteristics of Collaborative Creative Design, a social dimension for collective action, the importance of the immaterial dimension in collaborative design activities, the centrality of complex systems as design solutions. This has been useful to understand better Collaborative Creative Design, and it has provided a framework for acknowledging a possible new object for this approach. We have called this connectivity, starting its exploration through few key concepts. As an emergent idea, numerous research questions for understanding and developing connectivity need yet to be raised and answered. For example which is the role of design compared to other experts? Which are the specific methods and tools for designing connectivity? Which are the representative outcomes? How can connectivity be taught to the designers of the future? Moreover, the topic would greatly benefit from multi-disciplinarity, as it needs to be expanded upon by researchers coming from different fields as well as from practitioners to progress.

Nevertheless connectivity has the potential to be developed through dedicated methods and tools, thus supporting the development of Collaborative Creative Design, both in research and practice. Finally research into connectivity could be very relevant to the field of Collaborative Creative Design, as it could help disclose its less tech-dependent and more relationship-oriented side.

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