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Digest

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Peter the Great St. Petersburg
Polytechnic University,
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International Association

DESIGN: VERTICAL & HORIZONTAL GROWTH

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28.10.2020

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With the Cumulus vision to actively promote exchange of knowledge and design experience on a global and interdisciplinary scale, three Russian schools from St. Petersburg and Moscow — HSE Art and Design School (HSE University), St. Petersburg University, and Peter the Great St. Petersburg Polytechnic University have joined their efforts to host an online conference in collaboration with Cumulus.

'Design: Vertical & Horizontal Growth' was a precursor to the official annual Cumulus Conference. Postponed due to COVID-19, this will now take place in Moscow and St. Petersburg in June 2022. Since staying connected is critical in the on-going COVID-reality, three Russian universities decided to make participation free of charge. The conference was held in digital format in October 2020.

'Design: Vertical and Horizontal Growth' aims to encourage the Cumulus community to express their opinions on the role of design as a humanizing practice in the context of multidirectional development complicated by the COVID pandemic.

We decided to invite the participants to explore issues surrounding the design community's involvement in the innovation process. How can design thinking help society overcome its fear of and resistance to the main challenges of our time? In what ways could we bridge the gap between traditional living patterns and the changes rapidly occurring in all areas of society today?

We need a communicative model that would smooth over the differences between the horizontal and the vertical processes.

The perpendicular development vectors — x and y — shape the space of interpretation, aims and objectives of design. The horizontal vector represents cultural values and the conventional lifestyle; this is an area of social comfort. The vertical vector represents innovations that destroy the familiar way of life. Our discussion focuses on design as a practice of searching for areas of growth, support and balance, which make it possible to reconcile the traditional way of life and cultural values with the innovative approach to solving problems arising in society.

The three-day conference was held from 28 to 30 October 2020. Each day has covered one of the conference's tracks: —

Future Human, Creative Industry, Inter-action. Each host (SpbU, SpbSTU, HSE) was responsible for one track. This approach has presented a diverse Russian art and design academic community eager to exchange ideas with colleagues worldwide.

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CREATIVE INDUSTRY

Hosted by Peter the Great
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For over two decades the term 'creative industry' has been widely used to designate an ever growing diversity of economic activities. Creativity as such is an essential human feature necessary for inspiring innovative development of every industry and science. Should design be a universal instrument capable of embracing the whole range of human activities, or should it just focus on 'creative industries' as they are defined today? How does the project oriented approach of the industry influence design thinking? And what should contemporary art and design schools be teaching?

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Design in the Digital Era: the Balance Between Technology, Creativity and Culture

Abstract

The contribution aims to reflect on the impact of digital transformation in the production of cultural and creative content. Design assumes a significant role within this scenario, as it has always been a link between technology, market and society. Precisely, the Made in Italy sector embodies the synthesis of culture, creativity and technology, in which design unfolds an articulated system of values deeply rooted in the economic, social and cultural values.

The paper will address the role of design in the ecosystem that sees the production of culture and creativity borrowed from technological development, considering that, if the cultural and creative industries traditionally operate according to a concentric circular model (Throsby, 2006), technology introduces a third dimension of depth: within a multi-dimensional space, design assumes the role of connector and catalyst of economic-managerial, technological, socio-cultural and aesthetic-communicative knowledge.

Keywords: cultural and creative industries; design culture; digital revolution; Made in Italy manufacturing; digital transformation.

Introduction: the culture-creativity interplay and the role of technology

In recent years, the theme of the relationship between cultural and creative industries (ICC) has assumed great importance in the international theoretical debate (Flew, 2002; Pratt, 2009; Flew, Cunningham, 2013). Studies show that the boundaries between Cultural Heritage and creative industries are to be understood as blurred and permeable since they seem to allow the passage of a cultural product from one aggregate to another.

Therefore, when we study the theme of the creative industry, it is evident that this cannot ignore the involvement of the cultur-

al sphere as well. In this regard, the result of the 2006 EU / KEA Report can be significant, highlighting the instrumental correlation between the cultural and creative industries (KEA, 2006). The report brings out the notion of culture-based creativity: "creativity does not happen inside people's heads but in the interaction between a person's thoughts and a socio-cultural context. It is a systemic rather than an individual phenomenon" (KEA, 2006). Hence, following a systemic perspective, technological means contribute to shaping the languages and models of contemporary society, as well as its creative productions. Technology expands the individual's faculties remodelling the conditions of the world at practical, cognitive and even emotional level.

The technological means available today seem to facilitate these operations of modelling reality, thanks to a pervasive availability and accessibility. The "aesthetic society" (Manovich, 2019) is the product of seamless and complex interactions between media and tools, whose "use" in this context results not only in the production of contents but also in their promotion and communication. Specifically, the production and presentation of creative contents are the basis of the economic and cultural functioning of the aesthetic society, in which design plays a central role. Positioning itself as a means of cultural production (Manovich, 2019), the media feed the creative industries and vice versa, triggering a continuous cycle of identity and expression of contemporary cultures.

Indeed, the creative industries operate through a process whereby the cultural resources available in any medium are recombined in new ways (Burgess, 2006). Design, as a creative industry, works by combining and digesting what the cultural world offers through its stimuli, which it "continuously feeds on and which function like enzymes" (Ciuccarelli, 2006). Technological evolution and digitization have thus favoured the exponential growth of the tools available, expanding the types of support with which cultural resources can be both produced

and transmitted, with the same resulting mutations also for creative products. We live in a digital culture (Gere, 2009), that generates digital content; digital is also the support and tools, as well as the digital cultural heritage (Kalay, et al., 2007) resulting from these processes. Digital, therefore, leads to a new paradigm that changes the production, definition, enhancement, research and conservation of cultural and creative products (Spampinato, 2018).

The contribution proposes a reflection on the impact of digital transformation in the production of contents, which today participate strategically in the cultural and economic functioning of society. The role that the design culture assumes within this scenario is significant, as it has always been a link between technology, market and society. Specifically, the Made in Italy context offers a meaningful reflection for the contribution, embodying the synthesis of culture, creativity and technology, due to its rooting in the economic, social and therefore cultural fabric of the places where it stems. Here new technologies will produce a disruptive impact, as they tend to merge the physical and digital world seamlessly. Yet digital culture cannot ignore material culture, which acts as a portal between the physical world and cyber hyperspace: material culture will be playing a fundamental role, in which design crystallizes the "forms of making", translating them into the "shapes of living" in a new, automated world.

In fact, as software has been eating the world in the past decade (Andressen, 2011), automation is now taking stage, establishing a new generation of integrated systems, filled with machine-to-machine interactions: mankind will soon be immersed in a new ecology of man-machine relations, which will soon require a rethinking of the different socio-cultural categories: subject, action, intention, responsibility, cognition, work. In this scenario, design would play the role of catalyst of new meanings among the creative industries, as it moves from making stuff to making something (Sanders & Stappers, 2013): design traditionally inscribes its interventions in a broad socio-economic and strategic discourse, committing now to search for new values while the relationships of the future unfold.

The paper will therefore address the role of design in the ecosystem that sees the production of culture and creativity borrowed from technological development, taking into account that, if the cultural and creative industries traditionally operate according to a concentric circular model (Throsby, 2008), technology introduces a third dimension of depth: within a multi-dimensional space, design assumes the role of connector and catalyst of economic-managerial, technological, socio-cultural and aesthetic-communicative knowledge.

From Critical Theory to further interpretations

Design assumes a vaguely paradoxical role in the ongoing technological revolution. If on the one hand it can be understood in all respects as a creative industry and, therefore, recognizable as a driving force of social, cultural and economic development, compared to other ICs it retains crucial peculiarities. These features already emerged from the first document of the British government (1998), which introduced the concept of the creative industry, favouring the growth of the international debate on the subject. The report states that assessing the total value of design activity in the UK is difficult, since:

"1) design consultancies are engaged in much non-design activity;

2) much of its value is hidden within the value of other industries;

3) within companies, the design function cannot be consistently bounded, and different sectors or even organizations within sectors have their own definitions of design;

4) definitive statistics are not collected". (DCMS, 1998)

The cultural industry paradigm has ancient roots to be traced in the Critical Theory of the Frankfurt School: it was introduced

by Max Horkheimer and Theodor Adorno (1947) to highlight the effects of economic dynamics extended to cultural products becoming "consumer goods". The authors attribute to the cultural industry the nature of an ideological tool used to manipulate consciences and do not trace, in the rise of mass culture, the role of the development of the means of communication.

Walter Benjamin wrote about technical reproducibility as an element of democratization. Although, on the one hand, he supports the Adornian vision, pointing out a process according to which "the technique of reproduction [...] removes the reproduced from the sphere of tradition"; on the other Benjamin underlines that reproducibility "with the help of certain procedures, can also introduce the reproduction of the original in situations that are not accessible to the original itself. [...] And allowing the reproduction to meet the one who benefits from it in his particular situation, he actualizes the reproduced" (Benjamin, 1935).

Furthermore, it is interesting in this regard the position of Edgar Morin who in *L'Esprit du temps* (1962), argues that the cultural industry is not only an ideological instrument of manipulation but an enormous workshop for the elaboration of collective desires and expectations. Morin wrote about the "industry of the imaginary", an industry that stages collective dreams in a mixture of reality and desire, production aimed at consumption and unconscious expectations, is intended as the result of the collaboration between those who produce and those who enjoy.

Moreover, Alberto Abbruzzese offers a reinterpretation that overturns the thesis of the Francofortesi, arguing that representations of mass culture have contributed to producing "new worlds of experience" (Abbruzzese, 2013).

This type of reflection which, starting from the Critical Theory goes beyond, helps us to understand that the development of the cultural industry has allowed the social construction of a "new world" of representation. A world in which design has been able to place itself and evolve as a hinge between other disciplines and systems of knowledge that are much more specialized and structured. "Not in antithesis but as a catalyst of contents and synthesizer of effects, it makes design [...] extraordinarily adequate to pontificate the relationship between theory and practice, between possible and achievable" (Celaschi, 2008).

Hence, the instrumental relationship between cultural and creative industries is expressed in the main characteristic of the creative industries, and therefore also of design, that is the ability to use culture and creativity as a background for the creation of other types of products or services, which incorporate and enhance this cultural contribution (KEA, 2006; Sacco, 2017).

Culture and creativity, therefore, coexist in the same ecosystem within which culture generates creativity and the latter, in turn, generates a new culture. The creative element derives from the cultural substrate from which it draws the stimuli to be recombined to intuit or imagine new associations, new ideas and new processes.

It is what Richard Sennett called "open ended knowledge system" (Sennett, 2008), a system composed of forms, processes and cultural contents to be used both as tools to build a "collective memory" (Halbwachs, 1992) (as traditionally occurs), and above all as resources for the production of new cultural contents. According to this interpretation, the design culture feeds on the cultural sphere. It brings out the stimuli for the creation of the new through the connection, combination and above all, the interpretation of different elements.

The circular movement between these two dimensions belonging to the same ecosystem generates spontaneously and continuously over time numerous ideas and reflections of a crit-

ical nature. Cultural and creative synthesis requires a transversal and inquisitive reading that lies in their symbiotic relationship that inevitably exchanges ontological questions fundamental for identifying the overall evolution and future developments.

Design in this ecosystem

Within this system design assumes a dual and controversial role. On the one hand, Design action is consolidated in the elaboration of strategies and proposals aimed at bringing people together to the cultural world (as evidenced by the area of design for cultural heritage). On the other hand, the product of design, being part of the cultural and creative industries, is itself recognizable in the contemporary definition of heritage. It follows that design is both an active actor and a result of this process of continuous creation; it contributes to producing the culture of the future by interpreting the present and the past and at the same time designs the relationships that can allow this construction. Product of design is a testimony of the material culture capable of influencing the culture of the future. As “product”, in this case, we mean the result of the design action, therefore it can refer to the physical or intangible component of the product as a physical or intangible product, services and experiences.

Moreover, it is possible to trace this paradoxical aspect in the disciplinary evolution of the design itself. If initially design was conceived as an activity exclusively aimed at the industrial production of objects of use (Simon, 1969), the design of the new millennium shifts its interest from the domain of technique to creative thinking, laying the foundations for what is now known as design thinking (Brown, 2008; Kelley & Kelley 2013).

The root of the change is to be found in some substantial differences in the social, economic and cultural implications of the emerging reality that have raised essential questions for design in the face of a further and increasingly intrusive “new-new-new landscape” (Maldonado, 1961). During this evolutionary path, design shifts its disciplinary domains on the purpose of the design activity rather than on the object of the project: in fact, we move from the distinction between product design, interior design, visual design, etc. to “experience design”, service design, etc. (Sanders & Stappers, 2008, 2013). Design thus takes on the characteristics of a process of making sense (Krippendorff, 1989; Manzini, 2015) which can add other values to the product. Today design can be understood as an activity — design-driven innovation process —, as a result of this activity (a product, service, communication, strategy), and as an organized system of actors — the design system — (Maffei et al., 2015).

This process is characterized by an ever-stronger attraction towards the cultural dimension to be reused to reinvent the concept of the product (Calcagno, Cavriani, 2014), service or experience. Design thus becomes the “middle ground” between the cultural domain and the world of innovation, translating technological progress into ever new products and services. As Bonsiepe writes “design is the last element in the chain useful for introducing scientific and technological innovations into the practice of everyday life” (1995). Therefore, it has the essential task of collecting and coordinating the various paths of innovation, transforming them into shared values and meanings, introducing new forms and expressions of culture into social structures that flow into cognitive capital. Design thus becomes a vector of the precise moment of “now”, in which the past is handed over to the future.

In the current socio-economic context, culture, knowledge and cognitive skills have become the main generators of value not only to improve the productivity of an economic system that is proving to be increasingly complex and competitive but above all as sources of creative energy for sustainable growth solutions. Understanding functions and impacts of the production processes of the (new) culture and creativity are, therefore,

necessary so that the reference to these new forms of capital is not only ornamental. With this aim, the paper will examine the Made in Italy system as a case study and development ground for an Italian design that draws the reasons for its specificities from the relationship between culture, creativity and technology. In this terrain of design-driven innovation, economic value is produced by generating meaningful content (Verganti, 2009). Indeed, Made in Italy proves to be a system in which innovative dynamism exists precisely due to the ability to produce and absorb content from cultural and creative supply chains.

Culture and creativity in the new technological horizon: Made in Italy as a testing ground

In the Italian context, one of the most significant areas of contamination between culture, creativity and technology is the Made in Italy manufacturing system. Here culture and creativity are a driving force for the economy and feed the soft power of territories. The Made in Italy manufacturing system is a specific sector that draws value from the generation of “innovative knowledge” transforming them into “new utilities” (Rullani, 2008); with its close relationship with the cultural heritage, helps to strengthen the link between culture and creativity. This relationship is the basis of the Italian production context and strongly affects the value and competitive advantage of manufacturing companies (Cianfanelli, 2018; Goretti, 2016; Baia Curioni, 2005; Segre 2005).

Italian manufacturing system is mostly composed of Small and Medium Enterprises (SMEs) that hold a significant know-how in high-end production, based on profound knowledge about different technical and theoretical fields and artisanal processes. On one hand, SMEs need to safeguard and enhance their “Saper fare” (know-how) related to the history of the production district in which they are located. On the other, these companies need innovation programs both in design and production processes. Then, through Manufacturing 4.0 guidelines, some leading companies developed improvements and significant transformations in different steps of the supply-chain, connecting innovative technology applications and artisanship to traditional processes.

It is crucial in this context to highlight that the European evolution of Industry 4.0 was conceived from economically more prosperous macro-industrial systems compared to the Italian one, characterized by relatively larger companies. This scenario is significant as well as the man-technology binomial, which could probably strengthen the business models of Italian SMEs but reforming technological and cultural paradigms.

The spread of new generation technologies and the advancement of digitization have produced a significant impact on the economy of the creative industries (Made in Italy too), as they act directly on the languages and information from which representations of reality arise. Culture proves capable of indicating new development paths for traditional sectors by incorporating new creative or symbolic contents. An emblematic case is design, which stands out for its ability to find transversal applications to different industries, combining effectively with new technologies to add dynamism to manufacturing sectors and districts. Going hand in hand with technology, design has refined research and practice tools and processes, developing an interdisciplinary sensitivity. In this way, the discipline has progressively extended towards a humanistic-cultural dimension, in which it has introduced new paradigms of design-led innovation. Companies that have introduced digital systems in their processes have intervened primarily in those business sectors that generate the highest value in the final product, such as communication, design, production, internal and external logistics, after-sales services and maintenance (Goretti et al, 2020).

Yet nowadays it seems that technology is dictating the rules of change: the extent of technological advancement will entail a complex underlying cultural manoeuvre, since industrial products, both in appearance and in performance, will be placed in contexts in which technology will offer new social, environmental and cultural values. This will lead to think *ex novo* the forms of making, living and dwelling, which call for new subject-object interactions within ever more complex systems. It is fundamental, in a context such as the Italian one, dominated by ‘know-how’, to be able to integrate new tools offered by technological progress in a design and production process that preserves the value of traditions and that manages to involve culture and creativity towards new visions. In this sense, digital technologies represent immense tools for emancipation and evolution, if they are consciously integrated with traditional production processes in the form of “capsules” (Cianfanelli et al. 2018).

The result of these tendencies is an increase in the use of digital systems in design and management tools to develop and optimize the manufacturing process. Examples of these practices can be found in the introduction of the reverse engineering design process as tools for managing production and project paths (Fry et. al. 2017); in the introduction of robotic systems in the artisanal supply chain (Goretti, 2020); and in the widespread use of digital modeling and digital prototyping systems recently aided with experimentation on generative design processes (Cianfanelli, 2019). Moreover, in the use of data analysis and artificial intelligence for trend forecasting or customer analysis.

As an example, Generative design algorithms calculate thousands of possible solutions for a product, following criteria and objectives set by the designer, who at this point “only” has to make a choice.

As automated processes are increasingly managing the verification and optimization processes, the design process itself undergoes a significant acceleration: thanks to sophisticated algorithms automation goes to the DNA of design culture, directly affecting the development of morphology and aesthetics. Artificial intelligence, cloud computing and robotics offer new coordinates for creativity, in which design moves without patterns, configuring itself from time to time with the design problem.

The Italian design and production dynamics are to be understood as a form of cultural production and therefore as a non-static and immutable but cumulative and generative process, based on creativity and subject to innovation processes, including technological ones. It is here that design has intervened in the processes of companies with a high Made in Italy artisan component, to accompany them on the path towards technological innovation, preserving the know-how and the root of excellence that characterizes it.

Conclusions

The Italian manufacturing systems brings meaningful arguments to the discussion, thanks to a designing tradition deeply rooted within the cultural context where it stems, as the result of both local memory and site-specific features.

The Italian production culture has its roots in Art history and traditional craftsmanship from the ancient workshops. Therefore, made in Italy is not only a productive and economic phenomenon, but also a cultural phenomenon, an element that has its origins in the product-territory-society synergy. Each new technology is configured as an agent of change, building a dialogue with culture. The effects of this phenomenon manifest themselves in new visions and new practices that take on a concrete structure only when they spread in society. These technologies also find application in creative industries where there are emerging new tools aimed at au-

tomation to facilitate human actions. Where will the path of automation of creative and design processes lead us? And most of all, what is the role of culture in the face of the digital mutation challenge?

Technology operates directly on the way we know the world, offering new cognitive paradigms from which new internal approaches emerge to the design culture, which is now called to achieve a symbiotic balance between design intelligence and artificial intelligence.

The adoption of new generation technologies within the design process raises a series of critical questions for the future. The field of generative design offers significant space for reflection in this sense, as it places the processes within software environments, in charge of elaborating the design inputs, directly entrusted to the algorithms. Thus artificial intelligence supports (or frees?) Human creativity in the conception of artefacts, bringing out new spaces for post-algorithm design (Cianfanelli et al., 2019).

Such contamination has long been a matter of discussion since every technological advance is historically paired with the evolution of design approaches, theories and practices. Victor Papanek (Papanek, 1973 in Scodeller, 2019) already envisioned a condition of autonomy of computer systems within design, as they would facilitate the operations and therefore reduce its output to an assembly of pre-packaged components.

The growing relationship between designers and generative algorithms produces new outputs, reaching higher levels of complexity: products are now multi-functional, multi-technology, multi-interaction, lying in a multi-domain reality, in which emerge new critical issues as they undergo a progressive dematerialization process.

However, even if it appears that the material dimension of products — their formal aspects — risks to be left out, it embodies the first touchpoint with the “cultural” component inherent in human artefacts: in a world constantly shaped through and by technology, symbolic values become more relevant than ever before, especially in the Italian context. In fact, the study — and therefore the culture — of “form” has vital importance in Made in Italy design, as it triggers daily rituals and conveys identities. The material dimension is the place where designers enact a synthesis between the syntax of advanced technologies and the metaphors from “humanistic” culture: here designers are asked to imagine the world and how it could be lived, translating their intuitions through the “forms of making”.

Digital tools enhance innovation as a matter of horizontal combinations throughout the supply chain network, rather than vertical capital disposal. This paradigm calls for a dynamic ecosystem made of small and medium-sized companies, more likely to respond to change quickly. This is well represented by the Italian manufacturing system, where design has an increasing role not only in materializing ideas but also in guiding and managing innovation.

Design-driven innovation goes along with a “smart” productive economy, where its adaptive dynamics entwine with synaesthetic experience and tacit knowledge: this results with the setting of an “artist economy” (Lipovetsky, 2013), proving the growing intervention of immaterial culture in the establishment of new levers for value creation.

Made in Italy seems to fit correctly in this scenario as its cultural tradition is the result of a dialectic play between the transmission of lasting values and the absorption of technology-led change. This may lead to the conclusion that future times will call more often for combinatorial spaces, where knowledge and information-computational processes merge, generating multi-

dimensional dynamics that alter the design processes and the very genesis of value. The physical world merges with the virtual one, and the knowledge generated by the relationship between creativity and culture assumes a primary role for the management and cooperation between human actors and machines.

The future of the creative industries is thus linked with the diffusion and adoption of new digital technologies, which will have increasingly disruptive functional implications not limited to the artistic and cultural sectors. In this sense, the depth and breadth of the practices and knowledge of the design culture itself will find more and more interest in the study of contemporary society, in its implications and new cultural paradigms, but also its critical approaches towards the future.

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We'll meet again! 'Design: Vertical & Horizontal Growth' was a precursor to the official annual Cumulus Conference. Postponed due to COVID-19, this will now take place in Moscow and St.Petersburg in June 2022. If you have any comments or questions, please do not hesitate to contact us by email cumulusrussia@gmail.com