Hybrid Territorial-Artificial Systems. Opportunities in Design for Territories

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ABSTRACT

The design activity that stems from knowledge of the territory to which it refers and in which it operates, if aimed at its enhancement, turns out to be the conclusion of the flow and evolution of the history and culture of the place. In this sense, the resulting artefacts, whether physical or virtual, tell the story of its evolution as individuals and as the society that inhabits it. The research intends to demonstrate how the augmented narrative capacity of digital artefacts can be applied to territorial design practices, with effective effects on the territory itself. Through the description of the peculiarities, invariants and know-how layered in the places examined, the design process has led to the definition of hybrid territory-centred artefacts aimed at the accreditation of contexts with particular historical, cultural and naturalistic value, such as that of the Umbria region, investigating the relationship between design practice and digital technology.

Keywords: Hybrid Service-Product, Smart Augmented Product, Territory-Centred Design, Place Heritage

INTRODUCTION

The concepts of environment, territory and landscape are strictly interconnected. The environment is defined by the relationships of a subject with a part of the landscape. The environment is a relational entity, dependent on the subject to which it is referred. The landscape, on the other hand, is a real entity, established by a set of elements as well as the relationships that bind them. The landscape is the result of both public and private choices stratified over time, which involve material, immaterial, socio-economic, cultural, functional and aesthetic aspects.

The European Landscape Convention of 2000 defines the landscape "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (art. 1), emphasizing the role of the human action in the construction of the landscape itself. It specifies that are part of the landscape "natural, rural, urban and peri-urban areas. It includes land, inland water and marine areas. It concerns landscapes that might be considered outstanding as well as everyday or degraded landscapes" (art. 2).

Regarding the aesthetics of the landscape, it is formed by the aggregation of interventions, artefacts as well as private and collective spaces (Romano, 1993). In these terms, the pursuit of beauty, the romantic meaning of landscape, is not a "merely aesthetic fact, but it is related our most secret identity and to our imaginative memory" (La Capria, 2015).

Therefore, there is also an immaterial and subjective dimension of the landscape, which is reflected in the different perceptive, analytical and representative modes. The recognition of a landscape is also linked to the direct experience, the cognitive elaboration and the stratification of knowledge and history. The landscape is in fact closely related to 'inscape', which can be defined as the inner landscape, both of the individual and the community. According to Eugenio Turri (1979) to identify the landscape means identifying relationships that are repeated in a more or less extended space within which the landscape expresses and synthesizes these relationships.

The field of Environmental Design takes part in the research for a "compatible" relationship between the environment and the human's processes of transformation, thanks to the contribution of important figures in the sectors of architectural technology and industrial design, such as Tomás Maldonado, Eduardo Vittoria, Marco Zanuso. At the base of the scientific approach, there is a systemic vision of the project, for a design intended as the realization of new relationships between man and habitat (Losasso, 2017). Tomàs Maldonado (1971) defined the project as the "most solid link between man, reality and history". Therefore, the design, defined as concrete projection, should be considered the base of human society exploiting the results of technical and sociological imagination as well as political courage. The environmental design brings systems that tend to a disordered complexity to an ordered (uncomplicated) complexity. Zanuso talks about the project as a tool for active control of the environment that surrounds and involves us. Emphasizing the social role of the project, it defines it as an interpretation of individual and collective needs and, at the same time, as a propositive phase of meanings, results and answers that look

forward to a future and continuous solution over time (Tartaglia et al. 2020). The design process aims to explore the relationship between construction technologies, climate and housing traditions, investigating methods and models of governance that, starting from ecology, allow a sustainable transformation of the territory.

The territory is a complex set of resources, in which elements of the different capitals (economic, social, natural, etc.) coexist. As Corboz states (1985) the territory becomes a 'palimpsest' of signs of the past superimposed on one another, erased and rediscovered. Rullani (1999) combines the territorial element into two components: a physical (geographical) dimension and a dimension linked to abstract elements such as the culture shared by the actors and the natural territorial vocation. Caroli (2006) too divides the territory into a set of tangible and intangible elements, linking his analysis to Rullani's view of the territory as a relational structure, made up of individuals and organizations that carry out certain activities in the geographical area in which they are based and on which they have an impact.

Starting from these considerations, the work presented is based on a deep analysis of the territory to which it refers and in which it operates, and makes it a witness of the past and a harbinger of the future. It works on the identity and image of the places of reference as extensions of the identity and image of the people who live there. In essence, the territorial identity is the conclusion of the flow and evolution of the history and culture that inhabit that place. Through the description of the peculiarities, invariants and know-how sedimented in the hyperlocal of the places examined, the design process has led to the definition of hybrid territory-centred artefacts.

IDENTITY AND IMAGE FOR TERRITORIES

In general, we define identity as the objective reality that defines each place, person or entity, and which expresses its recognizable appearance. At the same time, we define the image in reference to places, persons or entities as the result of a design action that starts from the objective nature of things and aims to tell their identity. The process of defining the image is therefore a conscious act and, as such, is the result of reasoning. If the identity of a place is a very broad concept that concerns many areas of intervention and constitutes a value to be defended, the image is subject to the design process and works on the concept of perception and reputation (Terenzi, 2012).

In a project of enhancement and accreditation of a place (be it a city, a region, a particular geographical area) the designer, through multiple factors (which can be defined as 'alphabet') gives shape to a 'language' with which to communicate the material and immaterial, unique and recognizable values of a place. This language, once defined, can be declined in physical artefacts, 2D or 3D, or virtual, of any general nature. In this way, the interlocutor will recognize that place through the details of this message and will be able, through the interpretation of the elements of the alphabet told by the artefacts, to experience the imagery of values typical of the place that the project proposes to convey.

The starting point for the whole discussion is the fact that every place has its own identity, which has been formed over the course of centuries, if not millennia. It is part of the genetic make-up of the territory that, although it has undergone numerous evolutions and changes, continues to constitute its essence. What we define as 'place' is a known and familiar place, which is remembered in detail by becoming part of subjectivity. If a space has no identity and no community, if it is stereotyped and anonymous, it is *ipso facto* a 'non-place'.

Fundamental in this sense is the presence of the man who inhabits the said territory and the inevitable link he establishes with it. "The identity and image of the places we inhabit are extensions of the identity and image of ourselves. It is a natural human tendency for people to identify with their city, region or country" (Ahnolt, 2010). In essence, territorial identity is the conclusion of the flow and evolution of the history and culture that inhabit that place, through its population, its presence and the unfolding of life. All this takes place on the territory and is also evident through the production of artefacts to which the territory gives form, which in turn give it meaning and help sculpt the image that the territory gives back. Indeed, artefacts tell the story of the evolution of human beings as individuals, societies and species. There are no epochs, civilizations, societies or economies that are not characterized by the things they have made, be they material or immaterial.

The ability to be recognizable and identifiable, as well as the uniqueness of the place, in this way, is closely linked to the individuals who inhabit it and live it, the human potential is undeniable. It is the culture, traditions, religion, subsistence practices and lifestyles that characterize places and shape place heritage. Today, they are recognized, defined and protected by conventions such as, for example, the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, approved on 17 October 2003, which defines (art. 2) 'intangible cultural heritage' as "the practices, representations, expressions, knowledge, know-how (as well as the instruments, objects, artefacts and cultural spaces associated with them) that communities, groups and in some cases individuals recognize as part of their cultural heritage". In addition, the notion of 'cultural heritage' can be inferred from Art. 2 (2) and Articles 10 and 11 of the Code of Cultural Heritage and Landscape (Legislative Decree 42/2004): "The following are cultural heritage: immovable and movable things of artistic, historical, archaeological, ethno-anthropological, archival and bibliographic interest and other things identified by law or based on of the law as evidence of the value of civilization". While, as is well known, the concept of territorial capital was introduced in the 1990s by the European LEADER programs for the development of rural areas (Farrel et al, 2010) and elaborated by the OECD - Organization for Economic Co-operation and Development - in the Territorial Outlook of 2001. These clarifications highlight the primary role that these artefacts play in the construction of man's psycho-physical-emotional well-being, and for this reason they need protection.

In this perspective, we define territory's interpretation in terms of milieu (Dematteis, 1994, Governa, 1997). The concept of milieu denotes, to a first approximation, a localized and specific set of natural and socio-cultural conditions that, settling in a place over time, define the specific properties of the place itself.

SMART AUGMENTED PRODUCT DESIGN

Today we move in changing patterns that need to respond quickly to social, cultural and political stimuli. These models are therefore highly flexible and adaptable. At the same time, the people who act at various levels within them have to be just as changeable and adaptable (Margolin, 2007). The fluidity of the context has exponentially expanded the operational and epistemological boundaries of design, which is no longer just the design of the aesthetic component of mass production but becomes the design for the new behaviors' development, where objects and services are designed not to respond to obvious needs but to identify and anticipate latent needs. It is important for the design culture to have new interpretative frameworks, starting from the awareness that the very definition of industrial

of subject-object and object-place relations, achieving a symbiotic balance between artificial intelligence and design intelligence.

Deepening the relationship between the user, product and perceived value, in line with Kotler (2014), it is possible to distinguish three drivers of how customers attach value to a product: (i) design is today moving away from the traditional rigid and mechanistic structures, to contaminate itself with the new logics and modes of operation enabled by digital technology (Blichfeldt, 2021, Goretti et al, 2020).

Within a matrix that takes as its fundamental coordinates data-driven strategies (IoE, industrial IoT, cloud computing), data analytics (big data, machine learning, generative algorithms), human-machine interactions (extended reality hybrid interfaces) and the translation from digital to real (additive manufacturing, robotics, simulation systems, machine-to-machine interactions), product and information constitute a unicum.

Today, artefacts are designed for a continuous exchange of information between machines, systems, people, resources, products and consumers to ensure extended integration, optimize the performance of the context and develop a completely new relationship between the product and the market. It follows that contemporary industrial design is part of an intelligent scenario, which requires new approaches to orientate itself within a revolutionized design panorama, in which the environment, the economy and society come together, also in terms of sustainability. The new products of smart industrial design, in terms of both appearance and performance, are placed in contexts in which technology has created new scenarios, new forms of use and new social values (Norman, 2011).

Since the pervasiveness of digital interaction generates a radical change in people's behaviour, as well as a shift in their value levers (Epifani, 2020), there is a need to think of smart industrial design as an interpreter of new lifestyles. The new ways of use are deduced from the new systems Need: a lack of a basic requirement; (ii) Want: a specific requirement of products to satisfy a need; (iii) Demand: a set of wants plus the desire and ability to pay for the product. Customers will choose a product based on their perceived value of it. As a consequence, Kotler defines five product levels: core benefit; generic product; expected product; augmented product; potential product.

Starting from this definition of the augmented product, the research intends to demonstrate how they can assume a strong narrative capacity in line with the potential of digital artefacts. Therefore, this potential can be applied to practices of territorial design, with obvious effects on the territory itself, in terms of improving the use of places, well-being, environmental, social and economic sustainability, and in terms of enhancing local resources (Terenzi et al, 2020, Puglia et al, 2020). Through the narration of the identity of places, and with an image that aims to enhance the peculiarities, the invariants and the know-how sedimented, the design process has led to the definition of hybrid territory-centred artefacts that show how is also possible to increase the accreditation of places with a particular historical, cultural and naturalistic value, in the Manzini's (2018) interpretation of hyperlocal dimension, namely where the space's dimensions depend on the technology used to observe and act upon it.

The context of the Umbria Region is examined as a case study, investigating the relationship between design practice and the digital technology that powers products, services and systems. In this sense, the smart augmented product is not only a multi-function, multi-use and multi-context product, but also a digital container that dialogues with objects and environments, exchanges data, acquire services and learns.
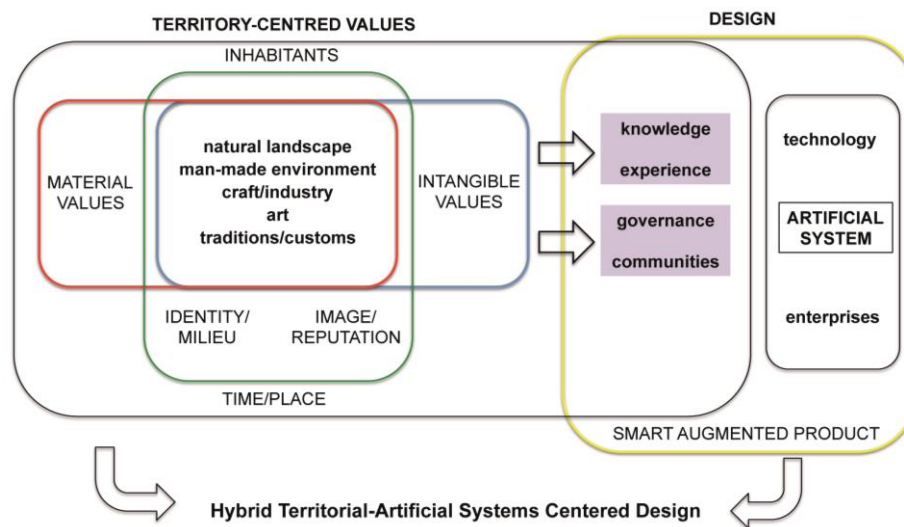

Fig. 1. Hybrid territory-artificial system centred design approach, by Author.

The design experiments carried out by the research had the objective of conveying the values of the regional context of reference, and laid the methodological foundations for a design-oriented approach to the enhancement of the territories, which is characterized by the centrality of the territorial capital and cultural heritage, in prefiguring Hybrid Territorial-Artificial Systems Centred Design (fig. 1). An interpretation linked to the theme of the self-sustainability of territories defined by Magnaghi (2010) "as a refounding research of virtuous

relations, of new alliances between nature and culture, between culture and history".

OPPORTUNITIES IN DESIGN FOR TERRITORIES

Increasing the functionality of a product and managing it with simplicity is now possible through digital technological implementations that turn the objects of our daily lives into devices. These systems are gaining new value in applied research in embedded technologies, and are evolving into products equipped with sensors, identification technologies, smart materials, etc. Specifically, the above framework developed by the research was applied to a system of wearables and smart jewellery, designed to traslate the potential of the context into them through processes of symbolic transformation of the communicable and exchangeable values of the territory.

The work is the result of both a design culture based on product performance and a design attentive to the implicit and aesthetic meanings generated in the relationship between body and object. With this aim in mind and thanks to the technological support of the Umbrian company 'Wearable Italia', objects have been designed using microcontrollers connected to both analogue and digital sensors and actuators, implemented by widely used, low-cost technologies, which have made it possible to create different levels of human-device-territory interaction, giving shape to new gestures, rituals and involvement. In this case, the concept of performance goes beyond anthropometric and ergonomic indications, involving the sphere of sensoriality, emotions and pleasure, transforming the object into a high performing and customizable communicative Hybrid Territorial-Artificial Systems. The interaction project in this case, therefore, aims to make it possible and easy to use products in a territory-centred way, i.e. by placing the valorization of the material and immaterial resources of the territory at the centre of its operation, promoting the user's reflective processes through concrete actions.

CONCLUSIONS

The research aims to highlight how Design for Territories is able to develop a methodology that is particularly useful in the processes of redefining local identities and economies. processes of redefining local identities and economies. In the case of territorial valorisation, the metadisciplinary approach of design takes on even more evident characteristics, since the object to be observed - the territory - is a complex and dynamic system made up of material, immaterial and human evidence, each time different and unique. In terms of application, each territorial project must bring out the elements of difference, specificity and originality compared to other territories, with a view to sustainability and adequacy.

The work points to renew traditional and often static local production by finding a balance between the uniqueness of local values and the global market. The results aim to offer a new perspective of process and product innovation that allows the traditional production sector (specifically the Umbrian one as an exemplary case of the Italian production sectors with an

artisanal imprint) to respond in a concrete way to the need to interact with digital innovation and, at the same time, to outline a peculiar aesthetic clearly declined according to the peculiarities of the reference territory.

By analyzing practices and processes of the two different scientific fields, that of Design for Territories and that of Smart Augmented Product Design, the project defines points of difference and contact between the different sector paths, in accordance with scenarios of use and formal repertoires that can solve and improve the user's experience in everyday contexts.

In this sense, creativity is no longer relegated to the morphological sphere alone, expanding also to that of software creation and interaction with the product. These aspects are now part of every human activity and are therefore areas from which the designer cannot disregard but rather must know and know how to interpret. Thanks to these new technologies, the role of the designer can take on new values and deal with the new aspects that technological progress is increasingly imposing on the current and future worlds.

In addition, by experimenting with processing technologies, exploiting the potential of shapes and materials, and activating networks of people, research promotes the strengthening of local identity in products with high added value that make economic activities sustainable from a technical, economic, environmental and social point of view in the long term, on the one hand, and on the other, all the players (from the public administration to consumers) more aware of and involved in safeguarding human and territorial capital.

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