



DESIGN CULTURE(S) | CUMULUS ROMA 2020  
JUNE 16.17.18.19, SAPIENZA UNIVERSITY OF ROME

# A designed generation: Maker's maturity and social responsibility

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**Abstract** | The following paper is a first step towards a research path that investigates the role of the craftsman and new craftsmanship in the machine society. The research looks at the post-industrial panorama, the actors on stage and the effects that this revolution has brought, is bringing and can bring to the artisan activity. A context with a strong identity and a culture of know-how that has allowed, together with technological progress, the emergence of figures such as the Maker, the digital craftsman. A figure that is only recently beginning to proclaim itself as such, but still floating in a limbo of identity ambiguity. As uncertain instrument of this new 'productive group', also the technological potential risks failing its role. Craftsmanship and post-craftsmanship perhaps have the opportunity to cooperate in order to achieve a result greater than the sum of the parts.

**KEYWORDS | IDENTITY, CRAFTSMANSHIP, POST-INDUSTRY, AWARENESS, ECONOMY**

## 1. Introduction

*"The territorial and production context is defined by the set of skills and experiences settled over time, productive knowledge consolidated at individual, family and group level and, moreover, by the bonds, which are also consolidated between companies and people."* (Francesca Tosi, 2010)

Modern production systems find their foundation in the artisan realities and in the culture of know-how typical of a tradition that is slowly disappearing. A production that, in addition to be a pride in the world, is a central sector of an economy that reflects the mechanisms of society (Stefano Follesa, 2017).

The building blocks of the development process of the global society, the liberalization of markets, have intervened as devastating factors in small-medium enterprises. Today, as reported by the latest ISTAT trade analyzes, in Italy in 2018 there are a total of 1.7 million of craft activities, reporting a decrease of 3% in the last 3 years.

Faced with a crisis in the planet's resources, the current consumption and production model leads us to redefine and question many practices that have been implemented so far. There are numerous critics and scholars of the current economic system who propose 'lateral' alternatives to development, through the application of concepts such as the necessary degrowth of Serge Latouche (2007) in "La scommessa della decrescita", or the "Crescita felice" by Francesco Morace (2015). The quantitative approach, according to these studies, must move towards a qualitative approach.

## 2. Crisis design: facing productivity crisis we produce new production tools

European policies announce for 2020 guidelines based on smart, inclusive, sustainable growth by promoting and developing an economy based on knowledge and innovation, more aware and rigorous in terms of resources. An attitude that at the same time favors both social and territorial cohesion through new indicators of well-being which, according to the "Report by the Commission on the Measurement of Economic Performance and Social Progress" by Joseph Stiglitz (2009), seek to outline aspects beyond of merely economic/monetary values, trying to conceive of well-being as the union and balance of social, environmental and economic capital.

From the material consumption point of view, the European Commission is working to standardize the calculation methods for the main environmental certifications in order to make the consumer more aware and responsible in the purchasing phase. High types of traced and tracer labels attempt to integrate social aspects through recognition of human rights and mapping of the entire production chain, including workers. There are collective scenarios such as those put in place by the Commons Collaborativo (Jeremy Rifkin, 2014) that are becoming increasingly current and feasible.

These aspects, through the concept of interdependence in the network, define new consumption models that go beyond mere possession in favor of exchange and services.

## 2.1 An unpredictable design: distributed productions generate values that the market cannot control without indulging them

The most recent social and economic transformations have shown, both in the context of global development and in the national economy, a crisis of production balances and questioned the development models that have defined and guided local production in the last forty years, reducing progressively the degree of competitiveness of craft businesses.

This loss is exacerbated by the constant contamination of culture carried out by globalization and by the massive industry which tends to amalgamate cultures to expand its catchment area. Lyotard defines the end of the great narratives in "The post-modern condition" (1979) as a loss of identity dictated by a single cultural strand composed of the sharing of certain values. The homologation of these paradigms, which aim at a more economic than ethical model, determines the end of this meta-narration of which the philosopher speaks and marks the departure from traditions and cultural values generating radical movements and works of 'rupture'.

The growing amount of innovation that is emerging thanks to radical and widespread movements such as Open Source, which from the first experiments such as the human genome project (HGP) has evolved to the present day, distinguishing itself as a real means of innovation on a global scale (making the term 'open innovation' coined in just 10 years), favoring the advent of new thought tools such as the J.S. Brown's *Thinking*, a portmanteau of 'thinking' and 'tinkering' (Antonelli, 2011).

Regarding this revolution, Andrea Branzi (2017) states that the widespread and distributed nature of modern design (referring to design as much as to architecture) makes it difficult to identify a single will, defining it as a militant and fluid link.

*"...just think that during the Salone del Mobile there are more than 400 exhibitions at the same time, all projects not intended for the market, but an expression of an idea of reform of the environment, the city, the habitat, to realize that it is a widespread avant-garde form. Less evident, perhaps, but with an anarchist, reformist base and with a surely greater number of employees than we had." (Andrea Branzi, 2017)*

The result is a series of small unpredictable innovations, as Pasquale Gagliardi (2017) defines them, which clashes with a practical market that tends to favor a 'planned change'. Innovations that fall within a programmed scheme or that are easily recognizable within an economy that, although dynamic, must remain predictable (A scenario extremely dissimilar from that structured by the Schumpeterian theories on which many companies base their business model).

The issues related to the relationship with local resources and territorial identity are the basis of projects, studies and actions in different sectors of industrial design and especially in the field of design applied to corporate territorial systems.

In Europe, specific directives on development activities push nations and companies to feed internal production in order to support their own development if they do not want to see their production system reduced to what Bauman calls an economy of only transit and exchange of goods and people.

## 2.2 A design of necessity: digital manufacturing as creative process design tool

In response to these needs there is a fervent return to the local, a new economy from below, sustainable and respectful of the diversity of the territories that could truly outline a strategic vision of the productive future. Just think of the role of the makers and the rapid social responsiveness of rapid manufacturing which has led to the proliferation of communities and places such as Fablab and Co-hub, where the interdisciplinary exchange of skills is in favor of the development of innovative start-ups and cultural growth of the cities in which they operate.

The technological update of Industry 4.0 and the adoption of certain production technologies (such as FDM or SLA / DLP) run in aid of an increasingly demanding market attentive to the central role of the final consumer. This rapid expansion has moved the planned obsolescence market above all, which has obviously felt called into question in the face of an instrument that can reset its competitiveness. An interesting program launched by Groupe SEB (which includes industry giants such as Moulinex, Tefal, Rowenta), is the "10-year reparability commitment", a mapping of 'repairers' that offers the possibility of finding 3D printed parts to replace of the components that can break over time in the products.

Jan Middendorp of LettError describes the importance of tools for a designer, referring however to artisans as their ancestors. The latter, according to Middendorp, were like disgruntled customers in the 'tools' market and for this reason they have always tried to make their own, to personalize their work environment.

*"They always had the tendency to personalize their tools, to appropriate them by honing them, converting them or expanding them. The more specialized the work, the greater the demand for customized or individually made instruments."* (Jan Middendorp, 2000)

The opportunity offered by some experimental and consolidated technologies, gained thanks also to the Open Source communities and the digital manufacturing machinery industry, to be able to apply these tools and innovations to any production sector and, as well as design has become more evident participated and a fundamental part of the most disparate disciplines, so the role of the designer is redefined under an ethical key for which the design process itself is the fulcrum of the activity and acts as a coordinating element capable of managing the various skills at stake and work and production flows.

*"It is not just about 3D printing technology adoption. Inserting a 3D printing sub-process into traditional stamping will likely require process redesign"* (Paul Brody, EY 2016)

Danish designer Olivier van Herpt launched in 2014 Adaptive Manufacturing, a collaborative project with the help of Sander Wassink. The project starts from the assumption that technological production has replaced the craftsman and therefore removed all traces of human and local influence and how this 'ambiguous' digital manufacturing process can mediate the language between the two realities.

*“At the foundation of every product there is the production process. When we replaced the craftsmen by machines, we lost the translation of local influences into our products. What if our machines could become more sensory? What if the machine could sense the local environment and incorporate it into the production process?” (Olivier Van Herpt, 2014)*

The research of the two designers examines the ways in which it becomes possible to regain that lost connection between the production of objects and the objects themselves. To do this, they decided to design scripts that distil shapes and textures from external phenomena. External information, measured by sensors, is then translated into specific printer behaviors via software. A sensory and sensitive machine that perceives the environment and therefore binds to a specific territorial context, translating the input into a specific movement, position or raw material. Here the designer still plays a fundamental role by defining the degree of sensitivity of the machine and the elements to be considered.

These approaches and experiments let think about the role of the digital manufacturer. In addition to demonstrating a willingness to declare themselves through their products, making them unequivocally attributable to their work, they show an exquisitely melancholy taste in their past, artisanal, traditional and local realities. Through the readjustment of past products or the use of traditional materials, the need to combine digital manufacturing with a world in decline seems to emerge until questioning if it is out of a real nostalgia or a secret will to confront the massive industry.

### **3. The responsibility of design: the centrality of design process given by its complexity**

Regarding this, Enzo Mari (2006) speaks of an almost criminal role of design in its being an instrument of proliferation of new goods in a world already submerged by them. In fact, Mari condemns the creative process and the search for innovation by attaching an almost criminal role to the current landscape which is dominated by unnecessary overproduction and a senseless frenzy. These words recognize the traits described by Gagliardi of a revolution that is not guided by a thought or a will capable of evaluating the social impacts that such innovations can have. We live in a period full of 'tools', but with ambiguous ends. According to Mari, the designer must look at human needs outside the market conditions when developing a project. With a severe denunciation of the progressive deterioration of today's design work, the main culprit for this situation is the global market that requires an object to be producible and salable in every part of the world. The role of the designer is thus diminished to a simple 'signature' to be affixed to series of objects in which any construction philosophy is lacking.

The designer should be in a position to respond to this 'ambiguity' by providing a complete and reproducible analysis tool that is able to put a more willing and interested market at the service of technological innovation, aware of its development and potential. A working method that would be able to create products from a synergistic process between technological research and the morphological and social spheres. Enzo Frateili (1969) defines

design as the result of the combination of three factors: language, function and meaning as indeed they refer to three specific study areas, morphological, technological and social respectively.

In this sense, the role of the designer acts as director of these categories to favor their synergistic development and offer a result greater than the sum of the parts. However, the designer is not at the center of the action, but he becomes a multifaceted and dynamic figure that insinuates himself into the individual disciplines and regulates their input and output.

### 3.1 A complex design: technological development confronts industry with radical changes in production dogmas

A system like that one just introduced perfectly coincides with the description provided by Alberto Gandolfi (1999) in "Formicai, Imperi, Cervelli" of a complex system, which combines the advent of digital, electronic computing, at the moment of true understanding of what really is a complex system and the realization of how this complexity is inherent in everything that surrounds us, from the physical and biological nature of things to the texture of the social fabric, from production systems to political systems. These systems are in fact represented as hierarchical constructs where each level of this scale is regulated by a network of interdependence and continuous circulation of data (input and output) which, thanks to the complexity of the system and of the individual parts that compose it, are in able to generate outputs of greater importance than the sum of the inputs.

If, by its definition, design is a process, as such it does not have a single interpretation and result but is a useful tool for understanding a whole series of social, productive and fruitful processes. An interdisciplinary discipline that has now imposed itself in almost all sectors of research and development, as well as production.

*"We are not experts in a specific subject ... we are experts in the process that leads a specific subject in bringing innovation"* (David Kelly, 1999)

Design as a disciplines has evolved in step with the technologies that have allowed this material to express itself in new forms and, precisely because it is driven by this impetuosity, it has evolved and complex over time to take on so many facets to become an extremely difficult subject to understand. Taking up the words of Bruce M. Tharp, and the study that led him to define the 4 major themes of contemporary design scenario: *"Design is pretty much a mess"* (Bruce M. Tharp, 2009).

Without a convincing, truly taxonomic way of organizing the design activity, the latter risks leading to misunderstood results; the risk, for the designer, becomes that of being scattered and vague.

Having to represent these mechanisms, it becomes possible to notice graphic affinities of representation and it is equally easy to identify assonances with more recurring and impactful themes such as blockchain, open source and community exchange systems. We are no longer regulated and centralized, but distributed and widespread, free to make choices and therefore responsible for them.

### 3.2 Designing awareness and behavior in front of the innovations

For this reason, it becomes imperative to endorse critical thinking towards a system that develops responsible and empowering policies. In this way of thinking we look at the Responsible Design, which has a relationship with the market, defining itself 'commercially available' and whose primary intent is not a profit maximization but rather to serve the less wealthy (E.g. a public tap that closes itself after a certain period of time). On the other it is possible to talk about an Empowering Design, which has little to do with the market but is closer to a critical intervention towards an attitude to be rectified (E.g. a tap that shows you how much water you are using and gives the user the environmental impact awareness).

In the world of 3D printing it is not difficult to associate the role of plastics, and it has been, fortunately, equally easy to find alternative and ecological solutions to the question. Today, various materials are developed directly deriving from industrial plastics that would otherwise risk ending up at the expense of governments or the environment itself. Instead, what is most difficult to see is what has been carried out in productive consumption and waste management. For instance, the waste generated around the food sector and how digital manufacturing has offered an answer. We have pseudo meats and edible compounds are produced deriving from food waste, used for the feeding of domestic or farm animals, and there is nothing that excludes that one day it will reach our meal consumption. Giuseppe Scionti (2018), doctor of biomedicine and professor at the Universitat Politècnica de Catalunya in Barcelona, patented a solution for the vegetable simulation of meat and its consequent application via FDM 3D printer. A revolution in the food-technology sector that is still proclaimed and printed as a steak.

Robert Artigiani (1987) stated that even in front of radical changes, characteristic elements of the previous system must be maintained, in order to achieve a minimum perceptual and existential stability.

Just as in 3D printing filament production, we have increasingly sustainable materials (in economic and ecological terms), derived from the recycling of the same bio-plastics, technologically performing and aesthetically appealing but which are produced in a less ecological way (given the limited accessibility of industrial complexes to renewable energies), in an increasingly aggressive and competitive market context and distributed in ABS containers and spools and sealed in common plastics.

## 4. Is that a prototype or a product? Towards new products conception

The economic and social crisis, mentioned above, focuses on the need to identify new development models that take into account the deep interdependence now active between the different economies and the potential expressed by the development of communication and data exchange systems.

According to the study by Claire Warnier (2014) the development of new small-scale production techniques will allow the transfer of power from the hands of industries and those who regulate the infrastructure to those of the designer and consumer, who today more than ever is identifying himself as the only figure.

In fact, Francesco Morace (2016) redefines the role of the consumer, referring mainly to the Italian context, that is becoming more aware of the production and creative processes and increasingly interested to them so much that he wants to be an integral part of them. From *prosumer* to *consumauthor*, a hybrid figure who directly participates in defining and selecting the prototyping lines of products and services, assuming their identity and involvement.

A concept that is closer to the world of luxury and an almost elitist market, but which in an increasingly social and open context is actually spreading like wildfire on almost all market levels. Since the days of Apple, the concept of branding had been introduced, or no more than just brands. A fluid, inclusive system, in constant transformation and improvement where the consumer, the community, feedback play a fundamental role in the development of the activities themselves.

#### 4.1 A physical design: product circulates on digital platforms, but acquires its value when we can touch it

Therefore, the research investigates the responsibilities that design has developed with regard to everyday products and in particular with the products to which the new generations especially refer, to which the cultural and social values of the context of belonging should be handed down, who today more than ever are able to define, recreate, hack, reprogram this context.

A first question that arises is how is evolving the concept of product by including those that are being created nowadays. To answer this question, perhaps the question can be circumvented not by looking at the present *consumauthor*, but at those who will come. The well-known digital divide created with the new generations has become consolidated and we increasingly have free access and understanding of digital systems. Nonetheless, the physical interaction and therefore the contact with matter remains, such as the need for the mind to establish a relationship, an experience that is not only visual or auditory, but above all tactile.

Geoff Mulgan (2017) clarifies how the artifact, the physical object, in each of its declinations, facilitates large-scale coordination (referring to the interaction created in large connective intelligence systems and collaborative societies). We are used to thinking with things and we struggle to do it in their absence. Large-scale cooperation and coordination generate a schematization and vice versa.

#### 4.2 Digital manufacturers identity: the result of a new product and production conception

At the basis of the reflections set out so far, the research deals with the relationship between design and production and the different ways in which the design discipline must



be placed towards a post-industrial production, paying particular attention to the identity, defined by the tools themselves, rather than by geopolitical or cultural characters. It must investigate the identity of objects and the different ways in which this is built in relation with the social context and from there with both material and immaterial resources.

At the basis of this reasoning there is the assumption that there has always been a correspondence between objects and places and that such correspondence has been interrupted (or at least weakened) with the advent of the machine society, the expansion of an economic system always more open and inclusive, and with the substitution of codified knowledge for practical knowledge.

## **5. Discussion: what future of Maker holds?**

In this socio-economic evolution, design plays a primary role.

On one hand because of its being an important discipline in the development of production systems, and therefore central in defining new possible alternative economic scenarios, and its ability over time to have become so multifaceted and interdisciplinary as to play a role in every production system.

On the other hand, for the responsibility that is unanimously attributed to it in the development of those consumer dynamics that have accompanied the progress of globalization.

Having outlined the panorama, the context, and the direction that the research wants to take, it becomes necessary to filter from the pool of potential results and sectors to which this research can be applied.

We are most likely in the middle of what Gandolfi (1999) calls a 'catastrophic bifurcation'. Micro-oscillations of confusing revolutions (entropy) are about to transport us into a future in which each individual will have full responsibility (enthalpy) for its own work and creation. It can no longer be said that we are at the gates of a revolution and the risk becomes that of letting it get out of hand or worse of using these tools unconsciously.

The question emerged at this point becomes: does the designer who 3D prints, really develop his design by virtue of 3D printing or exploit manufacturing as a tool for creating a design?

We usually think of production systems with two distinct figures: designer and developer, architect and worker, mind and arm. This gap is about to disappear. If we have now witnessed a series of movements that have generated individual verticalized figures on single themes (art, engineering, craftsmanship, gadgets, small and medium productions and so on) now we see hybrid figures capable of operating (not just knowing how to operate) in a more active way on the production scene.

Such a change is not only the result of technique or sensitivity, but a way of acting that has been able to generate a result greater than the sum of its parts. Awareness of the tools and design by virtue of these.

## 6. Conclusion

What today is called Maker could be considered a craftsman who is perhaps not fully aware of his role and its importance. Perhaps precisely because his role has not yet been officially defined. This new artisan could see his hybrid nature, straddling design and research, but a systemic approach to the formation of this figure, which has hitherto been self-fulfilled, is still missing.

This paper is the first part of a study that aims to analyze the post-industrial panorama and the role of its actors. With a particular attention to the relationship established between the digital manufacturer and his role as producer, the 'Maker' figure places himself in a context that no longer sees him only as customer of instruments trading, but an active part of a market that has spread their production potential to all. An open, distributed, (still) free scenario, which however carries with it the burden of moral, ecological, civil responsibility, of a power that has long since declared its potential.

*"Great is the chaos under heaven; the situation is excellent"* (Mao Zedong)

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