Project challenges: sustainable development and urban resilience

edited by
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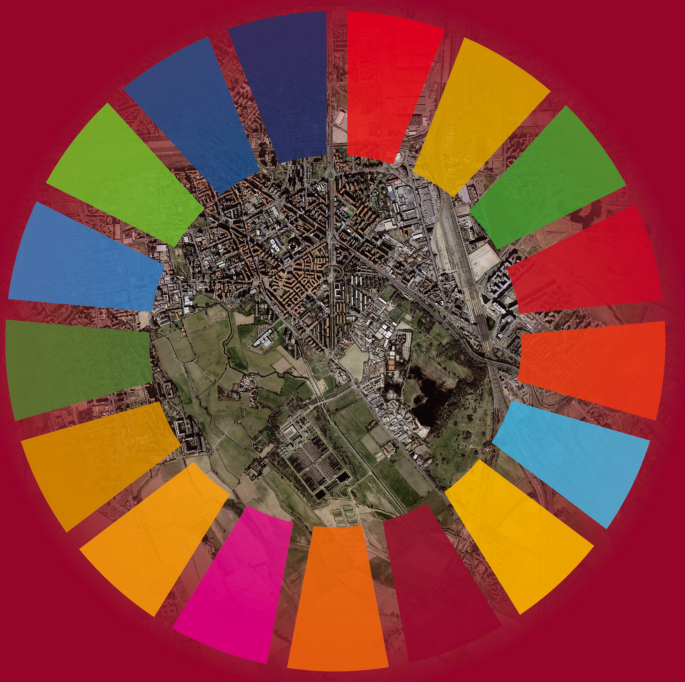

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Project challenges: sustainable development and urban resilience fosters a multidisciplinary discussion on the role of the architectural project for implementing the Sustainable Development Goals of the 2030 UN Agenda. The collected contributions of researchers and important stakeholders reflect on the necessity to operate in the perspective of finding sustainable development alternatives and resilient responses to changes, offering a wide range of keys for reading and interpreting phenomena and challenges that connote the contemporaneity at different scales, from global policies to local interventions. Complex challenges in which environmental, cultural, social, and economic aspects seamlessly intertwine.

The environmental technological project becomes an element of synthesis of the needs and resources of the territories and the local communities. Since the environmental, landscape, and cultural resources are largely non-renewable, they have to be used with awareness and responsibility, going beyond the concept of protection in itself and moving in the direction of the safeguard and transformation, in close continuity with the context of reference and in line with the limits imposed by the fragility of the assets themselves.

The result is a systemic approach to the issues of sustainable development and urban resilience, realised through the implementation of innovative processes for the enhancement, integration, regeneration, and inclusion of the environmental, cultural, social, and economic heritage.

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FOREWORD

The contributions collected in this book constitute a broad and articulated reflection on the issues of sustainability and resilience related to the project of enhancement of the environmental and cultural heritage. Within the framework of seminars organised in occasion of the second edition of the Sustainable Development Festival[1]*, the volume involves a group of students of the PhD course in "Cultural Heritage Conservation and Valorisation" of* Politecnico di Milano[2]*, which, under the guidance of professors and expert researchers, have conducted a specific study on the theme of resilience and sustainability with reference to their research activity.*

A rather heterogeneous picture of contents emerges, but undoubtedly coherent with the values that substantiate approaches and points of view. A coherence due both to the conviction that cultural heritage represents a resource for development, that can be considered in terms of design, and to the awareness that, since it is a non-renewable resource, this potential can only be expressed in continuity with the environmental context and within the limits imposed by the fragility of goods. This double awareness constitutes the central point in the relationship between cultural value and sustainability, in accordance with the interpretations expressed by the authors in the chapters of the book, recalling systemic approaches to the territorial and complex relationships and multi-scale methods of analysis and design.

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[1] The Festival is an initiative of the Italian Alliance for the Sustainable Development aimed at raising awareness, involving citizens, young generations, businesses, associations and institutions on the issues of economic, social and environmental sustainability, spreading the culture of sustainability and fostering a cultural and political change that allows Italy to implement the United Nations 2030 Agenda and to achieve the 17 Sustainable Development Goals.

[2] "Cultural Heritage Conservation and Valorisation" is a PhD course of the Department of Architecture, Built environment and Construction engineering, held by the professors Stefano Della Torre and Daniele Fanzini. The course deals with the relationship between protection, conservation and valorisation of a territory and will provide the fundamentals for the effective and efficient management of a cultural asset. The main aim of the course is to provide to students the primary critical skills useful to promote and to design initiatives that enhance a cultural heritage as development factor for a region.

The interest addressed to the continuity of the existing context, and not only to the single object, defines a model for the conservation itself. It is conceived no longer as an impediment to any transformation, but as a premise for a balanced and correct expression of the potential of the goods, recognising that the real preservation can be performed only through the co-evolution of the cultural goods with the contexts.

The tools of this approach to the protection and conservation, more sophisticated and complex than the traditional ones, have an impact on the territorial government, through systemic projects that involve the behavioural attitudes of the same citizens towards preservation as well as use and enhancement. In these terms, use and enhancement get a central role in the design action, also with respect to the need to find the necessary resources for the interventions.

The complex definition of proper tools for a sustainable conservation/enhancement of the cultural and environmental heritage represents an exciting challenge, but it still requires a lot of work also at the theoretical level. My gratitude goes to the authors of the volume, and above all to Daniele Fanzini for the coordination, for having lavished so much effort in seeking contents, values and objectives of the activities of conservation and enhancement, focusing on possible convergences with a modern ecology conceived as «a science and an ethic of diversity»[3]*, which is not based only on the conservation but on the values of sharing and co-belonging that can be projected in the interest of the society.*

Stefano Della Torre
Head of Department of Architecture, Built environment and Construction engineering
Politecnico di Milano

[3] Bocchi, G. & Ceruti, M. (2004), *Educazione e globalizzazione*, Cortina, Milano, p. 171 (translated by the author).

INTRODUCTION

Project challenges: sustainable development and urban resilience offers an opportunity for a multidisciplinary discussion on the role of the architectural project for implementing the Sustainable Development Goals of the 2030 UN Agenda.

The collected texts, including the contributions of important stakeholders, reflect on the necessity to operate in the perspective of finding sustainable development alternatives and resilient responses to changes, offering a wide range of keys for reading and interpreting phenomena and challenges that connote the contemporaneity at different scales, from global policies to local interventions. These are complex challenges in which environmental, cultural, social, and economic aspects seamlessly intertwine.

In this logic, the environmental technological project becomes an element of synthesis of the needs and resources of the territories and the local communities. Since the environmental, landscape, and cultural resources are largely non-renewable, they have to be used with awareness and responsibility, going beyond the concept of protection in itself and moving in the direction of the safeguard and transformation in close continuity with the context of reference and in line with the limits imposed by the fragility of the assets themselves. The result is a systemic approach to the issues of sustainable development and resilience, that is realised through the initiation and implementation of innovative processes for the enhancement, integration, regeneration, and inclusion of the environmental, cultural, social, and economic heritage.

In order to support this thesis, the text proposes four focuses.

The first part, "Architecture, city and territory", deals with the issue of sustainable development and resilience on the scale of urban policies and with respect to the production chains. In particular, the texts deepen the issues of circular economy and green economy applied to metropolitan contexts and minor urban centres, with the creation of eco-efficient neighbourhoods, up to products for the building industry.

The second focus is on "Peri-urban and rural territories". These transitional contexts between the city and the rural areas have in themselves great potentials in terms of resources and eco-sustainable services. At the same time, these are

particularly sensitive areas because subjected to heavy anthropic pressures, whose valorisation and transformation requires the implementation of large-area strategies, in a district logic.

The third section of the book, "Cultural landscapes", is focused on the strategic role of culture for sustainable development. In particular, by directing the transformation of the territory in an ecomuseum key, also by giving centrality to the landscape project, it is possible to increase the identity of the places and strengthen the sense of belonging and re-appropriation of the communities.

The fourth part, "Research experiences", proposes an apparatus of applicative insights and case studies on the following topics: governance and participation required by local development projects; urban regeneration through widespread interventions on built heritage and the redevelopment of public spaces; adaptive reuse; the enhancement of environmental and cultural heritage, also for tourism; technologies to increase the accessibility and resilience of cultural heritage.

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PROSPECTS OF INNOVATION IN THE PROJECT BETWEEN SUSTAINABLE DEVELOPMENT AND RESILIENCE

Elena Mussinelli[*]

The issue of facing climate change is highly topical, with a debate that involves not only the field of the research, local administrations, professionals and experts, but also all levels of the community, through campaigns of awareness raising and protest movements on a global scale.

Among the numerous events that are taking place in different contexts, the initiative held on the 16th of July 2019 at *Politecnico di Milano* is particularly significant, with the presentation and signature of the "Declaration of Milan for the climate adaptation of the Green Cities": a declaration structured in ten objectives to pursue climate change adaptation, already signed by 28 Italian cities[1].

The growing evidence of the effects of climate change is in fact rapidly increasing awareness of the complexity of the challenges we are called to face, challenges that had already appeared in the 1970s with the oil crisis and the consequent development of an "environmental consciousness" as well as of the arising of the paradigm of sustainability.

We are aware, on the one hand, of the need of reducing and mitigating the environmental impacts caused by human activities, by the intensity of urbanisation processes as well as by the consumption of land and resources, and on the other hand of finding solutions for the risk management, in response to climate change in terms of resilience and adaptation. In both cases, it is an issue of im-

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[*] Elena Mussinelli, full professor in Architectural Technology, Department of Architecture, Built environment and Construction engineering, *Politecnico di Milano*.

[1] The initiative, promoted and organized by the *Politecnico di Milano* with the Green City Network, the Sustainable Development Foundation and the Municipality of Milan, registered over 300 presences and the participation of experts and representatives of 26 Italian cities active on the fight front to climate change. The ten points of attention are: defining and updating plans and measures for the climate adaptation of cities; integrating policies and measures of adaptation with those of climate change mitigation; updating the risk assessment and the emergency measures, both medium and long term; valuing the positive effects of adaptation measures and accounting for the costs of the absence of such measures; developing adaptive abilities; focusing more on nature-based solutions; reducing the vulnerability and the risks of very intense precipitation; facing heatwaves and islands; promoting investments in adaptation measures; strengthen governance.

plementing medium and long-term strategic processes, which allow the overall improvement of the fruitive and ecosystem quality of the urban and metropolitan settlements, where the greatest criticalities are concentrated, even due to a renewed social demand.

These processes are complex and articulated, difficult to be analysed, programmed, managed, monitored and evaluated. Despite this issue, these are essential actions that cannot be postponed, considering that to the rapid times and the irreversibility of the effects of degradation and consumption of environmental resources correspond the long times of the natural cycles of regeneration, as well as the high costs for restoration, if and when it is possible.

In this perspective, the ten points of the Declaration signed in Milan should be considered both a challenge and a restart. They derive from the work of those who, in different institutional contexts, have researched, acted, made experiences, exchanging knowledge, skills, results, and even doubts and perplexities. They also represent a programmatic commitment for the future, which still calls for collaboration to maximise the effectiveness of actions and investments, in a dialogue within and between the communities. A collaboration that necessarily involves disciplinary contributions and sectorial and specialist competences that must be recomposed within common objectives, also for the necessary planning, regulatory and socio-economic outcomes. In this sense, the experience of the Working Group "Architecture policy for the Green Economy in the cities"[2], begun in 2016 and then evolved into the national Working Group "Experts of the Green City Network" which continues to actively work thanks to the coordination of the Sustainable Development Foundation, was particularly significant and fundamental for the definition of the contents of the Declaration (Antonini & Tucci 2017).

To the growing awareness of cities and metropolitan areas that daily experience the effects of climate change and environmental degradation, correspond multiple research advances, with a greater availability of methods, tools and technical solutions to provide truly structural and effective answers, well beyond the ephemeral practice of the green washing. With attention to the close relationships that exist between the objectives of sustainable development in terms of environmental and social resilience and the dimension of the economic and managerial sustainability, in the direction of a green economy that operates through place-based and resource-based projects.

However, several critical issues remain, primarily due to the scarcity of the natural resources and to the difficulties in implementing site-specific, systematic, synergic and continuous responses over time. The implementation of sys-

[2] The Working Group, established at the Sustainable Development Foundation, has contributed to the States-General of the Green Economy 2017 - National Council of the Green Economy, whose activities have been summarised in the document "Towards the implementation of the Manifesto of Green Economy for architecture and urban planning. Objectives, Guidelines, Priority Strategies".

tematic and effective actions monitoring for the evaluation of processes with effects on the ecological-environmental, economic and socio-cultural system involves, for example, - beyond the investments for the systematic diffusion of surveying instruments - the systemisation of objectively measurable indicators as well as of parameters that cannot be immediately quantified because they are linked to perceptive aspects or long-term changes.

These issues were faced by the research unit of the *Politecnico di Milano* within the Research PRIN 2015 titled "Adaptive design and technological innovations for the resilient regeneration of urban districts under climate change"[3], aimed at verifying the effectiveness of nature-based solutions and of the related green and blue infrastructures, as well as their applicability in terms of scalability, systematic use, adequacy and compatibility with respect to different contexts. Elements such as the local climatic and ventilation conditions, the orientation and the structure of the building strongly influence the impacts generated by the introduction of green solutions.

On the basis of these considerations, a priority issue for the forthcoming future, core element of the climatic-environmental challenge of cities, certainly regards the buildings, both in terms of recovery and for the achievement of standards of higher performance in the new constructions. In this sense, the actions of strategic refurbishment of brownfields or the reconversion of infrastructures and mobility, from grey to green and blue, can be oriented.

However, a fundamental aspect, often not adequately considered, concerns the quality of the public space, in particular of the open spaces, which constitute a peculiar component of European cities and perhaps even more of the Italian cities. Historically, the public space has been and must continue to be - even if with updated forms and modalities - the great social condenser of urban life, of the needs of communities and of their identities (Mussinelli, 2018). In the centres and above all in the urban peripheries this legacy, as fragile as it is precious, must be collected and renewed in terms of a "necessary" project culturally, technologically and environmentally appropriate[4]. In these places, the pro-

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[3] National scientific responsible: Mario Losasso. Local research unit of *Politecnico di Milano*: coordinator Elena Mussinelli; research group: Andrea Tartaglia, Raffaella Riva, Daniele Fanzini, Roberto Bolici, Matteo Gambaro, Davide Cerati, Giovanni Castaldo.

[4] *«Among the keys to the theory and practice of environmental design are the notions of "alternative technology" and "appropriate technology", expressed by figures such as Eduardo Vittoria, Pierluigi Spadolini, Marco Zanuso, Tomás Maldonado and Giuseppe Ciribini. Their research and experimentation has revealed a specific direction in design culture aimed at guaranteeing habitat quality with an approach focusing not only on physical and formal considerations, but also on the project's intangible effects: open, therefore, to an idea of socioeconomic sustainability that is a prelude to today's environmental governance. This cultural policy has since been significantly implemented and articulated with contributions from other experts in technology: Salvatore Dierna and Fabrizio Orlandi in Rome, Gabriella Caterina and Virginia Gangemi in Naples, Rossana Raiteri in Genoa, Maria Chiara Torricelli in Florence, Fabrizio Schiaffonati, Maria Bottero and Gianni Scudo in Milan, and many more. The issue is now widely addressed in the context of national research in the discipline of architectural technolo-*

ject should deal with the issues of sustainability, ecological and fruitive quality, urban security: all challenges accentuated by the effects of climate change, whose consequences also involve the theme of human rights, as underlined by the United Nations Human Rights Council in the recent draft resolution "Human rights and climate change" of the 9th of July 2019.

To move in this direction, it is necessary to promote the development of up-to-date skills, much more attentive and sensitive to the quality of local systems than to the media spectacularity of high-tech buildings (Schiaffonati, 2017). Going beyond declarations of intent that are not then reflected into punctual and feasible actions: as in 2011 Vittorio Gregotti emphasised in an article published in the *Corriere della Sera*: «*In the case of architectural production the word 'eco' has often become a mercantile obligation, with the ecology reduced to fashion, rather than new and possible social equities*» (Gregotti, 2011, translated by the author).

Furthermore, these skills should be applied to design actions that interact with the different components, both material and immaterial, that structure an urban system. The project as a tool for the management of the growing complexity should therefore create and manage «*interactions with the fields of urban economy, of mobility, of the procedural dimension as well as of the time programming, with references to the identity of the places, to the rational management of resources, the safety, the accessibility, the well-being*» (Losasso, 2017, p. 7, translated by the author).

In this context a privileged field of action is constituted by the suburbs and the peri-urban areas, particularly fragile due to the anthropic pressures to which they are subjected, but at the same time full of opportunities. In these contexts, the environmental project very clearly shows its multiscale character that, starting from a territorial vision, through the development of material and immaterial actions, demonstrates the capacity of prefiguration of simulations and of projects measurable in their operative effectiveness[5].

Systematic processes of valorisation strongly oriented to support the multifunctionality of the territory require not only analysis and prefiguration skills, but also and above all managerial skills for operating in accordance with network governance models, systematising local, physical-spatial and human re-

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gy, as revealed by the fact that more than 30% of the PhD theses prepared in technological disciplines focus specifically on environmental issues and on technological innovation for sustainability» (Mussinelli, 2015, p. 12).

[5] «*In this respect, it is important to point out that the scientific area of the Technological Environmental Design has been interested in project anticipation since its genesis just with regard to the capability in prefiguring architectonical and urban interventions, in providing and interpreting the evolving scenarios of the social demand and, last but not least, in outlining lasting and effective programs for young and professional education and training [...] The element that supports the interest in project anticipation is, in fact, related to the "added value" of the words "environmental" and "technological", focusing on the future perspectives of design and architectonical praxis*» (Mussinelli & Tartaglia, 2016, pp. 65-66).

sources, within district-type contexts that present characters of adequate homogeneity. Furthermore, well beyond the results obtained through ecological regeneration of already consolidated urban areas, precisely the rural and peri-urban territories represent the most significant environmental resource, the one that still plays an essential and indispensable role today in guaranteeing the vast area ecosystem balances. However, territories that today appear fragile both with respect to the unstoppable processes of land consumption that continue to generate fractures and discontinuities in environmental systems, and with respect to the land uses that limit and sometimes compromise the capacity to supply ecosystem services (ES). This is in contradiction with the European policies that on the contrary identify the natural capital and the ES as the most appropriate way to face the environmental and socio-economic criticalities related to climate change (Malcevschi & Bisogni, 2016)[6]. Policies that also push towards new management models for rural areas by promoting an agro-ecological approach and facilitating forestation processes.

Anyhow, strategies, actions and projects aimed at territorial resilience cannot be limited to focus only on natural capital, but they should also pay attention to the human capital operating towards the different phases of planning, design, implementation and monitoring of the transformations of the built environment. Human capital that also includes local communities, whose involvement must now be considered as a cogent element of every action of transformation the built environment: ecosystem quality and urban health are in fact an expression of a primary social need that clearly emerges when residents and city-users are asked to express themselves during consultations and participatory planning. In these contexts, the new social question is clearly expressed in terms of mobility, usability, interaction and inclusion but, too often, the answers are formalised in short-term tactical solutions, generic in the implementation methods and fragmented for the lack of a unitary vision. Alternatively, they are re-conducted to policies promoted by the public administration that are not matched however by research findings and scientific studies (Schiaffonati et al., 2015).

Whereas, the close correlation between the different scales of the triad architecture-city-territory should be declined into strategic visions, with strongly anticipatory contents and closely related to local specificities able to produce policies and implementation tools to build a systemic framework. A sort of environmental plan of the vast area, in which incentives are given to the different bottom-up actions already occurring with reference to the circular economy, to the development of green products and systems for buildings and infrastructural systems, to the design of architectures and sustainable urban public systems in environmental and socio-economic terms.

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[6] See also: “White paper - Adapting to climate change: towards a European framework for action”, COM (2009) 147; “Green Infrastructure (GI) - Enhancing Europe’s Natural Capital”, COM (2013) 249.

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1.
ARCHITECTURE, CITY AND TERRITORY

1.1 GREEN ECONOMY: A SUSTAINABLE FUTURE FOR BUILDINGS, CITIES AND TERRITORIES

Interview by Fabrizio Tucci to Edo Ronchi[*]

FT - *In the attempt of setting up a dialogue about the future of our dwelling towards a green economy with the President of the Sustainable Development Foundation, we need to address our reflections on the central role that cities have in this important and, by now, essential transitioning process.*

It was stated that "cities are not only the backbone of national economies; they are also the place where resource availability for future generations, as well as justice and equity, will be decided". Following the growing relevance of such topics, contemporary urban environmental conditions have become a determining attractive and distinctive factor of overall quality: an aspect towards which cities with the ambition of becoming the most advanced worldwide are diligently investing.

ER - There are no doubts cities play a decisive role both in the unsustainable aspects of current development and in the changes dictated by the transition to a green economy. On a European level - according to the Eurostat Urban Audit 2017 - the economic activity of UE28 is mainly concentrated in urban regions, which represent the engines of the economy: 59% of the world population lives in urban areas, where 62% of the jobs and 67% of the GDP is concentrated.

In 2016 the Dual Citizen of Washington research centre carried an international survey on 50 major cities, employing a Global Green Economy Index based on four parameters (air quality, water availability and treatment, biodiversity, and vegetation), attraction of green initiatives (web visibility of the green initiatives, green business opportunities, initiatives to favour green interventions, environmental data accessibility), sector efficiency (energy certified buildings, renewable energy share, sustainable tourism initiatives, transport emissions, waste recycling percentage), climate change and leadership (greenhouse gasses' reduction progress, media coverage on green thematic, participation to international forums on climate issues, CO_2 emissions per capita, per

[*] Fabrizio Tucci, full professor in Architectural Technology, Department of Planning, Design, Technology of Architecture, *Sapienza* University of Rome, Coordinator of the International Working Group of the General States of Green Economy for Architecture.
Edo Ronchi, former Italian Minister of the Environment, President of the Sustainable Development Foundation, Representative of the Green Economy National Council.

GDP unit, and per primary energy consumed).

The research was published in Italy by the *Relazione sullo stato della Green Economy* 2016 by the Sustainable Development Foundation: it places Copenhagen, Stockholm, Oslo, and Helsinki in the first four places, but also New York at the sixth, Berlin at the seventh, Paris at the ninth, Tokyo at the tenth and London at the eleventh. Unfortunately, Rome is at the end of the list, and it occupies the 45th place (Fondazione per lo Sviluppo Sostenibile, 2016).

FT - Also browsing through the sectors of the green economy we realise that on the one hand they have a key role in determining the quality of contemporary cities, and on the other, that they grow towards a green direction if the city offers a suitable ground. The relationship of key sectors related to green economy transition and city is relevant and obvious when it comes to energy, dwellings, transport, waste, and tourism. However, in order to better understand how the city can offer fertile ground for a green economy to develop, it is not enough to examine the key sectors, we need to consider a reference model capable of proposing, guiding, and qualifying solutions to ecological problems in contemporary cities, in an unitary and integrated fashion.

ER - Certainly. This model, which is advancing on a European and international level, is called "green city": an integrated and multisector approach to cities, based on key aspects of environmental quality, resource efficiency and circularity, mitigation and adaptation to climate change. The green city approach has been recently wisely defined by EBRD (the European Bank for Reconstruction and Development) based on the OECD-ICLEI (International Council for Local Environmental Initiatives) methodology in 2016. Such model was also adopted as a basis for a green economy development program in cities with the Economics of Green Cities Programme by LSE Cities (London School of Economics), led by Nicholas Stern. The integrated approach towards green city had already been adopted, in 2010, by the European Commission for the European Green Capital Award: an award which, by promoting the green city model, aims at supporting the advanced and sustainable development of European cities.

The relationship between the green economy and the green city was at the centre of the "Future city manifesto", proposed by a group of faculties coming from 20 Italian and foreign Universities in 2017. In the framework of the green economy's general states initiatives. On the one hand, Italian cities bare great potential, as we can also observe in a review of the key sectors, on the other, except for a few excellent exceptions, they lag behind and have a hard time positioning themselves next to the leading group composed by the most advanced European and world cities.

The extraordinary cultural, historical, and architectural heritage composed by cities and small towns in Italy, which had great importance in the rich history that characterises this country, remains an important reference value also for the future and an ever important base, but not enough for the relaunch of contemporary cities. As a matter of fact, these cities and towns are not keeping up

the pace on the road heading towards the transitioning to a green economy, with cities far ahead and others left behind.

FT - In the 2017 Report on the state of green economy in Italy, the Sustainable Development Foundation led by you presented a focus on city green economy, carrying an analysis on some of the most significant trends in the capoluoghi di Provincia *(administrative centres of the Italian provinces), strategically relevant for the development of green economy: commitment towards climate and renewable energy sources, the management of water resources, sustainable mobility, and public administration's "green" purchases.*

ER - The emerged framework is characterised by moments of light, with some excellent initiatives, and others characterised by shadows and delays. Adopting the integrated approach of the green city, which tackled different aspects and problems jointly, and enhancing possible synergies, and in order to come up with a general framework of Italian cities' current state, we propose the evaluation of some particularly important topics: urban regeneration, building, and urban upgrading, air quality, and circular economy.

Territorial planning and urban management in Italian cities obtained scarce results because they favoured, or allowed, decades of real estate expansion with low-quality dwellings, particularly in the peripheral areas of cities and with high soil consumption. Even though we are witnessing a reduction in the last years, in Italy soil consumption keeps increasing. Between November 2015 and May 2016, the new artificial roofs invested 50 km^2 of the territory, a little less than 30 hectares per day (ISPRA, 2017).

Moreover, the analysis of data concerning the 14 metropolitan cities shows how the total amount of soil consumed in 2016 represents 21.4% of the national total, constituting a higher increment than the national average. High soil consumption, dispersal and sprawl phenomena recorded in most of the urbanised areas, have caused the erosion of agricultural land, extended the impermeabilisation of soils, increased hydrogeological risks, and required the employment of significant amounts of resources in terms of urban development works and increase in the time and cost of transportation.

FT - Heading towards urban renewal following a green city model requires an organic and integrated design aimed at guaranteeing different urban requirements, ensuring high ecologic quality and the effective annulment of soil consumption, by reusing and using efficiently the existing dwelling patrimony and the urbanised areas, and reorganising soil use for settlement systems following compact and efficient models.

ER - As a matter of fact, today urban renewal projects require a more extended, effective, and fast approach towards the demolition of numerous unfinished and non-recoverable constructions - illegal and degraded ones without historical or architectural value - which spoil cities and territories, restoring and recovering the areas they occupy. In urban and peri-urban systems' renewal, it is also im-

portant to improve the safeguard and availability of natural capital, particularly multifunctional green infrastructures and vegetation.

Architectural and urban renewal following the green city model aims at improving, recovering, and reusing the existing public and private patrimony, adopting an integrated approach through energy efficiency measures and measures aimed at improving the other ecological characteristics of the buildings. Moreover, considering the increased hydrogeological risk and the great extent of the areas subject to high seismic risks, such operations ought to be verified and integrated into preventive measures aimed at reducing vulnerability.

City urban renewal requires suitable attention towards public spaces, both in the central areas and in the peripheral ones, as they represent a determining factor of urban quality: squares, boulevards, streets, arcades, urban parks and gardens, pedestrian areas and bike paths, influence greatly the city's environmental quality and how the latter is perceived and experienced. In Italian cities, it is also important to consider the direction, criteria, and standards for the conservation of the existing historical patrimony, and the management, maintenance, and aesthetic and functional improvement of the built patrimony.

FT - The safeguard and the enhancement of the urban and peri-urban natural capital - tree rows, gardens, parks and green areas, green walls and roofs, kitchen gardens and green belts - are of growing importance for the quality of cities and they are contributing to the reduction of pollution, air quality, reduction of climate change damages and risks, and the safeguard of water and biodiversity.

ER - The too often neglected natural capital it is an essential component for the quality of the urban landscape, and cultural, recreational, sport activity services aimed at the wellbeing of citizens. The analysis of public green in the *Comuni capoluogo di Provincia* (ISPRA, 2018) confirms its quite reduced size, with values lower than 5% in 96 of the 119 analysed *Comuni*, and with an availability per person between 10 and 30 m^2/person in half of these *Comuni*, whereas only in ten cities the value is higher than 100 m^2/person. The trend between 2011 and 2016 shows a slight reduction in the availability of green public spaces per person in most of the *Comuni capoluogo di Provincia.*

Given the situation, it would be good to define pluriannual programs, coordinated through the existing urban management and planning tools, to increment and protect urban green, paying attention to its potential in terms of urban and peri-urban open space renewal, and aiming at the creation of ecological corridors and green belts.

FT - Also climate adaptation measure ought to be integrated into the city's architectural, technological, and urban renewal, to reduce vulnerability and exposure to risks. It is a rather complex topic, neglected until recent times, but also in this sense it is now time to face it urgently, indissolubly integrating it with other types of interventions in the city. What do you think?

ER - Climate change causes dangerous heat waves, prolonged drought and high temperature periods, together with intense rain for short periods of time, and increase in flooding and landslide phenomena. It is now time to acquire full consciousness that such extreme atmospheric events can cause serious consequences on Italian cities, with risks for our health and great damage because, thanks to its geographical position and the characteristics of the territory, Italy is particularly exposed to such risks.

It is important to operate specific technical analyses in cities - related to local climate and territorial characteristics, but also demographic and socio-economical - to quantify the risks related to climate change, and paying special attention towards extreme atmospheric events. It is important to identify and program integrated strategies aimed at preventing and reducing the vulnerability to such phenomena and mitigating the seriousness of their consequences.

In order to face heat waves, we need to acquire evaluations on the adaptive capacity of the built environment, adopt the most effective technical and managerial solutions for buildings, outdoor spaces, and green infrastructures. In order to reduce risks and vulnerability linked to extraordinarily intense rainfall, it is important to halt waterproofing and new soil consumption and increase urban area de-waterproofing operations, to use green infrastructures also for absorbing and filtering greater quantities of rainwater, to dedicate open spaces, such as piazzas and gardens, to the absorption and retention of greater quantities of rainwater, favouring the discharge of such water from cities to peri-urban humid areas; the latter can be converted into ecological reserves for welcoming biodiversity and recreational and sport activities.

Even though technological improvements contributed to the reduction of emissions by some pollutants, the climate change underway is significantly contributing to the deteriorating condition of air quality, making the air we breathe in our cities a danger to our health. Rainfall is less frequent and draught periods are longer, the stagnating air phenomena are more frequent and last longer, the heat waves are more frequent and intense as are the recordings on high ozone levels.

FT - Such considerations are permanently linked with the issue of atmospheric pollution and the threats brought forward by the worsening condition of the air quality…

ER - With more than 80,000 premature deaths caused by the exposure to atmospheric pollution in 2014, Italian cities pay the highest bill of all European Countries for pollution (EEA, 2017). Moreover, they are not in line with the objectives of the NEC (National Emission Ceilings) directive entered into force since the 31st of December 2016, for four of the five atmospheric pollutants considered. Italy is subject to a European violation procedure because it did not comply with the limits dictated by the air quality directive.

The percentage related to the *capoluoghi di Provincia* with more than 35

days of limit excess for particulates (the PM_{10}) has improved, nevertheless, in 2016, it was still 33%. The situation is better in central and southern Italy, while in northern Italy, the percentage of *capoluoghi* who have failed to respect the particulate limits in the last years remained unchanged and at a high level: 54% in 2016. Most probably the current trend will not allow respecting the current limits and the most urgent objectives set for 2020-2030 (ISPRA, 2017).

If we were to apply the indications of the World Health Organization, which are more preventive for our health, we would have to record that even in cities that respect the European limits the air quality is not good. What emerges from the analysis of indicators for the evaluation of urban population exposure to atmosphere pollutants is, in fact, a critical condition: 82% of the population in the Italian *Comuni* appears to be exposed to average annual levels greater than the reference value for the PM_{10} (20 $\mu g/m^3$), 79% to the $PM_{2,5}$ (10 $\mu g/m^3$), and 32% to the NO_2. Air pollution in Italian cities, underestimated if not even neglected by public debate, is relevant and cause for concern. Good air quality in cities represents a decisive factor for health and wellbeing, in particular when it comes to children, elderly, and in general people that are more exposed and vulnerable.

FT - Green cities have a crucial role for the activation of a circular economy process, which is key for a transition to a green economy, as they can stop the consumption of new soil and activate reuse and renewal operations in already built-up areas and existing building patrimony. Moreover, they play a key role for the promotion of waste production reduction, including food waste, a topic where your role and work for many decades represents an important reference point in Italy and Europe. What can we do in this regard through the green city model?

ER - First of all we need to recover the delays and increase by 75% the separate urban waste collection, increasing and consolidating the demand for recycled materials, removing technical and cultural barriers, and applying public green purchases. Also promoting initiatives aimed at isolating and collecting construction and demolition waste material and recycling it locally to satisfy a market which is increasingly oriented towards renewal and recovery of the existing building patrimony can be relevant, but also fostering the integrated design of building components and systems to favour their future recyclability.

Green cities are important to build IT platforms that work together with industries so that by-products and waste coming out of the production process can be easily employed in other processes. They are important also to promote product reuse in preparation and repair centres and through networks for selling used goods, and to promote shared use of goods and services, activating different forms of sharing.

Green cities promote the application of technologies based on Information and Communication Technologies (ICT) for monitoring, collecting, and regu-

lating information fluxes, and use and management modalities, tending towards the eco-innovation of strategic urban supply chains such as: public lighting, intelligent buildings, mobility, diffused generation, energy distribution and consumption, management of matter fluxes and waste recycling.

FT - Public policies have a key role in the path towards green cities, through direct involvement of administrations on all levels: municipal, regional, and national. Can we state that such path demands equally great attention to the use of available European funds and national and regional public funds, employable, in their totality or in part, to implement measures for green cities?

ER - Absolutely yes. A green city project ought to be supported by suitable information tools, so as to be known and shared by citizens. We need to foresee punctual and recurring information and documentation tools to monitor activities, objectives, and results. It is also good to foresee broad consultation forms, which are nowadays possible thanks to digital technologies, aimed at stakeholders involved in projects and actions.

Also involving the private sector is quite useful, through agreements aimed at promoting the social responsibility of enterprises involved in the race towards the improvement of cities and territories, making their actions and contributes to the green city transparent. Enterprises ought to be also involved in the promotion of targeted investments, services, and other policy instruments, with the scope of improving cities' environmental performance efficiently and sustainably in terms of costs, and maximising economic and social benefits.

The implications for green city local development are quite interesting (GIZ & ICLEI, 2012): support of a more suitable local development, promotion and development of technologies, green innovations, and tools and strategies for the exploration, identification, and application of green business and governance models, supporting identification and diffusion of new opportunities for green investments.

As highlighted by UNEP in the 2011 report "Towards a green economy", the development of green cities can contribute to the improvement of social inclusion and the quality of well-being. The strengthening of public transportation systems, for instance, can reduce disparity by increasing access to the service and contribute at the same time to the reduction of traffic congestion in peripheral areas. Cleaner fuels for transportation and energy production can reduce local pollution, which usually damages the weaker part of the population. Traffic reduction and the improvement of conditions of pedestrians and cyclists can sustain social cohesion. In fact, evidence demonstrates how children who live close to green areas are more stress resistant, less inclined to have social disorders, and have a higher sense of personal value. Green areas stimulate social interaction and improve well-being.

According to UNEP, the transition of cities to a green economy can create

new job opportunities. Also, the EU Green Week 2017 dedicated to green jobs, underlined the high potential of new and good job opportunities generated by a green economy.

FT - During your long career, you often recalled the importance of having faith in the future, which you consider a key resource for progress. The 7th and closing point of the "Manifesto for the City of the Future" - which we put together by combining contributes from Universities', Corporations', Institutions', and Associations' experts - is entitled "Per un futuro più desiderabile" (Towards a more desirable future).

At the end of this dense and intense dialogue, which message do you wish to pass on, especially to the younger generations, aiming for a truly more desirable future?

ER - I want to thank you for this final question because I would like to conclude these reflections underlining the indispensable role of young generations in a society capable of having faith in the future. In Italy, youth unemployment amounts to 32.8%, while the general unemployment rate is equal to 10.9% (processing of data from ISTAT, 2018). It should not be so high, or at least it should be lower than the general unemployment rate: but it is, in fact, three times higher.

Let us not forget that most of the employed youth in Italy has a temporary job and low wages: in 2016 54.7% of the employed people up to 24 years had a temporary job. Since 2000, when they were less than half (26.6%), the condition appears to have become worse (OECD, 2017). Italy cannot move forward this way. It is not acceptable that one out of three young people is unemployed and that most of the employed ones are only temporary workers. If a country does not offer a decent and adequately paid job to its youth, it will compromise its future.

I would like to remind you that green is also a synonym for young. Green economy promotes new and relevant employment opportunities. A green city is not only welcoming and attractive to younger generations; it also promotes several new activities (Ronchi, 2018). Can you think of any other urban project with an equal extent of activities, innovative contents, and use to the green city? Can you think of any other project capable of attracting such high rates of new employment?

Is the need to provide the youth with a high number of job opportunities and high-quality jobs, not a good reason - not the only one, as we saw, but also not the least important one - to invest on green cities? I am aware that the answers to such questions are not simple at all, but if we refrain from asking the right questions in the first place, we might never find the answers we need.

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1.2 SUSTAINABLE PROJECT TOWARDS GREEN ARCHITECTURES AND CITIES

Fabrizio Tucci[*]

Issues

Out of the many pressing questions that demand an answer from every individual and citizen who cares about the culture of dwelling and the conservation of the environment in which we live and of which we are an integral part, four questions particularly demand an answer. Why should we change the way we build and dwell in our built environment - particularly cities - in a sustainable and "green" direction? Why should we proactively and tangibly promote a commonly agreed methodological approach and scientifically founded strategies to achieve that aim? Why do we need to study the trials and best practices that have been implemented over the past four decades at least (though this activity has intensified in recent years, all over the world)? Why should we all contribute to speeding up these "green" processes in the hope of securing a future for our cities?

The reasons are to be found in some telling and, in a sense, grim statistics.

Over four billion people - out of the seven billion alive today - live in the world's large urban centres, generating 80% of GDP but consuming 75% of the Earth's natural resources, responsible for over 70% of CO_2 emissions, producing 50% of the waste, using aqueducts that lose, on average, approximately 40% of their water, living in housing 70% of which is over 40 years of age, consuming over half of the world's primary energy, experiencing the worst traffic and continuing to consume land. The world's top 600 cities are already home to 20% of the population, generating over 50% of the planet's wealth (a percentage that is growing) but living in conditions that are far from what we would term social well-being and of environmental quality. In Italy, 32 urban areas have illegal levels of air pollution because they exceed maximum levels of particulates; and our country is, moreover, the one with the highest number of deaths from pollution, relative to the population, in Europe (GIZ & ICLEI,

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2012; IEA, 2018; IPCC, 2018; WEF, 2018; ISPRA, 2019).

"Designing", "building", and "dwelling", are actions that constitute the very essence of being human and citizens - with the enormous problems that this entails as well - and have been the subject of profound reflections by great intellectuals of the last century, who have left their indelible mark: from the foundations laid down in Martin Heidegger's famous *Building Dwelling Thinking* to the developments recently explored on the concept of "open city ethics" in Richard Sennett's recent book *Building and Dwelling* (Heidegger, 1951; Sennett, 2018). A "sustainable" and "green" reading of these terms makes a priority and an urgent necessity, stressed by every single scholar and researcher of our time, to provide answers to those problems. There are different ways to achieve effective solutions. First of all, radically improving the environmental quality of the design, building, and dwelling categories of human action. The attention, when designing and building, should shift to strategies for regenerating and redeveloping existing assets, protecting land, improving resilience, adaptation and mitigation, to energy efficiency and bioclimatic systems and resource circularity; to promoting the ecological conversion of cities, architecture, our way of living, producing and consuming through a new approach to dwelling; to incentivising the proactive role of all the players involved in such processes - from public authorities to commissioning clients, architects, and qualified and specialised entrepreneurs - and making the most of the contribution made by Universities and our leading lights in scientific research, so as to establish the most pioneering technological and environmental approach to project design (UNEP, 2017).

To this end, the European Union has become convinced that an approach that can more strenuously relaunch the priorities of urban ecological quality, sustainability and resilience is necessary (European Commission, 2016) - given the most recent developments in the green economy, understood as sustainable development, and in the circular economy as its fundamental basis - in the era of climate crisis (Circle Economy, 2019). While focusing on increasing the ecological quality of cities is a decisive factor if we want to ensure the well-being of its residents, interactions between the green economy and architecture, urban planning and technological design culture offer a major opportunity to fundamentally enrich our knowledge and improve our approach to renovation and urban development if we want to improve social inclusion and promote local development and new forms of employment. This is because it allows us to reformulate the way architectural, technological and urban designs are drafted, not to mention town plans, both from a strategic/planning and a technical/construction point of view (UN-Habitat, 2016).

It is indeed true to say that the green economy is a general economic model that results in *«improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities»* (UNEP, 2009) and, as far as this aspect is concerned, it boasts a wide body of work, particu-

larly at international level, whose aim has been to promote high ecological quality as a way of boosting regeneration and relaunching the economy and society. It is no coincidence that "the ecological conversion of cities" is one of the most important strategic themes that the green economy promotes, as shown by the many initiatives (UN, 2016; OECD, 2017; UNEP & IRP, 2017; WBCSD, 2017) that identify actions and measures as key factors for a kind of "urban green growth" that offers us the chance to improve the quality and sustainability of cities, that can provide a response to climate change, safeguard and enhance natural, cultural, social, and technological capital, and regenerate and redevelop the many assets that exist in our urban systems, opportunities for investment, employment and, in a word: to plan a more desirable future.

It therefore becomes essential to promote this "green" vision and publicise at all levels the important contributions and documents that are being produced, principally in an experimental and heuristic way, as the basis for constructing and developing a framework of priority strategies that, aware of the enormous variety and vibrancy of applications, can provide cities and architecture with guidelines, strategic benchmarks and tangible examples of how these strategies have been tried and implemented wherever they have been applied on the international scene over the past few decades, whilst always keeping the different scales (in an a-scalar sense), the different disciplines (in a multi- and transdisciplinary sense), and the various sectors of knowledge and know-how (in an inter-sectorial sense), closely and inextricably linked (Antonini & Tucci, 2017). We need to publicise improvement works that show high ecological quality wherever they have been implemented, to publicise the measures that have been most successful given the contexts where they have been applied, promote an awareness of the key role that properly drafted design plays in environmental and technological aspects, aiming for a future in building and dwelling where buildings, neighbourhoods, urban districts, and cities boast certified ecological, bioclimatic, energy, and environmental functions that are part of the lifecycle of materials and, generally speaking, all manmade products. That is why we increasingly need to focus on the role of research, to support experimentation, innovation, and the exchange of best practices, encourage innovative start-ups, inform and train public authorities, professionals, and entrepreneurs, foster companies that include green choices in their economic criteria, focusing, for example, on the efficient use of resources, material, and energy savings and eco-innovative processes and end products.

Approach

These needs have fostered - particularly at a European level, as mentioned earlier - the analyses and reports that are pointing in the direction of what is known as a "Green City Approach": an integrated, multi-sectorial approach to the planning and implementation of improvements that aim to increase levels of

well-being, social inclusion and long-lasting development in cities, based on the now decisive aspects of the high environmental quality, efficiency and circularity of resources and on climate change mitigation and adaptation.

This integrated approach to green cities had already been adopted by the European Commission as far back as 2010 with its European Green Capital Award (EGCA), given to European cities selected based on indicators that contributed to the definition of green city policies and measures. A complete and up-to-date definition of this approach was drafted in 2017 based on the methodology developed by the International Council for Local Environmental Initiatives, which was adopted by the European Bank for Reconstruction and Development. The "Green City Approach" was also adopted as the basis for a programme developing the green economy in cities, recently promoted by the Economics of Green Cities Programme as part of the London School of Economics' LSE Cities Programme, directed by Lord N. Stern (Stern, 2015).

In Italy, this new approach has been supported by significant contributions. In early 2017, the "*La Città Futura*" manifesto, presented by lecturers from a dozen or so Italian and foreign Universities, was launched as part of the initiatives of the States-General of the Green Economy (SGGE, 2017a), and over the past year the development of this new approach has been boosted by the international Green City Network promoted by the Sustainable Development Foundation, institutions that the author has the honour of coordinating in both instances. The basic aim was to launch a debate in the country - with a close confrontation with the international design experimentation scenario - fostering future developments as regards the relationship between the main principals that lie at the heart of the green economy and architectural and urban growth, regeneration, and development, attempting to bring Italian cities closer to the development approach of many European cities that have already achieved significant results as regards "green" growth and redevelopment.

A new approach to the drafting and management of design processes and priorities is motivated by problems - momentous problems that can no longer be ignored, as mentioned earlier - and is inspired by a vision - based on key principles and objectives that have proved themselves to be able to upgrade themselves and be called into question on a regular basis - and is supported by a method - that can be linked to a framework of guidelines, strategies, and measures/categories of actions that can offer a clear benchmark and at the same time are able to adapt to different circumstances, characteristics, and needs.

So, what should we do next? What logical/cognitive steps should we now take in order to support a methodological approach? What requirements should we look for if we want to properly set up "green" design and building processes and orient sustainable, balanced, and responsible dwelling?

There can now be no doubt that if we want to successfully introduce design answers to momentous problems of an environmental nature in the spheres of building and dwelling, in cities, architecture, and the living spaces of daily life,

then all the disciplines involved must join forces to tackle common objectives, all sectors of human activity must cooperate closely and all scales of building and dwelling must communicate with each other (SGGE, 2017b).

A multi- and inter-disciplinary, a scalar and inter-sectorial methodological approach will allow us to rationalise all aspects involved in different spheres of redevelopment and in process, project, and product-based arenas, which are also inextricably linked, combining traditional and innovative methodologies. The well-being of users, the proper regard for places, the management of water, energy, bioclimatic, and physical resources, the control of economic, social, and environmental costs, the promotion and enhancement of natural, cultural, social, and technological capital, all these are elements which should be constantly kept in mind (Tucci, 2018).

The inevitable clash between so many different priorities can only be resolved by resorting to a vision, a plan and a way of completing improvement work that are founded on a deep-rooted awareness of the need for a systemic, as well as heuristic, view of action at the various different levels and sectors and drawing on different fields; a view that always focuses on coordinated action where public authorities, commissioning clients, architects and contractors work together right from the beginning of the process. As well as limiting the impact on the environment, such an approach clearly has a strong social dimension: the user can be involved both during the design phase and the construction phase and, above all, during the management phase. An approach that also considers the importance of "design for social innovation" can definitely encourage users to appropriate space, responding to the changes that families, workplaces, and educational centres have undergone.

Work in progress

Progress is being made thanks to the work of the abovementioned national group of experts from the Green City Network and the States-General of the Green Economy for architecture and urban planning, a group that has been working for a number of months now on a new phase that involves a further stage that will fine-tune an even more complex and in-depth system of best practices and draft a set of benchmarks and innovative indicators designed to help assess and compare the measures adopted and the practices implemented.

That is why we must continue to develop an increasingly dense and active network of national contacts, in order to foster the connection and sharing of information, a comparison with common strategic frameworks, the development of demonstration projects and the use of existing EU support programmes as part of a policy that encourages cohesion and research. All of the above are essential as part of a process to build and offer a strategic benchmark framework for guiding green-inspired regeneration in cities.

During this working process and research phase, it has proved essential to fine-tune, initially, the methodological approach and the criteria and requirements used to adopt it and, later, the ecological guidelines and development strategies of "green" building and dwelling (GCN, 2018). It is necessary to strengthen our awareness of the priorities and main challenges that cities, architecture and technology are asked to face, objectively sharing our knowledge of the best practices that have been implemented globally, working with scientific knowledge and a heuristic vision in the hope of finding innovative, environmentally, and technologically aware design solutions that can prove sensitive to the differences of each context and adapt to the specific characteristics of each case, while taking their cue from the creation of a common strategic platform in order to promote and implement a new urban, architectural and technological environmental policy.

Speaking of which, we should end by mentioning an extremely important aspect that influenced the structure of works and research operated while pursuing the above-mentioned objectives. They put forward the strategic fields and the relative measures that should be adopted, which are the recurring themes that the challenges that affect all cities in this day and age face as regards "green" building and dwelling, and therefore its purpose is to offer a planning framework of issues, guidelines, strategies, and measures that are generally agreed in the scientific community and in practice at an international scale, systematically organised and made available to all, a framework that public authorities and architects should tackle broadly with regeneration work in their territories and contexts (see the tables below on "General objectives", "Guidelines" and "Measures/Action categories") (GCN, 2018).

It was not the intention to provide a range of solutions to be applied sic et simpliciter - indeed, I do not believe that such a thing can be done *a priori* - as the solutions should be found through a design-based approach, adapting common strategic courses of action to the different circumstances of each context and the specific nature of each case, on a case-by-case basis, thus keeping in mind, above all, the main characteristics of each location as regards environment, climate, social characteristics, economy, culture, size, etc. The "toolbox" metaphor is perfect: the tools are not the solution; they are the methods and instruments used to "repair" problems and find solutions. Hence, we could say that the work underway hopes to provide an initial toolbox that can be implemented and expanded over time as experimentation increases.

Conclusions

The guidelines/strategies and primary measures/action categories considered in the implementation of the international experimental initiatives would appear to provide incisive responses when it comes to making a practical, feasible change

in the accepted approach to “thinking”, “building”, and “inhabiting” architecture and the city, or what by now we refer to with a unified term of the “Green City Approach”. Because, as it has been demonstrated, this is the true key to entering once and for all into a fully operative outlook from which to promote the green economy - and, therefore, the circular economy - as an economic model characterised by a search for ways in which to reach maximum levels of inclusion and social wellbeing, as well as the best possible ecological-environmental quality of dwelling; and, to the extent it proves to be based on substance, a new conception of building, in the ecosystem, interrelated sense of the term, taking in the regeneration and upgrading of sites, the use of renewable energies, the reuse of raw materials, the augmentation of energy and bioclimatic efficiency, the development of forms of resilience, mitigation and adaptation to climate change, along with the optimisation of natural, cultural, and social capital, all grounded in the formulation of specific procedures for the planning and design of technologies, materials, products, and systems designed to promote and favour truly circular flows for the use and management of resources, so as to limit impacts on our biotic system, and on the biosphere in general. The policies represented under the categories of recurring measures/actions that can be found in the two figures/tables are probably only some of those that a future rich in experimentation holds for us. Others may take shape following the activities of research and experimentation which are constantly moving ahead in Italy, as well as on the international scene.

The important thing, in any event, is that we have achieved a heightened awareness of the fact that the activities involved in the planning, design, implementation, and management of the initiatives regarding the transformation of the architectonic and urban systems which are to be regenerated and upgraded, along with the activities involved in the preservation, safeguarding, and optimisation of historic or well-consolidated resources of construction and dwelling call for precise “green-oriented” perquisites to be met, and for strategic guidelines to be pursued, in addition to which a framework must be established that proves adaptable, flexible, always ready to be challenged and rendered obsolete by the ongoing evolution of experiences, though it must also be scientifically grounded, in addition to offering good practices, meaning measures and the actions that can represent, for a technologically and environmentally oriented approach to planning, a practical reference for proper conceptualisation and elaboration of the solutions to be tested and the results to be achieved.

This all-important awareness gives us hope for the formulation, in a not too distant future, of a sustainable, “green” framework for the building of, and the dwelling in, architectures, cities, and territories as a whole.

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GENERAL OBJECTIVES	GUIDELINES	
FIRST GENERAL OBJECTIVE ENSURING HIGH ENVIRONMENTAL QUALITY	1.	 AIMING AT URBAN AND ARCHITECTURAL QUALITY IN THE CITY
	2.	 GUARANTEEING A SUITABLE AMOUNT OF URBAN AND PERI URBAN GREEN INFRASTRUCTURES
	3.	 ENSURING GOOD AIR QUALITY
	4.	 MAKING URBAN MOBILITY MORE SUSTAINABLE
SECOND GENERAL OBJECTIVE USING RESOURCES EFFICIENTLY AND CIRCULARLY	5.	 AIMING AT URBAN REGENERATION AND REINFORCING SOIL PROTECTION
	6.	 EXTENDING UPGRADING, RESTORATION, AND MAINTENANCE OF THE EXISTING DWELLING PATRIMONY
	7.	 DEVELOPING WASTE PREVENTION AND RECYCLING
	8.	 MANAGING WATER AS A STRATEGIC RESOURCE
THIRD GENERAL OBJECTIVE ADOPTING MEASURES AIMED AT CONTRASTING CLIMATE CHANGE	9.	 CUTTING DOWN GREENHOUSE GASSES' EMISSIONS
	10.	 REDUCING ENERGY CONSUMPTION
	11.	 DEVELOPING ENERGY PRODUCTION AND USE FROM RENEWABLE ENERGY SOURCES
	12.	 ADOPTING MEASURES AIMED AT CLIMATE CHANGE ADAPTATION

MEASURES / ACTION CATEGORIES

- Identification, protection, and valorisation of the cultural assets and the identity of places
- Definition of directions, criteria, standards to improve the architectural and urban quality of the built environment
- Valorisation of the antropic-cultural ecosystems of urban areas
- Promotion of a culture economy
- Promotion of a certain degree of homogeneity and equity in the urban environment quality distribution

- Promotion/valorisation of green infrastructure, of their multi-functionality and multi-purpose
- Promotion/valorisation of ecological corridors and green belts, according to the context and biodiversity
- Promotion/valorisation of parks an gardens, trees, green facades, and roofs, according to the context
- Promotion/valorisation of urban farming and short production chain systems, according to the context
- Scheduling of green maintenance/management

- Cutting down air pollution through the management and reorganization of urban system activities
- Cutting down air pollution through focused actions aimed at increasing green surfaces in the city
- Cutting down air pollution through traffic management
- Cutting down air pollution through regulation of industrial facilities in the area
- Absorption of atmosphere pollutants within the system territory-city-building

- Limitation of private car circulation in cities and promotion of public transportation circulation
- Increase of cycling and pedestrian networks through new or existing linear infrastructures
- Regulation of private car parking areas in public spaces
- Promotion of shared mobility through technological advancement, also using ITC ad ITS systems
- Incentivisation of electric, hybrid, and biofuel car use

- Densification of the urban fabric object of study, the urban “voids” and the “non-places”
- Hybridization of monofunctional areas through the introduction of functional mix, and mix of activities and use
- Renewal of residential and non-residential urban areas in decay or abandonment through physical transformation and functional recon
- Renewal of urban infrastructures in decay or abandonment, through physical transformation and functional reconversior
- Prevention of hydrogeological risks through the improvement of surface permeability, urban drainage networks, etc.

- Planning of diffused and continued public and private dwelling patrimony upgrading
- Planning of existing dwelling patrimony maintenance to improve its quality and extend its life
- Prevention of dwelling patrimony seismic risks, also through procedural and permit facilitations
- Upgrade and reuse of the dwelling patrimony aimed at responding to new residential needs, most of all social ones
- Upgrade and reuse of the dwelling patrimony aimed at responding to new service and financial activity needs

- Employment of eco-compatible materials, nature-based, recycled-based, environmentally performative
- Prevention and reduction of waste production from building and living processes
- Separate collection and recycling of waste from living processes
- Separate collection and recycling of waste from building and demolishing activities
- Circular organization of the production-use-production processes

- Collection and reuse of grey and rainwater resources in buildings and open spaces
- Limitation of water consumption and efficient water use in buildings and open spaces
- Use of water purification networks with high purifying effluent’s quality and mud treatment-recycling
- Promotion of diffusion and reuse of purified water and water from polluted sites’ remediation operations
- Year-round diffusion and distribution to all citizens of potable, good quality water in sufficient quantity

- Acceleration of Deep Energy Renovation processes aimed at cutting down greenhouse gas emissions
- Adoption of performance-based design methods aimed at cutting down emissions
- Valorisation of the relationship between green (at different scales) and CO2 subtraction
- Valorisation of the relationship between sustainable urban mobility and greenhouse gas emissions’ reduction
- Record of greenhouse gas emissions and evaluation of the economic, environmental, and social impact

- Energy efficiency and reduction of consumption in buildings and dwelling complexes, both public and private
- Application of passive bioclimatic solutions through natural ventilation and cooling systems
- Application of passive bioclimatic solutions through natural heating and lighting systems
- Adoption of smart automation systems, domotics, and building management to support energy performance improvement
- Adoption of design methods based on environmental Simulation and Modelling processes

- Use of energy production technologies from renewable solar sources
- Use of energy production technologies from renewable wind sources
- Use of energy production technologies from renewable geothermal sources
- Use of energy production technologies from other types of renewable sources, e.g., biomass, water, hydrogen, etc.
- Use of Smart Grid or Dynamic Smart Grid for the diffused and adaptive distribution of renewable energy

- Development of plans and/or programmes for resilience and adaptation to climate change
- Adaptation to heat island phenomena
- Increase of resiliency to heat waves
- Increase of resiliency and adaptation to droughts
- Adaptation to intense precipitation, thunders, and Pluvial flooding phenomena

1.3 GREEN PRODUCTS FOR SUSTAINABLE ARCHITECTURES

Ernesto Antonini[*]

Sand, wood, binders, stones, soil: materials, as we were taught, are the essential ingredients of construction, like flour and eggs of the "building kitchen". Simple and versatile, poor but yet abundantly available, collected from nature and, after light processing, transferred to the building site into the hands of skilled craftsmen to be moulded, shaped and given value, according to the architect directions. So, thanks to their rustic simplicity, it will be equally easy to re-introduce them in the ecosystem at the end of their long cycle of use, with minimum environmental perturbations.

It is difficult to prove that this age of harmony really existed in some undefined moment of the pre-industrial era: on the contrary, several evidences show that manipulation of natural resources and related environmental effects have accompanying the evolution of our species since the Neolithic revolution (Diamond, 2005).

For sure, the "building kitchen" has changed more deeply after 18th century than in the previous 13,000 years, and much more in the last few decades. Pushed by both technical advances and increasing requirements in building comfort, safety and usability, a process of fast evolution has transformed the materials which were once called "primary" but are no longer considered so, since they became intensely handled, processed, and enhanced before reaching the construction site. Moreover, a considerable number of new materials appeared, supplied as semi-finished-ready-to-install industrial products which has led to a quick transformation of the construction site from being a production factory to a place for the assembly of goods manufactured elsewhere.

Therefore, a growing distance chases the rough essence of raw materials away from the product that will incorporate, transform, and carry them into a building. In the galaxy of new ingredients nourishing the contemporary construction industry, it becomes more and more difficult to find the *«primaries materials of the landscape [of which] they reflect [those] rhythm and essence»*

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that Mies van der Rohe, in 1926, defined as *«typical features of any country houses, anywhere on the world»* (Mies van der Rohe, 1926).

From linear to circular

The multi-pronged industrial attack hits the building tradition by destroying its material base. No more "country houses": despite nostalgia is often warmly received, we cannot really escape steel, glass, reinforced concrete, plastic, and countless other new compounds. Their outstanding performances have been developed through a gradual process of artificialisation, droving materials away from the former naturalness of their constituents, and continuously developing them. However, the enormous availability of energy and technologies able to exploit it, supported by a market that expands the effects of the industrialised mass-production, fostering the intense consumption of its outputs, has drastically accelerated the process, highlighting three intrinsic critical aspects of it.

The main of that inconsistencies concerns the fact that the model assumes the resources as infinitely available and gives them value only in relation to the advantages obtained from their direct exploitation, without accounting for the related indirect social and environmental costs. This "cowboy economy" (Boulding, 1966) requires continually withdrawing resources from the ecosystem, even beyond what is able to replenish, with the effect of an overall impoverishment of the available stocks and prospects for an even more dramatic rarefaction of the most valuable and most requested, as arable land, drinking water, rare minerals.

Secondly, the linear growth model leaves behind it a huge trail of residues embedding a high content of precious materials and an even more relevant share of process energy, as well as an enormous emission of pollutants which are dispersed in the soil, water and air.

Finally, providing more products and better performances in this way did not increase the welfare as expected (or demanded), but is causing the opposite effect to make serious disturbances to the life conditions on Earth, affecting also the opportunities for further development.

Therefore, the environmental challenge that disquiets the near future of our Planet makes it impossible to repeat and reproduce models of life and consumption that are substantially indifferent to their cumulative and disruptive effects on the ecosystem, with all the difficulties that such a correction of course requires.

Instead, we must develop and learn to apply a model much more similar to that adopted by living organisms, a non-dissipative but conservative approach, a series of shrewdness and tricks that allow the life of the individual and at the same time favour the survival of the species and habitats, with minimum asymmetries between the two scales and with a very high efficiency of all the transformations needed to continuously maintain the dynamic balance of the

system[1].

Just as biological organisms, which are programmed to take energy and nutrients from the environment, they use them for their vital functions and then return them so that they can feed other processes, without perturbing the general equilibrium of the ecosystem, thus ensuring the circularity of flows.

Referring to this paradigm, the notion of circular economy has been launched since the late 1960s, on the hypothesis that there is an extensive interdependence between the economy and the environment (Pearce & Turner, 1990). Based on this, the theory assumes that economic systems must function as organisms, capable not only of facilitating the implementation of biological cycles, but also of subjecting the technical cycles to similar logics. In other words, to ensure that the output of every withdrawal of resources from the ecosystem and of each process of transformation and use of these resources is effectively re-introduced in the cycle and used to feed other processes, generating a balanced flow circuit.

Since then, the concept has evolved considerably and gathered growing success worldwide, building on five different main schools of thought, namely Industrial Ecology, Cradle to Cradle, Performance Economy, Blue Economy, and Biomimicry (Wautelen, 2018) (Fig. 1).

Ellen MacArthur Foundation, which intensely promoted the adoption of this approach, developed the "butterfly" model (Fig. 2), summarising the notion of circular economy as a couple of interacting loops of material flows: the technical and biological resource cycles. (Ellen MacArthur Foundation, 2012).

Since the biological cycle is feed by renewable resources which are safely returned to the biosphere exploiting biological metabolisms after their use, the technical cycle needs that

> *«man-made products are designed so that at the end of their service life - when they can no longer be repaired and reused for their original purpose their components are extracted and reused, or remanufactured into new products. This avoids sending waste to landfill and creates a closed-loop cycle»* (ARUP, 2016).

In parallel to the theoretical advances, both company strategies and governmental policies have identified circular economy as an essential target that industry and society must reach quickly. Among other public makers worldwide, like China, EU has taken definitely this direction: COM(398) in 2014 (European Commission, 2014a) and COM(614) in 2015 (European Commission, 2015): launched the new "operational package" on the circular economy, to promote a most efficient and environmentally compatible future for Europe[2].

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[1] *«We have broken out of the circle of life, converting its endless cycles into man-made, linear events: oil is taken from the ground, distilled into fuel, burned in an engine, converted thereby into noxious fumes, which are emitted into the air. At the end of the line is smog»* (Commoner, 1972).

[2] *«The approach to the circular economy in Asia and Europe at the firm level takes different forms. […] China puts emphasis on 'cleaner consumption and production' and the '3Rs' prin-*

Building green architectures

Due to its size and heavy environmental balance, the construction sector is among the most involved by this challenging shift: in the EU alone, over one third of total energy consumption (IPCC, 1996), half of the materials extracted, one third of water consumption (European Commission, 2007), and one third of the volume of all waste produced (European Commission, 2014b) belong to construction activities. Hence the building sector is also one of the more promising fields of development for effective actions toward the successful transition to circular economy.

If the need to correct the route is clear, the scope of the conversion is enormous: the only restoration of effective biological cycles, to replenish the share of organic resources in the biosphere, imposes radical changes in the ways of producing and consuming. And even more challenging is to aim to reproduce the model in technical cycles, to restructure them by assigning a crucial priority to their induced effects, instead of focusing on optimising processes only with respect to achieving their utilitarian purposes.

According to ReSOLVE, a framework model performed by Ellen MacArthur Foundation, the transition to a circular economy involves six actions, that can be applied at different scales: products, buildings, cities or even to entire economies: regenerate, share, optimise, loop, virtualise, exchange (Ellen MacArthur Foundation, 2015).

Focusing on the built environment, several inspiring examples can be found in literature for quite all the possible actions and scales of intervention (ARUP, 2016).

Nevertheless, building materials emerge - among others - as a very promising target, representing a field in which industrial suppliers and building process actors can perform shared synergies, potentially powerful in accelerating the transition (Pauli, 2015).

Within this horizon, three key-issues seem draw the most encouraging directions:

- the reuse as building material of any kind of waste both from C&D and other activities, but enhancing the effectiveness and the environmental friendliness of the recycling process;
- the development of new bio-based materials to replace those manufactured from and by fossil resources, but radically reducing their environmental impacts within the entire cradle-to-cradle life-cycle;

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ciples: accordingly, Chinese concept in many ways resonates with the concept of industrial ecology which emphasizes the benefits of utilizing residual waste materials, including energy, water, different by-products as well as information. On the other hand, the European perspective focuses on a system design approach and draws inspiration mainly from the Cradle-to-Cradle methodology developed by McDonough & Braungart and the closed-loop economic model elaborated by Walter Stahel» (Wautelet, 2018, p. 23).

- the decreasing of building material embedded resources, but extending their useful lifespan, through labour-intensive-low-environmental-impact maintenance services.

Waste reduction and scrap recycling are among the more common policies which have been adopted toward circular economy worldwide and particularly in EU. The enormous amount of C&D waste and their yet limited recycled share justifies this priority, as well as some possible uses of industrial waste as ingredients for building products. An environmental benefit will surely derive from these practices, but only limited effects toward the circular economy transition can be expected, if the current building techniques will be still largely unchanged and the processes will only partially be supplied by some waste-made products. Additionally, the environmental balance of the recycling processes is not always positive, nor their economic sustainability, if effective design-for-deconstructing measures have not been originally adopted (Paleari & Campioli, 2015).

The development of new bio-based material is becoming a very dynamic innovation driver, which partially integrate the waste recycling trend too, since some of the exploited bioresources are recovered from landfill. Many promising examples are available worldwide (Brownell, 2017; Pauli, 2015).

The new materials made available by research also provide a powerful opportunity for innovating architectural outputs (Brownell, 2011), which are asked to exploit the environmentally friendly technical features within a coherent language, able to communicate socially shared values of sustainability (Brownell & Swackhamer, 2015).

Conclusions

To take the promising path toward the adoption of a circular approach in building design and construction, at least a couple of main topics need deeper research and knowledge enhancement, avoiding making them critical barriers.

The first concerns the relationships between architecture and time. The circular approach conflicts with one of the foundations of Western architecture: the notion of *firmitas* as the ability of the artefact to resist the attacks of time and nature thanks to its superior strength, without too much care on the cost of this performance, being the value of the artefact considered to be far greater than the resources used to make it. As an alternative to this concept, it emerges the idea of a relative time with which relating: the notions of duration and life cycle ask to provide new models and new languages, more consistent with the need to limit the withdrawal of resources and the impacts of human activities on ecosystems. To do this, new assessment tools and simulation methods are required to support the design processes, but a more stress resilient and time adaptive architecture is also needed to be experimented.

The second, and probably even more challenging topic, refers to the effectiveness of measures which can be adopted to operate a such relevant transformation within the building sector. Despite regulations and shared concerns, no relevant changes will be possible without involving all the many actors of the complex decision processes of designing, making, and operating building, including the huge supply chain feeding them. Since the digitalisation of all the stages of this process is the main and disruptive innovation dynamic we are facing, the success of circular economy appears to be strictly related to its integration into the process of digital management. This means that a big amount of environmental-related information must be made available in digital formats, in order to be included within the numeric model mirroring the real building in all its life stages. We are only at the initial steps of this path, needing a big effort to provide reliable computational data on building product environmental performances (Azhar et al., 2011).

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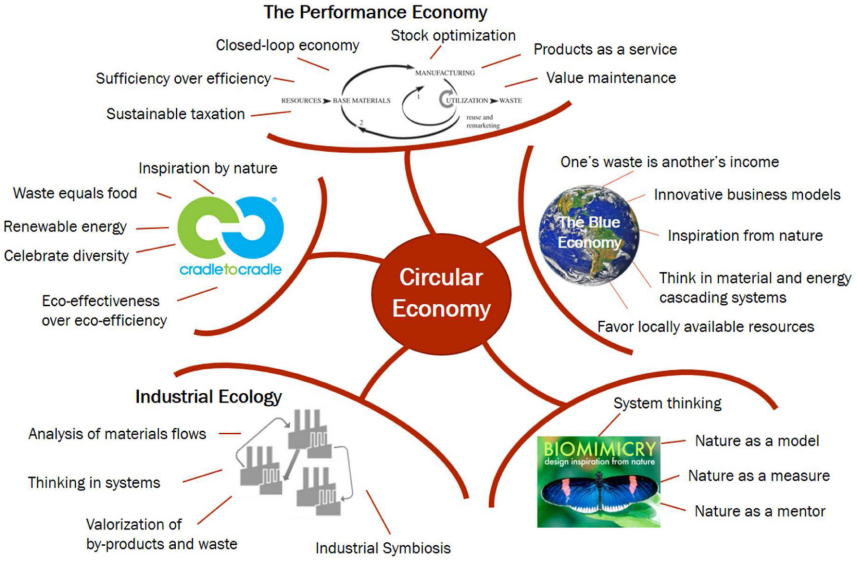

Fig. 1 - The influence of the various schools of thought on circular economy (source: Wautelet, 2018, p. 23).

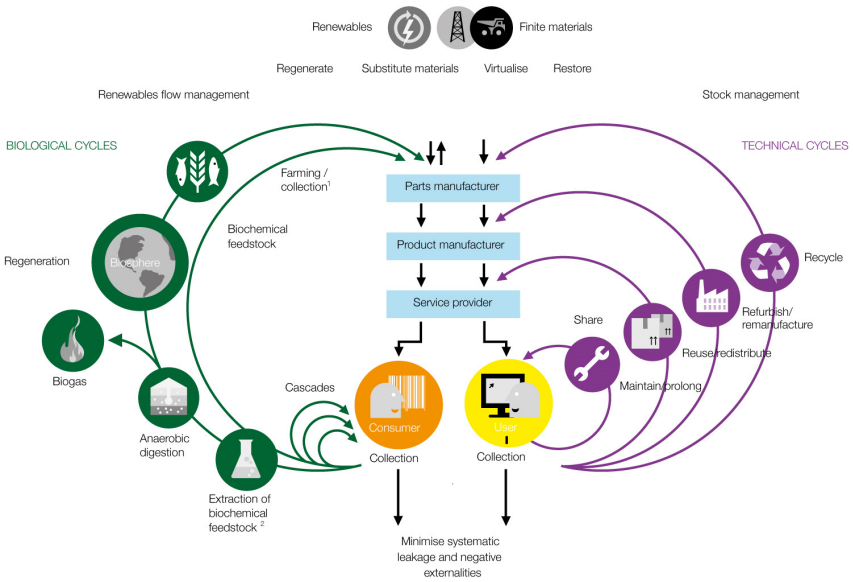

Fig. 2 - The Ellen MacArthur Foundation "butterfly diagram" of circular economy (source: ARUP, 2016, p. 17).

1.4 GREEN ECONOMY AND THE SUSTAINABLE PROJECT

Maria Cristina Forlani[*]

New development models for sustainability

When we talk about sustainability, we should always remember the three pillars that characterize it, instead, we generally tend to have a partial vision; for instance, in the architectural technology field, we focus mainly on the environmental aspect and, until recently, only on energy-related matters.

However, if we do not take into account even the most purely social and economic issues, it will be challenging, if not pretentious to fully speak about sustainability, for a "project" that can structure its behaviours and actions.

It is, therefore, necessary that the architecture, the city and the territory project is proposed in a broader perspective, relating to the "green economy"; thus, moving from a redefinition of the economy itself.

The discourse on sustainability, indeed, aims to undermine our development model to make other scenarios possible, to plan, to propose actions; as long as this model is maintained, there will be but individual proposals unlikely to affect the overall system.

There are several examples brought forward by prominent economists[1] that effectively explain how it is necessary to calculate the environmental costs within each "action" to raise awareness of accountable choices.

Our model, on the other hand, is supported by a type of economy far re-

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[1] One can summon the proposals of Georgescu-Roegen, H. Daly, R. Costanza and S. Latouche. Furthermore, the initiatives of the Commission on Global Governance which has been working since 1992 on several key points including the "management of economic interdependence" and the "strengthening of the rule of law", can be quoted. Simultaneously we note the World Commission on Culture and Development (WCCD) that is deepening the role of "culture" in the configuration of a new model of development not only based on economic growth. The WCCD was founded from the first steps established by the report on the new perspectives of world cooperation (Willy Brandt) and after the fundamental consultations with Gro Harlem Brundtal. Finally, the Manifesto for a global economic ethic of H. Kung, where the link between economy and environment emerges unequivocally and also the urgency of a substantial transformation of the system.

moved from this accountability, unable to "sustain" sustainability[2].

In this regard, we can point out the analyses laid down in *Making Peace with the Planet* by Barry Commoner where the need for a holistic vision is emphasised in order to acquire an awareness what choices are made - so as to avoid that "many good intentions" end up (as an old saying goes) "paving the way to hell"[3].

Since Commoner's analyses, the issue has meanwhile worsened; what funds are available?

We embarked thinking about sustainable buildings, for several years we focused on the energy issue with the aim of making the building stock more efficient, but since the 1990s conferences on the "sustainable city" have been underway in Europe; it was already clear, therefore, that we could not limit our focus on buildings but that a wider reality all the way up to the city should be considered. Nowadays, we are aware that even the city cannot qualify as sustainable if considered separately from the activities that characterize it. We must think of the territory as a place of resources and transformations.

In this regard it would also be interesting to evoke Vitruvius and the parable of Dinocrates. The architect Dinocrates had conceived the design of sculpting Mount Athos in the figure of a man that holds with his left hand the wide perimeter walls of a large city and, with his right hand, a patera so wide to take in the water of all the rivers that fall from the mountain and then pour it into the sea. The project pleased Alexander the Great who immediately asked if there were enough rural areas around the city to provide for the wheat supply of the

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[2] E. Tiezzi sustains that the choices made in the upcoming years can make the transition less dramatic and more enjoyable. The most salient features of this transition should be in particular the shift from prevailing employment in industry to prevailing employment in agriculture and services, from metropolises to smaller human aggregations, from specialization to interdisciplinarity in both work and culture, from centralization (productive and institutional) to decentralization, from consumerist values to new life values integrated in nature, from harsh technologies to soft technologies, from non-renewable energies to renewable energies, from the grand scale to the small scale the path towards a new model of development can start, but there is no illusion that it is an easy path: the road between "economy" and "ecology" is not smooth (Tiezzi, 1992, pp. 232-236).

[3] In his last book Commoner warned that *«preventing pollution means managing the same design of production processes in harmony with the social interest for the quality of the environment [...] a significant environmental improvement requires a right choice of technologies and production systems, so that this choice becomes in turn a social responsibility»* (Commoner, 1990, pp. 252-253, translated by the author).
In the same book he also presents an estimate (though dated, but to date can only be increased) of the cost of the transition to a model of "sustainable" development in the full sense of the word: *«in the United States the reconstruction of the main production systems, needed to solve the environmental crisis, it will cost about $ 100 billion a year for a period of at least 10 years. [...] the environmental crisis in the world cannot be remedied without the participation of third world countries [...] Which brings the total cost of the global transition to an ecological production system to perhaps $ 500 billion annually for ten years or more. [...] Therefore, the solution of the environmental crisis would require a cut of let's say 50% from the world military expenditure»* (Commoner, 1990, pp. 278-279, translated by the author).

residents. When he was told that for the supply it would be necessary to resort to the import by sea, he replied:

> *«Dinocrates I admire your designs and I am pleased, but I think that the foundation of a colony in that place is certainly a project to deplore. As a baby cannot feed or grow without the milk of the nurse, so a city cannot rise if it is not surrounded by fields that provide it with their products, nor can it have a large population without a wide supply of food to support it»* (Florian, 1978, pp. 30-31, translate by the author).

It is, therefore, crucial that the city is completed in its hinterland and takes into account its needs for what concerns production and utilities.

One could argue that nowadays cities operate in a "global" system. Or can one point out that they no longer work? Maybe not to measure oneself to a proper extent?

Italian territory between metropolitan areas and small towns

What is Italy's issue relative to cities and territory? We have a very high consumption of land (the highest in Europe), since the post-war we have expended 70% of the territory despite a limited population growth. We find ourselves, therefore, in a very critical and contradictory situation: there is an unutilized or underutilized real estate (of 27 million housing facilities, 7 million are empty) and yet there are no "houses". In the densely populated areas the housing issue is sensitive.

Soil consumption and sustainability lead us to a much-debated issue: what is the limit of the city so that it can be considered sustainable, beyond considerations on how it is built and how many of its elements can be mitigated?

Many European cities have blocked any possibility of further expansion. The limit has been recognized.

Still, several contradictions remain; there is no denying of trends leading towards megalopolis, we are talking about 120 million inhabitants for the future Beijing. Even if the situation in Italy is quite different, one can perceive an awe that borders on admiration and envy for such expressions of modernity.

In Italy there are only 4 municipalities that exceed one million inhabitants, but dedicated policies make the conditions underlying the unification so attractive, that already 14 areas have been shortlisted for the title of metropolis/metropolitan area; therefore, it is possible to notice a race to constitute new "metropolis". It is true that administratively they somehow replace the old provinces, but one cannot deny recognizing a certain "hinting" towards the idea of the great megalopolises, placing themselves in the trend of what is known as "future".

This will, of course, lead to an exhaustion of the free interstitial soil due to the drive towards "compacting". Nor does the propaganda of the "urban vegetable gardens" appear to be of any practical use, it rather seems a fashionable

trend, and even scarcely assessed with respect to the environmental quality (air, water, earth) in which the cultivation would be carried out. Agriculture in the city does not solve any problem.

It would be rather appropriate to take into consideration not the "metropolis" but those cities - even of large dimensions - that have no strong pollution issues.

The debate on the dimension of the city and on the search for sustainability (liveability) leads to considering, therefore, also the other "pillars" and, in particular, the social one. Social problems found in megacities, metropolis and large urban agglomerations are more easily tackled in medium and small dimensions.

Another consideration arises from yet another contradiction of our time. On the one hand, we race to constitute infinite cities and to compact the population and, on the other, there's a shortening of distances, promoting ICT and, therefore, the possibility of remotely having connections and services with the ease of meeting the whole world in a "global village".

The potentials of the "network" are not linked to urban development methods. Yet the large conurbations reveal on a daily basis, major social problems, including of violence cases. With this regard, E. Hall's study on this subject is highly enlightening (Hall, 1963)[4].

Let's try to discuss about these elements that lead us to recall a peculiarity of our Country compared to other territorial conditions detectable in the Americas and in Asia. In South America, China and Japan immense megalopolis can be seen thriving, but perhaps we must ask whether it is appropriate to intervene without reasoning in the single thought or whether it is better to claim a different culture and peculiarities. Salvatore Settis recently wrote on *Il Sole24ore* of the "right to the city", starting from a

> *«reflection on the historical city in contrast with the unique thought of a development model focused on a horizontal megalopolis with verticalized clusters of architecture and internal segregations based on census, the historical city shows that the richness of the city's form lies all in its diversity, that includes the differences that differentiate the city from any other and that distinguish it from all others»* (translate by the author).

And this should be a vital focus.

A point can be made if this peculiarity, the history and geography of our

[4] It cannot be ignored that urban planning has a substantial "social" role before than economic and/or formal and, therefore, among the several questions, it seems right to emphasize the peculiar aspect that links the research field of architecture, space, to that of sociologists, groups of people. In particular, research on how people use space, among them and in relation to their living environment, needs to be deepened. These analyses favour the understanding of the mechanisms, already noticed in animals, that characterize human life and the different modes of relationship and reaction to spatial-temporal situations; the conflict between one community and another, for example, is accentuated by overcrowding in those cultural systems that tend to preserve identities and distinct behavioural peculiarities, causing confusion and misunderstandings.

Country, is not actually the expression of the specificity of a development and coexistence model, a discourse on sustainability that fully includes the social and economic areas.

On this concept there are in particular three expressions of different eras that can be brought to the attention. Among several lines of Calvino taken from *Le città invisibili* (*Invisible Cities*) one seems truly fitting. Calvino makes Marco Polo voice the key point that clarifies a path towards the sustainable design of the anthropized system. Polo says: *«Of a city one does not enjoy its seven or seventy wonders, but the answer it gives to your question»* (Calvino, 1972, p. 50, translate by the author).

The same concept is traced by Settis in the Siena Declaration, where he writes of a beauty that is not merely an aesthetic concept, but functional to prosperity, thus, to the economy of the city and also to its honour that could be defined as its cultural identity or, as defined by Settis, its civic asset (Settis, 2017).

Again, recently, in the *Laudate si'* Encyclical of Pope Francis it is stated:

> *«beauty is not enough in a project because it is even more valuable to serve another type of beauty: people's life quality, their harmony with the environment to mutual aid»* (Francesco I, 2015).

Thus, years apart and in very different contexts (a secular writer, a political-administrative text and a religious solicitation) we find a common thread that, from the political text hinging on the exemplification of the anthropic system of our Country, expresses that unity of purpose appropriate to outline a new model based on the need to express a city economy founded on work (and, above all in small towns, not merely for a tourist blueprint).

It is work that determines the functional mix of an enjoyable city.

It is solidarity that allows the coexistence between people and participation in the city governance.

All this can only happen in minimal dimensions or by splitting up the large dimensions to constitute "cities made of villages"[5].

Therefore, if it is right to address the issues that affect our cities (we do not talk yet about megalopolises and we hope not to have to), trying to considerably mitigate and even trying to find solutions in a different economy, it is also necessary not to forget the other half of the Country that constitutes mainly in-

[5] It is interesting to recall the case of L'Aquila which, due to its specificity, has allowed to carry out observations on a model of city-territory, or instead, on a "city of villages", able to address the challenges of the future with a view to sustainability. The foundation of the city of L'Aquila, indeed, is of singular nature since the various founding communities for a long time established a correspondence - related to city and territory - between their part of the city and the "castle" of origin, and maintained their own local identity by constituting each neighbourhood with its own church, its main square and its fountain - the urban centralities.
In this case, "history" provides solicitations and new organizational approaches; in this way it is possible to reconnect in order to innovate and promote experimentation aimed at local development and the construction of a peculiar identity, attractive and competitive, to position oneself as a "node" of a global network.

land medium and small businesses.

The networks could reach even the smallest centres, that we are aware they are rich in history and culture and, therefore, of considerable human resources that, consequently, made them animated by a lively cultural life[6].

If it is right then to take care of the big cities, it is perhaps also necessary to pay a little more attention to the fate of the other half of the Country, because, in fact, we do not reach 50% for the residents who live in large cities that affect a territory of about 30%; hence, 70% of our territory is dotted with a myriad of small towns, most of them under 5,000 inhabitants. What do we do about them? Do we abandon them or perhaps, it is rather time, in a climate of economic, social and environmental sustainability, to start seriously taking them into consideration?

These are garrisons on the hilly and mountainous parts of our Country which, nowadays abandoned, create environmental problems of no small importance; the territory no longer cultivated and looked after is in a downstream landslide[7].

The other issue is that part of our coast, where most of the population has been concentrated, from 2050 will tend to go underwater[8].

Should an honest planning not consider this contingency and start thinking about it? In the hinterland we have several million cubic meters available, we could plan a rebalancing of the territory that tends to sustainability through local economy[9].

All these matters are constantly contradicted by our model because nowadays we do not provide funds for development (both European and local) if there is not a project that then aims to enter the financial sector and, therefore, very far from sustainable economy.

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6 From a research carried out several years ago on the spaces for entertainment, I noticed with amazement the widespread diffusion of theatres in the Abruzzo-area territory, even tiny ones in small urban realities. Nowadays these theatres have mostly become supermarkets with an undeniable cultural collapse that perhaps requires a little more attention on our part to restore those values that still connote us, but that we are gradually losing / alienating.

7 ISPRA, Institute for Environmental Protection and Research, has since 2016 already released alarming information and numbers to contemplate, but above all to intervene on. In fact, Italy is second in Europe for seismic and hydrogeological risks that threaten over 10 thousand cultural assets. Furthermore, *Coldiretti* (Italian National Confederation of Farmers) has disclosed worrying data concerning the loss of over a quarter of the cultivated land due to the overbuilding and abandonment caused by inappropriate development models.

8 A study published in *Quaternary Science Reviews* shows the sea levels foreseen in four Italian areas at risk: The Northern Adriatic, the Gulf of Taranto, the Gulf of Oristano and that of Cagliari. According to estimates, Italy at the end of the century would have about 5,500 square kilometres of submerged coastal plains.

9 The Leipzig Charter on sustainable European cities was created in 2007, where in order to achieve the objectives of social cohesion and integration in cities and urban areas, it is recommended to strengthen the local economy and local labour market. The goal is to secure jobs and facilitate the creation of new businesses.

Thus, these are all the contradictions on which perhaps we should start to ponder and pause to actually get to share a sustainable model of Country (whole) because we cannot focus on small realities, but we must think in a very broad vision of care of all our territory, a basis for a more sustainable structure.

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2.
PERI-URBAN AND RURAL TERRITORIES

2.1 CULTURE, PROJECT AND ENVIRONMENT FOR THE DEVELOPMENT OF RURAL AND SUBURBAN TERRITORIES

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Rural to urban transitions

The relation between urban centres, rural territories and suburban areas demands to be defined not only on a physical and functional level, but also on a cultural one, placing itself in a connection - both tangible and intangible - between tradition and innovation, between well-established knowledge and elements of new tangible cultures. Tradition, intensely researched in the present time as a reassuring link with memory, is a significant part of our collective imagination. In spatial planning, the innovative perspectives towards which one must turn to for a modernization of the inhabiting tradition represent one the critical aspects that, however, requires a deep focus. On the one hand, it is possible to determine how to manage the imprints of cultural, urban and environmental identities that belong to suburban and rural territories' heritage, on the other, one can outline how to devise a project for their development, looking at new territorial systems and to new models of transformation processes. The analysis of the natural, socio-cultural and economic components of the territory must prompt the drafting of strategic valorisation visions that ensure the best usage of resources to build pilot schemes capable of activating new relations between the natural environment, agricultural network, infrastructures and artefacts (Tartaglia & Cerati, 2018).

The arguments, on the transition from rural to urban placing as central an act of relaunching subjectivities through the appropriation of space, working on daily life and spontaneity in a union between practices that nowadays would be called bottom-up and top-down, put forward by Henri Lefebvre in the 1960s and 1970s, are still very topical (Lefebvre, 1973). Lefebvre emphasised transformations inhabiting construed in an anthropological sense - but not attributable to anthropology alone - altered in terms of culture, civilization and society according to frameworks differing in times and places, in relations and modes

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of production and, in structures and superstructures. If for Lefebvre the contemporaneity was defined by the progress of from the rural life to the city, nowadays the argument is substantially overturned on how to re-anthropize in a culturally appropriate mode and in terms of preservation, but also promoting, the suburban and rural parts that are related to the cities.

The historic city until the 19th century repeats itself and builds itself solid, identical to itself in defining its own future within a completed model. The transition between the limits of the big cities - heirs of the European tradition up to the beginning 20th century and of the consolidated city of modern tradition - and the rural landscape, indicates the loss of indisputable specificities (Macaione, 2016). Uncontrolled growth and the criticality of the relations between urban centralities and rural areas of proximity, have determined the well-known regressive phenomena in the territorial structures such as the unsustainable consumption of agricultural land, the boom of the ecological footprint of urban systems and the crisis of settlements' resilience (Fanfani, 2014). However, the emergence of contemporaneity brings forward the closure of certain cycles. A case in point is the degradation of large parts of the suburban and rural territories, an outcome of structural socio-economic transformations following the fall of the genetic motivations of the settlements, where territories could not acquire new development perspectives that would restate a meaningful horizon in a framework of altered conditions.

Nowadays the conventional contrast between city and countryside is overcome through spatial and functional distributions arranged in a fragmented patchwork, hardly classifiable according to modernity's conventional categories. Alongside sprawl, it is possible to detect "drosscape" situations; places created according to development needs, with no relation between the use of space and places that escape classification procedures, desolate landmarks expressing a destructive experience of the territory (Rigillo, 2016). It is a matter of marginal or marginalized spaces "trapped" within urban growth or that represent a margin, a border with respect to the more strictly speaking rural territories. The drosscape, landscapes of waste, can be associated to some extent to in-between landscapes, de-industrialized landscapes or in some cases marginal, without well-defined borders but "stationed" in some areas of the territorial geography between agricultural landscape and urbanized landscape. The "city of waste", which also includes its suburban and rural territory, demands to be repurposed starting from the representation of the dynamics connected to its metabolism, according to a narration on the landscape and ecological outcomes created by those processes (Gasparrini & Terracciano, 2016). These objectives must reflect policies, plans and projects geared towards resilience, *«capable of cultivating the quality and adaptability of urban landscapes, recovering and relaunching some narrative traditions of our recent past' city, on the basis of new environmental paradigms»* (Gasparrini & Terracciano, 2016, translated by the author).

In contemporaneity, urban quality should be measured on a capacity for interpretative and design openness, able to create new opportunities, freeing itself from masterplans *«based on the prediction of long-term effects founded on the inflexibility of the decisions and predicted actions»* and aiming at incremental and adaptive approaches of development scenarios and strategic masterplans based on the flexibility of actions and timeframes (Carta et al., 2016, translated by the author).

The rural and the suburban, seen as components of nature, must also be evaluated for the way in which the built is in them "fulfilled". As Giancarlo De Carlo had comprehended, it is the emptiness in the rural and natural landscape that can redirect the critical look on the city. In the 1970s Eduardo Vittoria referred to a similar concept, speaking of an empty space in the *habitat*, that detects a constantly changing space, namely "the empty space of life" (Vittoria, 1973). The understanding of Giancarlo De Carlo identifies in the territory the matrix that contained a genetic code capable of generating and keeping in a single ecosystem cities, landscapes, suburbs, buildings, countryside and nature. For this reason, according to De Carlo *«architecture cannot be autonomous, merely because its first motivation is to reflect human needs and its first condition is to place itself in a place»* (De Carlo, 1995, translated by the author).

Beyond the direct relationship between tradition and innovation

The dialectic between tradition and innovation recalls a new description of the territorial governance practices according to which cultural and environmental heritage linked to the territories and existing settlements should be re-organized, given a new meaning and re-cycled. The life cycles' topic becomes critical, not only from a productive and functional point of view but also from a cultural one. A new co-evolutionary balance must be drawn between urban and territorial dimension (Fanfani, 2014). Some cycles are to be considered inevitably completed, such as that of settlements originated on the basis of economic grounds that unfortunately no longer exist nowadays. The activation of new integrated cycles of production and exchange (functional, productive and socio-cultural) represents the challenge to offer new perspectives, put forward new integrated activities and trigger innovative narratives related to visions that develop through evolutionary processes and actions that also arise from local communities.

The analysis of the historical urbanization process clarifies how much the countryside and the suburban areas are still in a state of subordination with respect to the city. The conflict has been modernised and it would be simplistic to address it nowadays according to a direct contrast between tradition and innovation. The rationale of the sense of dependence and estrangement must be grasped, without reverting in nostalgia or regret of a lost past (Renna, 1980).

The subject of the relation between cities and rural and suburban territories

can find a benchmark in the evolution of the debate on identities and the transformations of living. As François Jullien (Jullien, 2018) points out, the return to the local dimension nowadays takes over a substantial part of the debate scene but, within many of its forms, it unduly represents the centre of a reaction to the processes of globalization according to an interpretation of only "defense". The rural and the suburban are cultural factors that, despite being created, paraphrasing Jullien, "within a tradition, in a certain environment and in a certain context", must be interpreted not as "enclosures" to be defended, rather as resources: they have, as a manifestation of culture, the prerogative of being available and non-exclusive resources, of being a factor of intelligibility and not an object of glorification, or of protectionism as for its own sake, or, again, of rhetoric celebration of a past world (Jullien, 2018).

Recognizing oneself in the rural components or in the urban countryside in the face of the metropolis represents still nowadays the chance to implement the reversal of one's own destiny of progressive marginalization (Renna, 1980).

New possible directions for the regeneration of rural and suburban territories build on a double awareness. On the one hand, there is the observation of the existence of an environment now pervasively anthropized that, placed in an intermediate position between metropolitan and rural areas, demands an innovative interpretation of what has now stabilised in anthropized areas without a break in continuity. On the other hand, the pursuit of relation between built and nature that is redefined in the contemporary world is detected. As is widely known, the relation between individuals and nature has developed in ancient times according to a vision that is rooted in the way of thinking of classical Greece. According to this viewpoint, nature is the mother and place where one lives and, as such, is destined to welcome living. The other vision, of Cartesian origin, has evolved in light of the exploitation of nature related to productive and settlement activities, initiated sometimes abruptly or other times more prudently, until one considers nature as a "fund" prone to any treatment, determining processes and actions detrimental to its integrity.

With regard to these two antithetical visions, a form of third way could be effective, referring to an integration of the settlement and rural systems that have stratified over time and which demand their modernised interpretation. The sometimes-wild urbanization that has occurred in recent decades has partially erased traces of memory. In other cases, however, referring to the principles expressed by Emilio Sereni (Sereni, 1979), through a *reconnaissance* detailed work, those permanencies provided with inertia with respect to change should be recovered, characterized as still active elements or as qualified traces of an intelligible past and endowed with value. It is a principle applicable to urban and suburban territories, that revives elements bearing the *longue durée* - in the words of Marc Bloch and Lucien Febvre in their studies within the *École des Annales* - both physical and historical-cultural and socio-economic.

In the rural territories the records to be safeguarded and used as a system of

resources should be identified for new frameworks and new habitat balances, starting from the structure of the Roman *centuriatio* and up to the set-up of open and closed fields as well as historical routes created on the basis of specific socio-economic imperatives.

Environmental strategies for an integrated regeneration

The urban and rural interface *«represents thus a strategic framework to exercise and implement new project forms for a lasting regulation of the relations between city, territory/environment and local development, however, it recalls at the same time the need for a multiscale approach»* (Fanfani, 2014, translated by the author). The new prospects for the development of rural and suburban territories can be implemented following multifunctional approaches in which the range of action is necessarily inclusive of environmental policies. With this in mind, environmental planning, the disciplinary scope of the technological area, represents a relevant disciplinary perspective not only with regard to the utilization of resources, in the environmental impacts' estimation, in environmental protection and in combatting pollution, but in the ability to carry out a deep consideration on cultural issues and on the relevant systemic and process correlations in a complex dimension. As Otto Frei maintained, the circumstances of contemporaneity are geared towards the establishment of a single biotope according to a complex integration between society and environment, measuring itself against the territorial and urban governance issues related to the territorial and economic cycles.

Circular economy is one of the emerging and interesting phenomena that stand out from conventional economies that constitutes emerging economies alongside the sharing economy and the sharing economy that can act as an innovation in the perspective of a continuous *unicum* between urban, suburban and rural. Too far-reaching territorialisation of processes must be replaced by a district type approach, not only geographically focused but also connected to supply chains that develop in areas of the territory and which witness the multisectoral convergence of productive, economic and cultural activities in an interactive system that tends to settle with the contexts. Many European cities have been concerned with the issue of suburban and rural territories and of the district approach to be launched in different contexts. The example of the 2012 Olympic London is paradigmatic for what concerns the creation of a green belt, a substantial green perimeter band beyond which, in order to stop the consumption of soil, no further urban expansion can be carried out (Burdett, 2015).

At a time when environmental risks have undergone a considerable increase, from the climatic to the hydrogeological, in the exposed areas the component of greening seen in multi-sectorial and multisystem mode, implemented according to various scales, from the green belt of the parks to the urban farm-

ing and up to the reactivation and re-functionalization of *drosscape* trapped in urban borders, should be nurtured. In several national environments the approach to the theme of integration between urban, suburban and rural witnesses the funding of operations on major territorial cultural attractors. Among the others, the planned operations in Campania concern the museum hubs laid out in a net and, among these, the Royal Palace of Naples, the Royal Estate of Carditello, the Archaeological Museum of the Phlegraean Fields and the *Certosa di Padula*. Excluding the Royal Palace of Naples, which has an urban location in the historic town centre, the large territorial facilities are connected to an agricultural and rural productive territory. The Royal Estate of Carditello was the centre of production that looked onto the Royal Palace of Caserta, a hub for aggregation and government of the productive territory. While the Archaeological Museum of the Phlegraean Fields is in an area where the anthropized landscape is deeply marked by the widespread and intensive small local agriculture, the *Certosa di Padula* is a large container with an extraordinary court which was the centre of government of the clergy structure with respect to the flat territories close to Cilento.

In the National Tourism Plan for 2020, innovative scenarios are proposed with respect to the need for each cultural attractor to be connected to the promotion of territories through contexts among which rural and suburban areas are noted in relation to quality agriculture, infrastructures (tangible and intangible), thematic itineraries, marketing strategies, *"verbatim"* contexts concerning storyboards and storytelling. The current challenge demands the ability to integrate and connect through technologies, instruments, actions and activities that can be individually governed. If the challenge is also about integration, it is necessary to mention integrated urban and rural districts in which tourism, culture, agrifood, quality agriculture, parks, protected areas, rural areas and inland areas consist of territories that must possess a large capacity for forecasting cycles that complete within themselves through sharing and circular economy. Embedded within the broader national strategies, the National Tourism Plan pinpoints the topic regarding nature, protected areas and rural landscapes linked to that of food and taste itineraries. The scenarios of recycling of what has closed one's own process demand a reconversion into processes of a different nature linked to contemporaneity that have the capacity to bring out the cultural traces of our territories within a new widespread circularity. The cognitive shortcomings determined by the phenomena that do not place the information and knowledge system on the network must also be overcome, since cognitive shortcomings are one of the risks of the integration operations' failure. In the hypothesis that Magnaghi expressed at the beginning of the 2000s in *Il progetto locale* (Magnaghi, 2010), the need to organize the territories and settlements in districts and for multipolar and network systems, against the risk of the present's hypertrophy that makes one live in a too fragmented time and an organization, is noted. This concept is moreover well clarified by Marc Augé (Augé,

2012) with the observation of the shortcoming due to the lack of development of narratives, actions and activities that can reactivate a mechanism of the future. Augé maintains that we live in a sort of eternal return to circumstances that do not determine development prospects. The risk of a technocratic society can also be found in the inability to reactivate that sort of arrow of time and recalling those bottom-up processes that meet the multiple needs of the communities but also of the productive system and local administrations. From architecture is demanded to retrace its historical battle that consists in a search for meaning in the actions for a better life condition and the topic of the promotion/enhancement of suburban and rural contexts is fully part of this goal.

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2.2 THE VALORISATION OF THE RESOURCE SYSTEM IN RURAL AND PERI-URBAN AREAS

Andrea Tartaglia[*]

The role of green areas

Over the centuries, mankind has progressively given new values and meanings to the actions of using and modifying the green components in the territory, both agricultural and urban. Different cultures and societies have moved from considering the natural elements as a source of great utility with respect to the primary productive system, to identifying them also as the main tool for creating aesthetic and landscape values through a planned and managed use inside towns also. In this scenario, parks and gardens for example became symbols of beauty and of wealth and power. Green, water, sculptural elements have been shaped and organized following outcomes to express artificiality or looking to the naturalness of the result according to the different cultures and historical periods. Used in open spaces, but also in buildings - think of the famous hanging gardens of Babylon - green is not only a natural element, but also a technical component for the use by landscape architects, green architects and architectural designers.

Nowadays, in addition to the productive and aesthetic values, the environmental values and the impact in terms of wellbeing have become a more and more central issue, also stressing the systemic role of natural element and the importance of ecological connectivity. In particular, it is quite recent the understanding of the so called "ecosystem services". In fact, the ecological devastations due to the industrial production and the new ways of life in the modern era that are producing also phenomena like climate change and widespread modifications in the uses of soil, are pushing the international community in concentrating policies and in investing resources toward new ways of using and valorising our territories.

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The ecological issue

The ecological understanding of how the territories and the world in general "work" have given a new meaning to the need of a multiscale and systemic approach to the management of intervention and transformations.

> *«Land-use changes and landscape transformation processes associated to urban expansion, agricultural development and industrial activities have important consequences on the environment. In particular, anthropogenic impacts may result in a reduction of various benefits that humans gain from nature through the so-called ecosystem services [...] Understanding the ecological foundation of the ecosystem service is of critical importance to ensure their preservation. [...] Recently, economic evaluation showed that the global accounting value of ecosystem service flows and natural capital stocks largely exceeds the global gross domestic product»* (Melià et al., 2018, p. 50).

Because of its nature, the ecological issue is not a specialist problem but a transversal one that concerns every activity carried out by human beings. The normal tools introduced in the last decades by the European level to improve the sustainability of programmes, plans and projects have had a very limited impact on the general ecological qualities of the use of territories. SEA (Strategic Environmental Assessment)[1] and EIA (Environmental Impact Assessment)[2] have been introduced *«to provide a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation of projects, plans and programmes with a view to reduce their en-*

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[1] The SEA is a mandatory process that must accompany the preparation and approval of plans and programmes in order to control and verify the outcomes of the choices with respect to environmental issues. In particular, the SEA provides for a wide and continuous involvement of the various competent authorities, stakeholders and the population. It focuses on the need to assess the repercussions of the various feasible alternatives and also to define and then implement a procedure for monitoring the results of the planning and planning choices, to be able to intervene when the results were not in line with the forecasts. At European Community level, this procedure was introduced with directive 2001/42/EC. In Italy the transposition took place with the legislative decree 3rd April 2006, n. 152 "Environmental regulations".

[2] Experienced for the first time in 1969 in the United States with the National Environment Policy Ac (NEPA), the EIA is an authorization procedure aimed at controlling and minimizing the environmental impact of projects, and introducing any mitigation and/or compensatory measures. In Europe, EIA was introduced for the first time with the directive 1985/337/EEC. In Italy the transposition took place with the law 8th July 1986, n. 349, which also established the Ministry of the Environment. Initially born to be applied to major infrastructural interventions or to structures destined to host particularly risky functions for the potential negative effects on the environment, progressively its application has also been extended to more contained interventions, delegating responsibility to gradually lower administrative levels. Consequently, the authorization powers can be community, national, regional, provincial or even municipal. The procedure involves the preparation of an environmental impact study, which, together with the project to which it refers, must also be made available to citizens, which can express themselves on the merits of the contents before the competent administration expresses its decision with respect to the authorization or refusal to carry out the work.

vironmental impact»[3], but the Italian experience cannot be considered so successful. All too often, these tools and procedures have been considered as bureaucratic obligations. Only in rare cases, a territorial plan has been deeply modified after the conclusion of the SEA. Moreover, often the most significant impact on the environment are not caused by big projects that must undergo to an EIA, but by the sum of many small interventions. An evidence of this can be easily found in the recent publication edited by ISPRA with regard to the soil sealing processes in Italy (Munafò, 2018). The lack of a national policy really focused on a more adequate use of our territories is constantly jeopardizing our resources. In fact, the most impacting element that in the last five years was able to contain the soil sealing has been the economic crisis that has hit in particular the building sector. The crisis has reduced 80% of the annual rate of consumption of territory compared to the period of economic growth that has characterized the beginning of the century. In any case, the process goes on and it is important to notice that the analysis of the 2017 data highlights that often the major consumption has involved small and medium municipalities.

Territorial and administrative fragmentation

In fact, comparing the situation in the different European nations, the urban dispersion is an issue that is particularly evident in Italy. This has a multiplier effect on negativities related to land consumption, especially in a systemic view of the Italian territory.

> *«The effect of land consumption does not only impact the areas directly affected by the coverage artificial but also the areas adjacent to them. In fact, it is necessary to consider not only the direct effects that the consumption of soil has on ecosystems, but also indirect ones, which influence some services important ecosystems, such as climate or hydrological regulation»* (Congedo et al., 2018, p. 55, translated by the author).

The fragmentation is a direct result of the lack of coordination among the different administrations in charge of governing the transformation of the territories. Each intervention is often considered as an independent variable and not as part of a wider scenario of multiple transformations. A correct management and implementation of the ecosystem services must overcome administrative boundaries and specialisms.

The first level of this discontinuity can be identified in the segmentation of the municipal territories in urban, peri-urban and rural areas. Actually, these titles identify only a different roles and functions in a system in which all the components are interdependent. If the urban areas are more devoted to provide economic and social services for the population, the more natural rural areas guarantee more ecosystem services. Services that are fundamental also for the

[3] See: http://ec.europa.eu/environment/eia/index_en.htm (accessed December 2018).

quality of the built urban areas. Thus, the peri-urban areas so are not only the moment of transition between artificial and green landscape, but also an important interface to create relations and continuity for the management and the improvement of territorial ecosystem services. The correct management and transformation of rural and peri-urban areas is fundamental for the resilience of territories and the towns themselves. It is not only a matter of stopping the soil consumption and territorial fragmentation, but of soil use. In fact, the soil sealing is probably the most impacting intervention in a peri-urban/rural area, but this does not mean that a not sealed soil is always a positive use in terms of ecosystem services.

Soil consumption and national policies

With regard to the well-known issue of soil consumption, the attention is normally focused on the lack of the promulgation of a specific regulation[4]. Currently, some Regions have anticipated a national law approving specific regulation to stop or at least to contain this erosive process that it is quite impossible to reverse. However, if on one side there are a lot of public proclamation and few legislative acts, on the other side it is quite evident that in Italy the majority of the fiscal, economic and safeguard policies tend to push toward the use of not built areas. From a pure economic point of view to build in a free area is always cheaper and simpler than to revamp or rebuilt where there is an already existing construction. The reasons are multiple: the problems of reclamation of soils and the management of the rubble; the different costs and the level of unknown risks between new construction and refurbishment; the pulverization of properties in built areas; the different land rent of a free area compared to one occupied. Not last, the endemic difficulty in Italy in modifying or worst demolishing the existing. It is quite impossible to make a distinction between cultural heritage and no longer useful build product. The lack of use and role in the society is often not perceived as a problem. A situation of abandoning is often preferred to any kind of intervention and transformation and this is much truer when we act in the rural environment. In fact, the land recycling is a process that in Italy happens only in situations of particularly high land rent, such as the urban territories of Milan and Rome. The urban densification, that is the direction identified by the EU to contain the soil consumption, can be achieved only

[4] The first law proposal purposely aimed at addressing this issue dates back to 2012 on the part of the Minister for Agricultural, Food and Forestry Policies. This proposal identified in the agricultural areas the cornerstone of the protection of the territory and in fact it defined the consumption of soil as the reduction of agricultural land due to sealing, urbanization and construction not related to agricultural activity. In 2016, a new proposal broadens the scope of action and pursues the "Containment of land use and the reuse of built-up land" to pursue the community goal of zeroing up land use by 2050. At the moment, however, none of these proposals has ever become executive.

in a frame of policies, tools and incentives that in parallel push the investment in that direction and that valorise every intervention able to improve the environmental qualities and a compatible use of not sealed areas. If it is true that:

> *«regardless of the greater or lesser attention placed on planning, for essentially financial reasons, the territory is however invested by a process of creating property values above all private, with a process that takes place at the expense of natural goods that are irreproducible without proper consideration of the margins of tolerability of this irreversible consumption»*[5].

It is evident that the soil sealing cannot be stopped or reversed only forbidding the occupation of new areas as some regional and local regulation are trying to do. In any case, it is important to move from the generalist approach of soil consumption to the most complex approach of soil use.

The role of rural and peri-urban areas

The awareness of the importance of ecosystem services and their value also in economic terms, adds today to the understanding of being able to contribute with appropriate interventions for the transformation of land use not only to the enhancement of existing ecosystem services, but also to the creation of new ones. In this scenario, the role of peri-urban and rural areas acquires a central position also considering their possible positive impacts on urban areas. In particular, rural and peri-urban areas must not be considered as reality to be safeguarded or frozen. They are not only one of the most representative areas to handle the problems with regard to the relations between built environment and natural elements, they represent an important opportunity to implement the uses of soil toward most sustainable and efficient ways to valorise the existing local resources. It is important to guarantee a continuity in the management of these territories, avoiding processes of abandoning and fragmentation.

Nowadays, urban areas are in the centre of the common debate because of their negative impact on environment, the high demand of resources for their functioning and the problem of adaptation toward global phenomena like climate change. The attention of architects and planners aims on improving resilience, transforming cities in sustainable environment, reducing their energy consumption, increasing natural elements and recreating ecosystem services deleted by the past construction models. However, all these solutions can for sure mitigate problems and acute phenomena, but they cannot reverse the global reductions of ecosystem services. We have to consider that, for example in Italy, the consumed soil by urban settlement and infrastructures was in 2017 the 7,65% of the national surface (Munafò & Marinosci, 2018). The national land

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[5] Ombuen, S., *Politiche urbane e incremento del consumo di suolo. Riflessioni di un esperto di urbanistica*, available at: http://ec.europa.eu/environment/land_use/pdf/ombuen.pdf (translated by the author).

use card 2017 by ISPRA stresses that half of the Italian territory has still a rural vocation. This means that only a correct "use" of these surfaces can produce a significant positive impact to compensate the negativities of urban areas.

Towards a more aware design approach

Current policies are pushing toward a more sustainable use of land. Tools and used indicators focus in this direction. However, as it is happening for urban environment, the point is to reverse also in rural and peri-urban areas the progressive fragmentation and loss of ecosystem services. If, from a scientific point of view, the knowledge is quite advanced, planners and architects have not yet developed enough tools and abilities in this direction. The decision-making processes and the consequent projects are usually not developed and then verified on the basis of indicators that have scientific value.

The long-time sustainability of the decisions can be pursued only following performance-based approaches able to integrate environmental, economic, productive and socio-cultural components in peri-urban and rural areas.

> *«Multifunctionality is an increasingly indispensable feature for these territories that guarantee multiple ecosystem services not only for the local community but also for the relevant urban areas of reference»* (Tartaglia et al., 2017, p. 189).

The objectives to be pursued by intervening in these territories can be multiple, for example: reduction of CO_2, of pollutants and of energy consumption; sustainable intensification of agriculture improving in parallel productivity and environmental management; diversification of activities, creation of new professionalism and increase of the social inclusion in rural areas; enhancement of natural areas and increase of biodiversity; recovery and reuse of artefacts and infrastructure with a significant landscape, cultural and historical value; construction of new environmental nets and green and blue infrastructures and reactivation of existing ones.

The acquisition of new shared values for these parts of the territories is the proper answer to the degradation and abandoning processes. As already experimented in heritage area, the relationship between protection and enhancement is very close and it is necessary to connect

> *«environmental quality with wider-ranging debate about quality use of land, also taking into account considerations regarding intangible aspects linked with perception, recognition, identity and a sense of belonging»* (Mussinelli, 2015, pp. 17-18).

Peri-urban and rural areas represent the new challenge for environmental design. A discipline that has developed a systemic approach to govern coordinated policies and projects integrating management models and composite systems of skills[6].

[6] In this regard, refer to a project of ecological, economic and socio-cultural improvement devel-

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oped according to a multi-scale and multi-disciplinary approach typical of the environmental technological design by the Research group "Governance, design and enhancement of the built environment" of the *Politecnico di Milano*, with the support of the technical area of the *Fondazione Sviluppo Ca' Granda* and of the del *Consorzio di Bonifica Est Ticino*. The project involved the vast rural properties of the *Fondazione Sviluppo Ca' Granda* present in the south-west of the Milan metropolitan area. The results of this experience have been reported in the following publications: Tartaglia & Cerati, 2018; Tartaglia et al., 2018.

2.3 THE EXPERIENCE OF PATRIMONIO CA' GRANDA FOUNDATION: SOCIAL REPORT AND ENVIRONMENTAL IMPACTS

Marco Giachetti, Davide Cerati[*]

The Patrimonio Ca' Granda Foundation[1] is the body that manages the rural heritage of the *Ospedale Maggiore Policlinico* in Milan. The latter represents on the one hand the largest landowner in Lombardy and the second in Italy after the Roman Curia and, on the other hand, the historical testimony of the city of Milan through the presence of an archive, recently opened to the public, which tells the cultural and urban transformations of this territory since 1066, the year in which the first document in the collection was drawn up. The patrimony is almost entirely the result of papal, noble, feudal legacies and, more recently, of great entrepreneurs who wanted to donate these lands to the hospital so as to guarantee it sources of revenue and resources.

The foundation of the *Ospedale Maggiore* took place in 1456 thanks to the Duke Francesco Sforza who began to donate a widespread series of lands. In 1561 Pope Pius IV donated one of the largest plots of land, today attributable to the whole territory of Morimondo (lower Milanese) which has remained intact over the years. Napoleon ceded the Mirasole Abbey and the neighbouring lands to thank the doctors of the Hospital for the work performed on his soldiers. The King of Italy, in 1863, signed the first statute of the *Ospedale Maggiore* dividing it into two divisions: the health and the patrimonial divisions. In 1968 this distinction was cancelled, and the two units merged into the same administration. In 2002, during an inspection, the Ministry of Economy suggested returning to the two divisions and, only in 2014, the Sviluppo Ca' Granda Foundation

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Davide Cerati, PhD and architect, expert of environmental evaluation and nature-based solutions.

[1] In 2014, the *Ospedale Maggiore Policlinico* established the Sviluppo Ca' Granda Foundation to which it entrusted the rehabilitation and enhancement of its rural heritage. In just 4 years, this new structure succeeded in obtaining important results in terms of profits and new resources to invest in research and in updating hospital facilities (almost 35 million euros). In 2019 the name of the Foundation was changed in Patrimonio Ca' Granda and the social goals were extended to include the humanisation of care and the protection of the hospital's cultural assets as well as the medical research.

was instituted.

Today, the hospital assets consist of 85 million square metres of land. It involves 10 provinces and 96 municipalities, representing just under 2% of the agricultural surface of the Lombardy Region. This territory has an estimated worth of around 500 million euros and has an inestimable environmental and cultural value. There are 1,100 kilometres of pedestrian cycle routes within it. These lands are composed of two important nuclei such as the area of Morimondo (2,100 hectares) and, with the same extension, the area of Bertonico.

The Foundation has changed the type of governance applied to these territories over the last thirty years through a turnaround. In fact, a health care reform in 1968 brought hospital and patrimonial management together, thus creating administrative and managerial imbalances. In these years there was a single hospital statute that also managed the land patrimony. The strategy adopted was to make many lands buildable so that they could be resold and set up a monetary budget for the hospital. This trend, however, did not take into account the great environmental quality that could derive from the proper exploitation of these areas. In fact, the Patrimonio Ca' Granda Foundation has decided to propose a new, different, and innovative approach cancelling the real estate lever in land management. The idea was to create a public patrimony that would bring resources to the hospital but which, at the same time, can develop on different fronts. The public territory must be enhanced through interventions that maintain the unity of these areas; in fact, the latter have not been parcelled out for more than 600 years. The basic idea is to rent these lands to farmers so as to guarantee excellent quality standards for the life and landscape of the city.

In summary, the Foundation was created to manage the available assets in an innovative way and to pursue two main objectives: the first is linked to the revenue of research resources, implementing valorisation strategies that have an impact on the territory; the second consists in making the territory known and in guaranteeing its restoration and maintenance works. Sustainability, improvement, heritage integrity, and transparency are the values of the intervention.

The structure of governance is interesting as it sees the President of the Hospital and the Hospital Council match that of the Foundation. For this reason, the President and the members of the Council carry out their activity free of charge and the Foundation finances itself through the revenues of the rented lands. All proceeds are donated to research. In this way there is a positive impact on the territory, and thus positive effects on the public. The Foundation seeks to enhance the agricultural forestry and agro-food system. At the beginning, the mission was also to know in detail the entire properties available to be able to execute maintenance works. This process lasted four years. The maintenance works were carried out in agreement with the farmers based on the necessary actions in favour of new agriculture and incentives were given in this

regard. Due to the Land Consumption Law it was decided to put on the market all the lands made buildable by the territorial planning tools. To date, half of these territories have been sold for a total amount of around 11 million euros. For the remaining part, a request for relegation to agricultural land was envisaged to save money for taxation and restore agricultural land in the Region.

In recent years, interventions have been made in favour of this policy. First, a quality food label was established. In fact, the *Ospedale Maggiore Policlinico* is the first hospital in the world that produces biological milk guaranteed by its doctors, whose revenues are donated to research. About 1,700 litres of milk are sold per day in a supermarket chain in the city of Milan. The goal is to demonstrate that the product is so good and healthy that it can be sold anywhere. Moreover, for six months, it was served to hospital patients in order to start a policy of improving the quality of the food served in hospitals and schools. In addition, always for six months, a short supply chain project was implemented by providing rice, milk, and yogurt to in-patients paying, together with the Lombardy Region, the difference of the price to the company that was in charge of the catering service (Lanzarini, 2017 and 2018).

As regards rural properties, some initiatives have been carried out for the promotion and knowledge of these territories. In fact, days dedicated to walks and bicycle rides were organised among the farms in the area and, thanks to the collaboration of *FAI*[2], seminars were organised on the history of these areas.

A call by Lombardy Region was also won to plant five thousand trees in the area of Morimondo. Their placement has been designed to create shaded cycle-pedestrian paths and connect four ecological corridors in the area.

Important interventions of recovery and refunctionalisation have been carried out on artefacts of cultural value such as the medieval Mirasole Abbey.

The founding idea is to carry out a systemic project involving all the heritage that was previously left to the hospital. Furthermore, for this reason, the white dove, the symbol of the Hospital and the brand, was recently redone by the historical Curti Furnace[3] in Milan, to be place at the entrance of each farm.

The cultural and environmental actions and policies of Patrimonio Ca' Granda Foundation can be inserted in a wider strategy for the environmental, socio-cultural, and economic redevelopment of rural heritage in the middle and south sectors of Lombardy Region.

As first, the nature-based action of tree planting and, more in general, of implementation of territorial naturality, offers environmental multifunctional

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[2] *FAI*, *Fondo Ambiente Italiano* (Italian Heritage Trust) is a non-profit foundation established in 1975, modelled on the National Trust, with the aim of protecting and enhancing the Italian historical, artistic, and landscape heritage.

[3] The Curti Furnace is the same that in 1400 had made the moulds and the terracotta designed by Filarete for the façade of the first hospital, now the headquarters of the University of Milan.

performances (typical of so-called green infrastructures) reducing land surface temperature during summertime, mitigating air pollution, implementing soil drainage, rainwater reduction, and carbon sequestration. Recent studies show the positive interaction between natural implementation of rural area of South Abbiatense and territorial economies, through the activation of circular site-specific strategies and actions (Mussinelli & Cerati, 2017; Tartaglia & Cerati, 2018; Tartaglia et al., 2017).

Furthermore, the presence of a capillary framework of water bodies can enhance the sustainable growth of rural territories. The redesign for a new navigability of Naviglio Grande and Bereguardo canals offers the opportunity of reactivating of the historical socio-cultural and economic relations between Milan and its peri-urban and rural areas.

The economic and environmental growth of the territories owned by the *Ospedale Maggiore Policlinico* is also supported by the increasing range of services offered by the tenant farms.

The sale of high-quality products made through "zero-kilometre" agri-food chains, together with offers of agro-tourism services, represent today the key element for the regeneration of the built and natural rural heritage.

The reused historical heritage, the implementation of areas with a strong naturalistic vocation, the regeneration of blue and green connections to the city of Milan, and the push towards sustainable and quality agriculture are today the elements of strategic development for the regeneration of the properties managed by the Foundation. Through the provision of methods and tools capable of measuring the effects of this growth in the medium and long term, the Foundation is now, and even more so in the future, one of the main stakeholders in the regeneration of metropolitan rural areas.

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2.4 PROJECT FOR THE DEVELOPMENT OF RURAL AND PERI-URBAN TERRITORIES: DISTRICT NETWORKS AND MODELS

Daniele Fanzini[*]

Working on local development, especially in rural and peri-urban territories, means connecting the material resources of the territory to the intangible processes that produce wealth and wellbeing, inclusiveness and a sense of belonging. The construction of networks, from the material which encourage physical interaction, to the intangible which encourage social interaction and the exchange of ideas, is the way in which this relationship may be translated into organisational models and systems.

This paper investigates the way in which the issue is tackled by the cultural technology of the project, suggesting possible solutions for overcoming the management model in favour of vocational clusters within which the economic and social stakeholders who produce effective innovation are better represented.

Cultural heritage in policies and research

One of the aims of the Maastricht Treaty is to promote harmonious and balanced development. In order to achieve this aim, the European Union promotes sector based policies in various sectors, among which are employment, social rights, infrastructure, environment and, not least, culture. In Europe, cultural heritage is indeed widely considered an important factor for identity and the creation of wealth. As a resource shared by everyone, cultural heritage is protected at both a national and European level, but its potential for growth depends on the way in which it is shared and valued. In accordance with Sonkoly and Vahtikari (2018), it is possible to identify three periods of change in cultural policies on an international level.

The first era, which existed in the time period from 1880s to 1960s, is characterised by the national principles of protection and conservation of heritage on an individual monument scale. This period continued until the codification of the concept of cultural heritage protection, which in those times was very

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rarely used to describe the cultural assets claimed by a nation or a community.

The second 20th century era began in the 1960s and continued until the 1990s and saw the first institutionalisation of the concept of cultural heritage by way of international laws. The principal players in this second period were UNESCO and associated institutions.

The third era, which started in the 1990s and continues to this day, sees a renewed institutionalisation of the cultural heritage concept, the significance of which may be linked to the principles of sustainable development and the nature of which is officially recognised by the EU Council of Ministers in 2014 "as a strategic resource for a sustainable Europe".

Cultural heritage was absent from the debate on sustainable development for a long time, despite the recognition of its environmental, social and economic importance. As well as alleviating poverty and inequality, a well protected heritage can actually provide innumerable benefits in virtue of the interaction between natural and cultural resources which influence each other in a sort of co-evolutionary process.

In 2015, the 20th General Assembly of the Member States World Heritage Committee adopted a policy of integration with the aim of helping professionals, institutions, communities and the relative related networks to exploit the potential of world heritage for sustainable development. Its adoption brought about a significant evolution in the concept of heritage as a resource capable of: producing economic development, attracting local based investment, creating long term and dignified employment in both cultural contexts and in natural protected areas rich in biodiversity. In addition, it increases a sense of place and belonging, respect for others, a sense of purpose, social cohesion, individual and collective freedom of choice and action. The aim is to increase what Nobel Prize Winner Amartya Sen defines as: *«the capacity of individuals to live and be whatever they choose»*; to take protective measures to reduce the risk of disasters and increase resilience (UNESCO, 2015).

The UN 2030 Agenda for Sustainable Development identifies 17 global targets (SDGs - Sustainable Development Goals) and 169 specific objectives recognising the close bond between human wellbeing and the health of natural systems and the importance of protecting heritage in order to help people recover a sense of continuity, dignity and responsibility. Indeed, as highlighted by Giovannini (2018), *«a change of mentality for a transition towards a sustainable development model depends not only on "genetic" factors (though relevant), but also on education and culture, i.e. the way in which the development model functions»* (translated by the author). Beginning with the acknowledgement that all cultures of the world can contribute towards, and are players in, the drive for sustainable development, the subject of culture is present in various points of the UN 2030 Agenda:

> *«- 4.7 ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others […] culture's contribution to sustainable development;*

- *8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products;*
- *11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries;*
- *11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage;*
- *12b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products».*

The launch of the European Year of Cultural Heritage 2018, represents another considerable move in the direction of taking full advantage of the potential and challenges involved in the creation of a single and shared European cultural heritage for sustainable development, which in the field of research translates into the supply of knowledge and advice to improve the policies of those various sectors connected to culture and heritage, with education at the forefront.

This revision will inevitably have consequences for the types of funding for research in the Union. With regards implementing the revision, interpreted in its broadest scientific and political context, the new directions suggest for the future the promotion of a European framework of sharing and broadening the concept of cultural heritage, which takes into account the cultural, social, economic and ecological challenges posed by the changes which are underway.

The "Cultural Heritage Counts for Europe" (CHCfE) project, created five years ago with the contribution of the European Union, has the ambitious aim of demonstrating the positive effects of investment in heritage, gathering and documenting concrete proof of the relative economic, social and environmental impact. The project also shows the way in which cultural heritage may qualitatively and quantitavely represent a key factor in the success of the "Europe 2020" strategy in as much as: it reinforces the perception and understanding of the importance of structural funding and European investment and the impact of these investments; it improves understanding of the Cohesion Policy, with the additional aim of providing recommendations as to how and by means of what mechanisms, future improvements may be made; it safeguards European cities through the Heritage Urban Landscape approach; it increases the value of knowledge, reintroducing local cultural traditions into territorial planning interventions and urban design; it offers new prospects of survival to craftsmanship in cultural creative industries.

Following this reasoning, the recent and powerful EU declarations on participative governance should be taken into consideration in order to encourage collaboration between researchers and the interested parties. Coherence in this co-creative and cross sector collaboration, and the strength of the horizontal networks of the many parties interested in the recognition and utilisation of European cultural heritage, are key to the proposals of recent European policies

for the controlled and efficient connection of cultural and environmental heritage to the culturally based sustainable development of the future.

Collaborative networks and design for enhancement of the built environment and cultural heritage

Gabriella Caterina, in a paper published in 1989, saw interventions on the built environment as a complex operating area in which: *«to discover the capacity to protect the cultural identity of place»*. A working environment which, sustained by the value which building heritage is able to offer, supplies a multi-scale reference framework, composit and continually developing, within which *«the results of the transformation process constitute the introduction of constantly new changes of adjustment»*. This particular vision presents certain interesting implications: the widening of the field of operations in building heritage interventions, from their physical dimension to their evolution over time and in the spaces according to context; the strong bond between interventions to individual buildings and the territory and their overall dimension; the "evolution principle" of transformational processes which provides a basis for critical thinking and management.

Almost thirty years later, Caterina's assertions are extraordinarily current. As she herself observes:

> *«Analysis of the incidence of interventions on the territory continues to move towards an awareness of transformative processes which, subverting the traditional "project" literature and expanding the viewpoint, propose the physical dimension of the intervention binding it to its evolution over time and to the interrelationships with which it is enriched through the context»* (translated by the author).

Many of the issues discussed above can be identified in these simple and clear assertions: the promotion of a broad, diffused and extensive interpretation, in short, a "holistic" approach to the concept of heritage; the diffusion of appropriate methods to manage the complex process of the formation and consolidation of community identity; the use of inclusive and participatory methods in the processes of evaluation and exploitation of heritage.

In the work of Caterina, cognitive networks as tools to support the implementation of European policies are directly invested into the project, themselves becoming design material. In technology culture, the word knowledge is indeed synonymous with "design" (Cetica, 2003), an activity which also involves the projection of scenarios in a dimension of "the possible". This is at the same time a potential future horizon and a *hit et nunc* operating context influenced by the social dynamics of the territory.

Design and decision making are strictly interrelated activities (Crespi & Schiaffonati, 1983), which today require instruments that can measure up to the complexities and uncertainties. The economic crisis, the effects of which can

still be seen, especially in marginal and border territories, has indeed damaged the concrete certainty of continual growth and the possibility of being able to manage the dynamics through planning/design methodologies and tools. A question therefore emerges: how is it possible to focus on local culture and development during times of crisis in marginalised territories?

Pier Carlo Palermo (2016), gives his point of view which is very similar to the opinions discussed so far. Departing from "past ideas" which are, however, "long term" (this is how he himself defines them, referring to the territorialist approach of Magnaghi, to the "critical geography" of the Northern European type and to the place-based community matrix), he proposes the integration of diverse scale policies, policies which he calls "hybrids" when compared to standard models, in that they are oriented towards the search for the right mix, sustainable and effective measures of reform, competition and redistribution. Policies which take into account the fact that *«it is impossible to think of pursuing an aggregate growth if unprepared to rule out the formation or degeneration of "significant local crises"»*. Within this vision, the themes of local development and awareness of place play an important role which Palermo proposes to investigate and include in real processes, beginning with the most evident critical issues. In summary: less planning and more design which is fact-based and anchored to large scale public visions and policies.

A similar point of view is expressed by Schiaffonati (2017), who, with direct reference to the activity of design, highlights the importance of being able to interpret reality, to measure up to actual daily life, providing solutions which are shared by the community, using anticipatory visions able to represent and document the validity and actual feasibility of the solutions proposed.

The points of view cited are both in line with the "space-feeling-action" model (Fanzini et al., 2018) which provides a possible representation of the temporal space context within which it is possible to construct that principle of coherence between long term thinking, the orientational role of research and the experimental dimensions of design, typical of cultural districts. The "feeling of sameness and similarity" which Capello (2017) attributes to the existence of a common vision, of communal industrial vocations, a feeling of community, of "territorial loyalty" which together bring about the creation of a "territorial identity" based on cognitive, relational and cultural models which support a sense of solidarity.

Italian cultural districts and the case of Oltrepo Mantovano

Districts are configured as a mixture of physical and cognitive networks which, through design, foster social innovation and new functional uses of heritage. Something very similar to what Norris (Norris, 2000), when talking of organisational theories for territorial development, interpreted as intangible infra-

structures which support organisations exchanging ideas and transforming them into concrete facts. Valentino (2003) defines them as *«connected systems within a territory which integrate the processes of cultural heritage enhancement with the related infrastructure and manufacturing sectors»*. This definition underlies many of the themes analysed in the previous paragraphs, particularly the network dimension of the relationships between the operators, their active and creative involvement in the drawing up of strategies and projects, with cultural identity as a cohesive factor.

To these we add the components identified by Della Torre (2006): the existence of a strategy focused on the landscape, the architecture and the artistic heritage; well defined territorial borders; the existence of a territorial brand; the presence of an active local community which knowingly identifies with the territory (local system); the possibility of involving educational institutions; the existence of innovative forms of cultural expression; a cultural networking capability as well as high standard cultural activities; the presence of financial organisations connected with the enhancement process (or potential beneficiaries of positive externalities); the existence of a local administration system which works to facilitate the integration of cultural activities into a system.

Della Torre (2013) attributes the success of a cultural district to its ability to be an efficient tool in the management and enhancement of the existing heritage within a given territory. As a functioning network, through forms of governance and systems of infrastructure, the cultural district is able to impose restrictions and connections, integrating cultural resources into a complex system connected to ancillary sectors. The way the networks are organised depends on both the characteristics of the area and the conditions which determine the dynamics of creation. With direct reference to the latter, we can identify two substantially opposed approaches: the top down approach of public policy and the bottom up approach of private enterprise. Aside from the approach, the various district types have a variety of factors in common which must be "culture driven" and on a territorial scale (Francesconi & Cioccarelli, 2013).

The Cultural district of *Oltrepò Mantovano* is a typical example of bottom up initiatives supported by the enthusiasm of the mayors of the territory and carried out with the active involvement of the local population. The cultural development of this distinctly rural part of the Mantovano territory began with the strategic alliance of the communities with projects co-financed by the European Regional Development Fund (ERDF) and other national and local groups. The uniqueness of this experience lies in its being concrete evidence of the "ecology of value" concept. Built upon knowledge/network-based and user driven systems it feeds innovation, stimulating active collaboration, emotional involvement and direct interaction of the multi-industry operators through participatory networks (Pilotti & Ganzaroli, 2009). The term "innovation" requires a clarification: the term in this context does not refer to new elements in a general sense but on a local level. An enterprise which originates in the cognitive potential of

government and civil society but develops through the circulation of ideas, the true source of innovative inspiration and a *«framework within which the formulation of policy problems, their salience and tractability are socially constructed»* (Gasparini, 2005, p. 341).

The Italian experience with regards to cultural districts is sufficiently broad in terms of time and space to provide ample case studies and examples of success and failure. In the successful cases there is a positive synergy between various financial sectors that have supported the evolution of passive experimentation of experience aimed at the active involvement of the players who for the occasion are transformed into co-processors of their own experiences (Schiaffonati & Treu, 2009). Furthermore, the Italian cultural district has had an essential role in promoting the value of minor local heritage and its potential for improving local development in sustainable ways. There are, however, some obscure points which Nuccio and Ponzini (2017) have highlighted. Among these is the use of the term "cultural district" as a sort of convenient umbrella label for extremely heterogeneous policies. These problems are less relevant in small and medium sized rural areas where Nuccio and Ponzini point out a more widespread use of cultural districts as a political strategy to overcome the limitations due to a chronic lack of resources and isolation.

The need arises therefore for a "disambiguation" of the term, too often used to promote very diverse types of enterprise which, in some cases have little or nothing to do with cultural themes. Furthermore, the need arises for more involvement in the proposal, also with regards to the manufacturing sectors connected with culture and creativity, the only ones capable of increasing the levels of innovation in the interventions on cultural heritage, and producing positive long lasting results in terms of economic development and social innovation. One of the most widespread limitations which emerges from the analysis of the Italian experience of cultural districts carried out by Nuccio and Ponzini (2017), is indeed the excessive presence of policy making and consultants, to the detriment of the financial and social stakeholders in the territory.

From cultural districts to vocational clusters for culture and creativity

At the base of the numerous economic policies for culture, from the first cultural production clusters to the actual traditional and evolved cultural districts, there are certain common elements:

- context - the territory is not simply a container for development but one of its fundamental ingredients;
- politics - the political approach to heritage must be integrated and effective in guiding and advancing private enterprise;
- process - the protection and enhancement of cultural heritage is continuous and the project is a form of co-creation which extends over time;

- opportunity - the success of an intervention on cultural assets depends on the scalability of the business model which is achieved together with the businesses in the field of replication and continuity of products and services.

These elements are directly related to the concept of *"milieu"*, which Camagni (Camagni & Maillat, 2006) uses to describe the way in which innovation is generated by the tangible and intangible components of heritage. In the social capital model used by Camagni, namely the alliance of operators active in a territory, motivation comes about thanks to favourable conditions of cooperation, socialization, loyalty, reputation, cohesion and a sense of belonging.

Networks play a fundamental role as they connect with both the intangibility of relationship dynamics and are more directly invested in the reality of the places they serve.

In the field of network theory, some studies on "cognitive networks" have illustrated how important it is for the actors to have a clear representation of the relational structures which can influence their behaviour. The potential for growth in an organisation is enormously increased by knowledge of its own network and the ability to make the best use of it: *«to feel part of a cohesive and friendly environment promotes creativity and the propensity to collaborate with others, with the additional goal of tackling more innovative and complex challenges»* (Montanari, 2018).

In the field of urban studies (urban geography, urban sociology, policies for cities and the territory) the role of spaces and how they relate to each other and the city's role in supporting clusters which enable creativity and innovation have often been highlighted. "Place" has always been an important factor in industrial development and it is even more so in the economy of the symbolic and imaginary (Fanzini et al., 2013; Hutton, 2016).

In both areas there are other aspects which deserve further analysis. In the field of Network Theory there is a need to understand how the perception of relationships could influence creativity (Montanari, 2018). In the study of the built environment on the other hand, the need arises for an understanding of the way in which the characteristics of the containers of heritage can suggest new functions, stimulating shared and participatory enhancement initiatives (Gaspari et al., 2017).

The union of these two requirements led to the proposal to adopt urban regeneration as a new strategic objective for the Smart Specialisation Strategy of the Emilia-Romagna Region. The proposal was developed with Cluster *Industrie Culturali e Creative* which is part of the regional ecosystem to encourage innovation. The initiative promotes events, gatherings and research activities aimed at improving the quality of the territory and the individuals who live there; giving back a clear perception of what the region can offer on a cultural level, in small scale manufacturing and higher education; promoting the discovery of the origins of the territories and at the same time their development; creating new business opportunities for creatives, artisans and companies and

their products, able to give a true sense of what "made in Italy" really means; supporting projects within which analogue skills are united with the purely digital; creating synergies, new forms of employment and a new market.

The term urban regeneration is intended as a particular category of intervention on buildings, able to produce long term socio-spatial effects, strengthening the business ecosystem - including and above all, those connected with the creative and cultural sectors - as well as contributing to the improvement of the built environment (Venturini & Riva, 2017). The aim is to trigger a virtuous process of renewal which includes both the contents and the container, i.e. the production of new culture together with the regeneration of spaces. A process which is fed by a continuous exchange between tangible and intangible culture, between public and private enterprise, between old and new cultural production to initiate new growth and innovation.

The creation of a live system able to link data relative to locations, events and CCI regional manufacturing and the development of an advanced live multimedia system, are the technological solutions which have been identified for the enhancement of the creativity and craftsmanship of the Region (including event managers), linking them with the assets of the territory for a new management of the relationship between visitors/users of the cultural assets. These initiatives will allow for the simultaneous exploitation of the origins of the territory and its development, creating new business opportunities for creatives and artisans as well as businesses, giving a tangible sense of the "made in Italy" label. This interaction may also encourage new projects wherein analogue skills are joined together with the purely digital, creating synergies, new types of employment and a new market.

Conclusions

European Union policy for research in the field of culture encourages co-creative and cross-sector collaboration and the creation of networks between individuals with diverse areas of interest in the enhancement and use of cultural heritage. The technological culture of the project considers the construction of networks connecting project designers with stakeholders to be a fundamental problem to resolve.

"Place", intended as the various types of location, space, site and area, plays an active role in the relationship between: cultural assets which represent the principal resource able to guarantee that development relates to authentic community values (culturally based development); building assets, especially those no longer in use, representing a major opportunity for new economies that through culture produce innovation using creativity; the spaces, in particular historic centres with characteristics which encourage creative activities that lead to innovation.

The district model has played an important role in the promotion of the value of minor local heritage in relation to themes of sustainable development but its practical application has demonstrated certain limitations, primarily the lack of involvement of the financial and social stakeholders capable of producing real innovation. The vocational cluster model proposed by the Emilia-Romagna Region for Smart Specialisation Strategy and the adoption of urban regeneration as one of the five strategic objectives of the Cluster *Industrie Culturali e Creative*, present a possible alternative.

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3.
CULTURAL LANDSCAPES

3.1 THE ROLE OF CULTURE IN SUSTAINABLE DEVELOPMENT PROJECTS

Raffaella Riva[*]

Sustainability, participation and active citizenship

The international context places the issue of the sustainability of development as a precondition for any project and intervention of territorial transformation at all levels, from the scale of supranational policies to that of local intervention. Sustainability in the broadest sense of the term, that goes beyond the aspects of environmental protection (responsible use of resources, reduction of consumption and polluting emissions, limitation of impacts and waste, protection of the environmental heritage), to include also the aspects of economic feasibility (financial availability, payback times of investments, ability to activate new economies and positive induced), social equity (accessibility of resources, distribution of benefits, social re-appropriation, usability) and cultural enhancement (strengthening of local identities, growth of the sense of belonging, development of creativity, promotion of dialogue and contamination between cultures) (Gangemi, 2001; Dierna, 2008; Forlani et al., 2016).

This approach presumes that the management of the territory is the result of participatory paths and active citizenship, the success of which is measured in the ability to activate innovative forms of collaboration and cooperation between public and private entities for the protection and enhancement of the common goods, meaning the environment, the landscape and the material and immaterial cultural heritage (Gustafsson & Mellár, 2018; Petraroia & La Marca, 2017).

In fact, this is a difficult condition to achieve, especially in Italy where participation often remains attested to a superficial level of information, sometimes consultation, rarely deliberation and active involvement in the choice, design, and implementation of a common project. The reasons are to be found above all at a cultural level, in a widespread disinterest in the management of the common good, in the lack of adequate training and in a misinterpreted search for representativeness of the community within the processes. This is not so much

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a lack of adequate tools as a more limited structural habit of confronting and seeking compromises between different interests, including conflict. In general, there is a lack of willingness to take on the burden of choices, with the public renouncing its role of orientation and coordination, which does not correspond to an equivalent responsibility of the private sector towards the community (Riva, 2019). It is therefore necessary, in the first place, to fill the present cultural gap with actions aimed at increasing the sense of belonging and assumption of responsibility of the communities towards the common heritage.

On the basis of these assumptions, at an international level, institutions dealing with culture have long since initiated a debate on their social role and on the need to open up to the territory and to economic and productive realities: *«today museums are increasingly recognising their role as agents of social and economic change as they generate knowledge for and about society, are a place for social interaction and dialogue, and a source of creativity and innovation for the local economy»* (OECD Secretary-General & ICOM Secretariat, 2018, p. 12).

This debate had an important moment of sharing and discussion in 2016 in Milan on the occasion of the 24th ICOM General Conference on "Museums and cultural landscapes". The ICOM General Conference focused on the new challenges that globalisation poses on the one hand to the system of institutions that deal with culture, and on the other hand to planners and those who in various ways deal with the territory and the quality of living.

In particular, it proposed a reflection on the social responsibilities to which museums, and more generally cultural institutions, are called, as territorial institutions for the active protection of "cultural landscapes", wanting to emphasise with this term the concept of "landscape" of the European Convention of 2000, that is *«an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors»*, and therefore the central role of communities in its definition.

A first important result was the opening of the debate to the world of ecomuseums and community museums with the recognition of their role of direction and inspiration in the management of common goods[1]. Basically, it has been recognised that ecomuseums represent workshops of participation and "capacity", local centres of "good governance" of the territory, able to provide a shared key for reading and interpreting the landscape and the widespread cul-

[1] The reference is in particular to the "Forum of Ecomuseums and Community Museums" and the convention "Museums and cultural landscapes. The ecomuseums and community museums perspectives" hosted at the *Politecnico di Milano*, under the patronage of the Italian Society of Architectural Technology *SITdA*. The results of these two initiatives are formalised in the "2016 Milan Cooperation Charter - Ecomuseums and cultural landscape" with the commitment to create an international working group on the theme of the project of the cultural landscape, with that strongly transdisciplinary approach that characterises the ecomuseums and distinguishes them from the more traditional museum institutes. For more information see Riva, 2017 and the websites sites.google.com/view/drops-platform/home and www.ecomusei.eu (accessed November 2018).

tural heritage, offering tools for project support thanks to their transdisciplinary approach, acquired through practice in the fields of participation and social inclusion (Mussinelli & Riva, 2017).

The contribution of ecomuseums to disseminating a culture of sustainability

Ecomuseums have in themselves the ability to disseminate the culture of sustainability because they are established as institutions strongly rooted at the local level, able to produce initiatives and interventions tailored to the territory, enhancing above all social relations as their action is focused on "networking and cooperation". Because of these peculiarities, ecomuseums, in their most innovative sense of "social enterprises" and "development agencies", have the potential to give rapid answers to local issues, proposing an "adaptive renewal", and therefore in the long run also to influence the logic of economic development and policies on a global scale (de Varine, 2002 and 2017).

The action of the ecomuseums is mainly based on community participation. It is the communities that can give meaning and value to cultural landscapes, being a substantial part of them. The added value that this approach is able to offer to local development is valid not only for the widespread or so-called "minor" cultural heritage, or for disadvantaged areas, which historically have represented the privileged field of action of ecomuseums, but also for contexts of recognised value, such as UNESCO sites, protected areas, monumental heritage, whose management is often still conceived and perceived as mainly binding and therefore limiting development.

In this logic there are several emblematic cases of ecomuseums that promote sustainable development by focusing on the enhancement of the landscape, while proposing different interpretations and variations depending on the territorial and socio-economic contexts of reference (Riva, 2017).

Some ecomuseums favour the social aspects of the landscape and the cultural heritage, with projects centred on the assumption of responsibility by the community through processes of recognition, interpretation, and valorisation of the collective heritage[2], or in border areas or those subject to phenomena of migra-

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[2] This is the case of the Brazilian ecomuseums that experiment effective models of participation, also because of their closer relationship and derivation from community museums and the teachings of Paulo Freire. Examples are the *Ecomuseu da Amazônia* founded in 2007 in the City Hall of Belém, or the *Ecomuseu Serra de Ouro Preto*, in the *Parque Natural Municipal Arqueológico Morro da Queimada*, in the province of Minas Gerias. On the other hand, despite a spontaneous and widespread participation, in the Brazilian ecomuseums there are problems related to the limited presence of employees who manage the structures offering guarantees of continuity over time.
A further example, in a different context, is the *Écomusée du fier monde* in an industrial district of Montréal (Canada), which interprets the "ecomuseum collections" the set of natural elements and artefacts, the value attributed to them by local communities, and the actions taken to

tion, with the valorisation of cultural diversities[3]. This latter meaning carries within itself all the relevance of the theme and its deep social value, also in the light of the most recent waves of migration, in the emergency of the reception and social and cultural integration of refugees and asylum seekers.

In other cases, the patrimonial aspects of the landscape are more relevant, in particular in those contexts characterised by the presence of environmental and cultural assets of recognised value. Here the action of the ecomuseum is expressed through integrated projects oriented towards the development of new economic activities, in a productive and tourist key[4].

In other cases, the project aspects are central, especially where there are major critical issues, in marginal areas such as peripheral metropolitan contexts or peri-urban rural areas. In these cases, the valorisation of the cultural landscape is declined as participation of the community in the planning processes[5], in the responsible use of resources, and in the management of the landscape, with actions that range from environmental restoration to the recovery of the material and immaterial cultural heritage[6].

Even where the focus of the ecomuseum is not on the landscape, it is possible to derive an articulated range of actions and good practices for local development, which lend to an effective transfer to other contexts. These good prac-

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enhance them. Conceived in this way, the "ecomuseum collection" is not a collection of "objects", but a key to interpreting the cultural landscape.

3 An example is the *Ecomuseu de Santa Cruz* in the western outskirts of Rio de Janeiro (Brasil), which enhances the "melting pot" and the collective memory of immigrants, through the collection of their family heritage and the revival of traditional rituals and customs, with the active involvement of the various communities from Portugal, Italy, Spain, Austria, Hungary, Syria, Lebanon, Japan, Korea, and China. In this case, the ecomuseum becomes an expression of the culture of hospitality that has always characterised the local community.

4 This is the direction taken by the Staffin Ecomuseum Ceumannan, on the north-east coast of the Isle of Skye (Scotland), an area rich in Jurassic finds, which includes areas bound as Special Area of Conservation (SAC) of the Habitats Directive and Site of Special Scientific Interest. In this case, the Ecomuseum works for the economic growth of the rural community, encouraging the development of responsible, non-seasonal tourism, implementing the provision of services, creating new stable jobs and combating depopulation.

5 An example is the request from the community of Oudlajan, in the heart of Tehran (Iran), to develop an ecomuseum for the protection of the identity of one of the historic districts of the city, which the local town planning regulations do not seem to be able to preserve from degradation and from a disrespectful transformation of its still well preserved cultural landscape. The experience of the Ecomuseum System of Salento *SESA* (Italy) is also significant, with the extensive work carried out on the territory that has led to the development of participatory processes, the drafting of "community maps", and then the acquisition of the results within the Regional Plan for the Landscape for the Apulia Region and the formulation of specific "Recommendations on the Landscape".

6 Think of the actions promoted by the Ecomuseum of the Landscape of Parabiago, with the Mills Park, north of Milan (Italy), which have led to a real "river renaissance" of the Olona Valley, strongly compromised by industrial development both from the ecological and socio-cultural point of view.

tices range from community involvement to produce social innovation[7], to the diffusion of the principles of the European Landscape Convention[8], to the sharing of responsibility in the management of the landscape[9] and the valorisation of local productions[10].

While highlighting the occasionally substantial differences in how each country defines the concepts of landscape and cultural heritage, the openness to international comparison makes it possible to identify some invariants that constitute the original contribution of ecomuseums to the project of sustainable development. In particular, the expertise that ecomuseums and community museums put at the service of local systems can be found in the activities of awareness raising and training; in the ability to build relationships between administrators, economic operators, associations, private citizens, visitors; in the dissemination of the culture of participation understood as work done daily with the communities in the process of recognition of the heritage, as well as the identification of strengths and weaknesses of the territory, to seek appropriate, effective, and shared development solutions that can be implemented through a widespread assumption of responsibility (Riva, 2017).

Development prospects

The ecomuseums offer an opportunity to reflect on the social role of the project, the importance of participation and the enhancement of cultural heritage as levers for development in harmony with the values and needs of local communities.

In this sense it can be said that ecomuseums work for sustainable development and have the potential to play a strategic role in raising the awareness of

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7 The example of *La Ponte Ecomuséu* in Asturias (Spain) is emblematic with its "Heritage and Social Innovation Observatory HESIOD", a platform that identifies, analyses, gives visibility, and disseminates socially innovative experiences in the field of cultural heritage.

8 A reference is the Elvo Valley and Serra Ecomuseum in the Biella area (Italy) with the promotion of Landscape Day and the project "Shared Landscape" within the INTERREG Italy-Switzerland Cross-Border Cooperation Programme 2007-2013, a participatory project aimed at the preparation of master plans on the conservation, management, and redevelopment of landscapes, to be incorporated into the tools of spatial planning, with the identification of priority actions and interventions to be funded and implemented.

9 This is the example of the river contract "Lamone Common Good" promoted by the Ecomuseum of Marsh Plants of Bagnacavallo in Ravenna area (Italy) for the enhancement of the culture linked to the river and the sharing of regulations of water management and use, safeguarding biodiversity and the river landscape.

10 This is the line taken by the *Ecomuseo delle Acque del Gemonese* with the *Pan di Sorc* project, which has recovered a traditional bread and its agri-food chain, with the aim of creating added value for the territory, while also enhancing the role of agriculture in the management, maintenance and enhancement of the landscape. Since 2012, *Pan di Sorc* has been recognised as a Slow Food "Presidium".

communities on global issues and on the achievement of the 17 Goals of the 2030 UN Agenda for Sustainable Development. Various activities are already being promoted with reference to the sustainability of agricultural production, including through the conservation of biodiversity, education and enhancement of cultural diversity, professional and technical training, awareness raising and implementation of measures for responsible water management, the protection of ecosystems, awareness of energy saving and the use of renewable energy sources, the development of new production chains and forms of responsible tourism, social inclusion, the promotion of sustainable models of production and consumption, the use of impact monitoring tools, awareness raising and implementation of measures to combat climate change and for resilient management of territories.

In particular, an important role is played with respect to Goal 11 "Sustainable cities and communities", regarding the commitment to the care and enhancement of cultural and natural heritage, the development of ability to planning and participatory management of settlements, the promotion of an interdisciplinary approach, integrated and inclusive in land management.

The contribution that the ecomuseums offer to the achievement of Goal 17 "Partnership for the goals", is also significant, for the activities of facilitators of the construction of effective partnerships between public, public-private actors and in civil society. Ecomuseums are also a fertile ground for testing systems to measure progress towards sustainable development that are complementary to GDP measurement.

The action of ecomuseums for sustainable development is generally more effective where there are stable networks of cooperation at national and international level, able to provide scientific and technical support to individual experiences, to promote a dialogue and then a scientific evaluation and validation of the results achieved[11]. The actions are also more effective in those ecomuseums more "structured", which have a solid internal organisation in addition to the voluntary component. This condition allows, in fact, to build effective models of governance with the subjects who operate in different capacities on the territory, and at the same time to maintain adequate degrees of flexibility and adaptability to the changing needs of communities and local contexts.

In essence, ecomuseums are able to have a positive impact on the sustainable development of local systems, to the extent that they operate in a logic of social enterprise of public utility, in the meaning that in Italy is also attributed by the Third Sector Code. This connotation allows us to overcome sterile and purely conservative approaches that often risk being perceived as vernacular or folkloric (Riva, 2012). In particular, they can play an interesting role in experimenting, in a suitable and receptive environment, inclusive and participatory

[11] This is the case of the National Coordination of Italian Ecomuseums which produced a Strategic Manifesto to «*contribute to the birth, the development and the evolution of ecomuseum experiences that are able to produce virtuous models of sustainable local development*».

management techniques, such as co-programming, co-design, the establishment of participatory public-private partnerships, the creation of participatory foundations, the signing of agreements or the implementation of horizontal subsidiarity measures, the administrative framework, the implementation of social protection projects.

Thus intended, ecomuseums are not limited to the protection of the past, but are projected towards the construction of a shared future, becoming concrete "laboratories" of experimentation and innovation, places to communicate, create consensus and form the community, as desired in the evolutionary definition of Rivière (Rivière, 1985). Only in a logic of valorisation, also productive, of the territory capable of generating new values of use and economic benefits, and therefore capable of generating development, do the recovery of the architectural heritage, the reuse of disused buildings, the reinterpretation and innovation of artisan knowledge, the transmission of the intangible heritage, the regeneration of the local economy, the social reactivation become possible.

These new contents of the ecomuseums open up many opportunities for research, particularly in the area of technological design, which for some time has been working with richness and articulation of contributions on the themes of building and urban recovery in terms of sustainability, in the perspective of configurations of the ecomuseum model, including new ones.

Some experiments in environmental design are moving in this direction for social housing and services, for the enhancement of the historical and natural heritage in terms of usability and accessibility and, more generally, for the processes of resilient urban regeneration (Mussinelli & Riva, 2017). Technological design in fact promotes a systemic and measurable logic, which starting from the detection of a system of needs, translates them into requirements and then into performance. Referring to ecomuseums and to a vast area of reference, this logic allows the elaboration of a "meta-project" of the ecomuseum, in order to "sight" its activities from the definition and establishment phase to the management phase, in a long-term time horizon, offering a panel of project alternatives and, above all, a reference grid to frame the individual actions in a more articulated strategic vision and to evaluate the effectiveness of the process undertaken (Riva, 2008).

The evaluation of the results is a complex issue, because it requires to consider both the direct and indirect economic effects, and aspects not immediately quantifiable, such as the improvement of the quality of life and the environment, education and training of the population in relation to issues of collective interest, the capacity for innovation and creativity that the system is able to express. In this regard, there are already various tools, including experimental ones, for assessing the effects of the action of ecomuseums on local development[12]. Hugues de Varine suggests to operate on three different levels: an evalua-

[12] The reference is for example to the *Ecomuseo delle Miniere della Val Germanasca*, in Pied-

tion of the structure of the ecomuseum to verify its sustainability and feasibility, an evaluation of the impact on the community to measure its social utility, an evaluation of the process and methods used to identify improvement actions (de Varine, 2019).

These important experiences open up many opportunities for debate, research and experimentation, from which to develop a common methodology of assessment, useful to verify the effectiveness of the action of ecomuseums and to make the results achieved comparable, not only with other cultural institutions, but more generally with other processes of local development and projects of regeneration of the built environment.

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3.2 RECONSIDERING MUSEUMS AND ECOMUSEUMS IN A GLOBALIZED, CHANGING WORLD

Alberto Garlandini[*]

In 2017 ICOM established the Standing Committee on Museum Definition, Prospects and Potentials (MDPP)[1] in order to explore the conditions, values, and practices of museums in changing societies. MDPP addresses trends in society and new conditions, obligations, and possibilities for museums. MDPP has set up seven working groups that deal with key issues such as new trends in ownerships, partnerships and governance, cultural democracies and participatory practices, geopolitics, globalization, migrations, and de-colonization. In the past year MDPP, in collaboration with ICOFOM, ICOM International Committee for Museology, organized 37 workshops in 35 countries with 850 ICOM participants from all over the world. Some workshops focused on the most serious challenges faced by society and museums in the coming decade. Here are some issues that participants highlighted as museums' key challenges: sustainability, migrations and demographic change, diversity, inequality and human rights, racism and xenophobia, social inclusion, loss of identity and lack of cohesion, urbanization.

1. Living in a globalised world

The United Nations' 2017 International Migration Report

Around the world, communities are steadily undergoing rapid transformations: economic, political, social, and cultural. Millions of women and men, as well as

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[*] Alberto Garlandini, Vice President of ICOM International Council of Museums.

[1] See MDPP Standing Committee's activities in: www.icom.museum/network/committees-directory/ (accessed on 8th October 2018). The first results of MDPP has been discussed in the International Symposium "The changing role of museums: new museums for a new age" that was organized in Singapore's Asian Civilizations Museum by the Singapore National Heritage Board and ICOM Singapore on 9th October 2018, see: www.nhb.gov.sg (accessed on 8th October 2018). The Coordinating Core Group of MDPP comprises Jette Sandahl, Denmark (Chair); George Abungu, Kenya; Margaret Anderson, Australia; Afsin Altayli, Turkey; Lauran Bonilla-Merchav, Costa Rica; David Fleming, UK; Alberto Garlandini, Italy; Kenson Kwok, Singapore; François Mairesse, France; Richard West, USA.

information, technologies, capitals, and goods are moving from one country to another. United Nations' reports show the magnitude of the global social change.

The 2017 International Migration Report of the United Nations' Department of Economic and Social Affairs highlights that the number of international migrants has continued to grow over the past years due to economic, political, military, environmental crises and conflicts. In 2017 258 million people left their countries. Migrants were 222 million in 2010 and 173 million in 2000. In seventeen years, they have increased of 49%. Migrants now amount to 3.4% of the world population; they were 2.8% in 2000. It is noteworthy that in 2017 high-income countries hosted 165 million migrants, 64% of the total number of international migrants: from 2000 to 2017 the percentage of international migrants in high-income countries rose from 9.6% to 14% of the total population.

The demographic change in Italy

The UN 2017 International Migration Report gives interesting data about Italy. Italy hosts 5.9 million migrants, 2.2% of the world migrants and it is the 11th country in the world as for number of hosted migrants. At the same time, more than 5 million Italians (8.2% of Italian population) live abroad. In 2017, 3 million Italians were migrants.

The Italian National Statistical Institute (*ISTAT*)[2] confirms the United Nations' data. According to *ISTAT*, more than 5 million foreigners live permanently in Italy. They are 8.2% of the population and were 0.4% in 1981. Foreign-born Italians are now 1.15 million. In 2017 202,000 foreigners obtained Italian citizenship and 41% of them were under 20-year-old. In 2002 the foreigners that obtained Italian citizenship were only 12,000. In 2017 25,000 Italian newborns, 5% of the total, had a foreign parent.

Italy is a fast-changing country. However, the magnitude of the demographic change is underestimated.

2. Museums and global change

The ethical and educational challenges of social change and diversity

Are our communities aware of global social change? How are they reacting to the opportunities and dangers of globalization? What can museums and ecomuseums do to face such social change?

Facing globalization and social change means preserving and promoting diversity. Museums and ecomuseums can play a significant role in helping people see diversity as an enrichment rather than a threat. This is a crucial ethical and

[2] See the *ISTAT* website: https://www4.istat.it/en/archive/migrations (accessed on 8th October 2018).

educational challenge: diversity can flourish only in a context of democracy, tolerance, justice, and mutual respect.

In a globalized world many traditional identities of communities are fading. People with different origins are now living together and their cultures and customs should be taken into account and integrated. Inclusive societies should be aware that forging new, hybrid identities can be problematic, but it is indispensable to promote social cohesion and sustainable development.

Curricula including diversity and intercultural studies can play a pivotal role in the education of open-minded new generations. In recent years museums have considerably increased their intercultural activities, in partnership with schools, adult learning agencies, libraries, archives, local authorities, community organizations, teachers, and cultural mediators. All over the world museums promote interculturality when they use their collections to support cross-cultural education, dialogue, and communication within and between communities[3].

Social integration and cultural interaction: necessary ethical values for museums

The UNESCO Universal Declaration on Cultural Diversity[4] and the UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions[5] represent the global references for museums. Article 4 paragraph 8 of UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions offers an indisputable definition of interculturality: *«Interculturality refers to the existence and equitable interaction of diverse cultures and the possibility of generating shared cultural expressions through dialogue and mutual respect».*

The ICOM Code of Ethics[6] is ICOM's cornerstone and considers the respect of diversity a key principle. It points out that museums should work in close collaboration with the communities they serve and from which their collections originate[7]. One of the major tasks of museums is promoting the con-

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[3] Case studies on intercultural activities in Italian museums are discussed in Garlandini, 2016.

[4] The Universal Declaration on Cultural Diversity was adopted by acclamation by UNESCO's General Conference on 2nd November 2001; it is available on the UNESCO website: www.unesco.org (accessed on 8th October 2018).

[5] The Convention on the Protection and Promotion of the Diversity of Cultural Expressions was approved on 20th October 2005 and has been ratified by 135 States; it is available on the UNESCO website: www.unesco.org (accessed on 8th October 2018).

[6] The Code of Ethics for Museums has been translated in 38 languages; it sets out the general principles accepted by the international museum community, as well as the minimum standards of conduct and performance to which museum professionals should conform throughout the world. The Code consists of eight general principles arranged in a number of guidelines. ICOM constantly updates and revises its Code on the basis of social changes and of museum functions. The Code is available on the ICOM website: http://icom.museum/professional-standards/code-of-ethics/ (accessed on 8th October 2018).

[7] The Key Principle 6 of the ICOM Code states that «*Museum collections reflect the cultural and natural heritage of the communities from which they have been derived. They have a character*

nections that collections have with the cultural, ethnical, political, and religious identities of the communities they arise from, considering that those communities may live in distant countries.

The core functions of museums are conservation, exhibition, communication, and promotion of collections. However, today's museums have new responsibilities for the tangible and intangible heritage surrounding them, for the communities they represent, and for the territory from which their collections originate. The museums *«in the service of society and of its development»*[8] have become communication hubs: they promote participation, inclusion, and mediation, engage in intercultural dialogue, address new audiences, and use new languages and media.

3. The social role of museums

The 2015 UNESCO Recommendation on the social role of museums

The UNESCO Recommendation concerning the Protection and Promotion of Museums and Collections, their Diversity and their Role[9] was adopted on 17th November 2015. ICOM contributed largely to draft it. The Recommendation raises awareness on the importance of museums in today's societies and defines the policies for museums and heritage that Member States are invited to promote. It highlights the primary functions of museums - preservation, research, communication, and education - and their new social role and extended mission. The Recommendation confirms that ICOM's Code of Ethics, its definition of museum, and its standards are the most widely shared international reference in museum management.

The contribution of ecomuseums to the social role of museums

Aiming at revisiting the Recommendation Concerning the Most Effective Means of Rendering Museums Accessible to Everyone[10] approved by UNESCO on 14th December 1960, in 1972 UNESCO and ICOM[11] organized the Santiago de

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which may include strong affinities with national, regional, local, ethnic, religious or political identity».

8 For the ICOM Statutes and the ICOM Code of Ethics a museum is *«a non-profit making permanent institution in the service of society and of its development, open to the public, which acquires, conserves, researches, communicates and exhibits, for purposes of study, education and enjoyment, the tangible and intangible evidence of people and their environment»*.

9 The Recommendation is available on the UNESCO website: http://www.unesco.org/new/en/culture/themes/museums/recommendation-on-the-protection-and-promotion-of-museums-and-collections/ (accessed on 8th October 2018).

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11 On ICOM's role in organizing the Santiago de Chile's Round Table see: de Varine, 2017.

Chile Round Table (Do Nascimento et al., 2012). The Round Table brought attention to the social role of museums and the need for a "democratisation of culture". Its final Declaration proposed the idea of a new holistic museum integrated with a multidisciplinary approach: a new "society-serving museum" able to show visitors *«their place in the world and make them aware of their problems, as individuals and as members of society»*. The Santiago Round Table defined the museum under a new light: an institution in close cooperation with local communities, committed to promote their development and to improve their quality of life. Since then, ecomuseums and community museums all over the world have promoted material culture and anthropological disciplines. They have highlighted the crucial role of participation of communities to museum life, provided new interpretations of heritage and promoted its role at the service of local development.

4. Museums and landscape

"Museums and cultural landscapes" was the interdisciplinary theme of 2016 ICOM General Conference[12]. According to ICOM, museum collections cannot be explained and interpreted without considering the landscapes in which they are located and, conversely, landscapes cannot be recognised and valued without the help of museum collections.

The perception and the meaning of landscape differ from one country and one language to another and relate to their diverse cultural and social backgrounds. Landscape is a polysemic concept that integrates the physical, natural and geographic aspects of a territory with its anthropological, social, economic, and cultural aspects. Landscapes can be urban and rural, maritime and mountain, industrial and agricultural, but they can also be abstract, sensory and mental, of memory and conflict, intercultural and intergenerational. In ICOM's vision, cultural landscape surrenders its purely aesthetic value and becomes the physical, social, and symbolic context in which humans live. Landscape is the indissoluble result of nature and culture, past and present, and is part of the cultural and natural heritage, to be preserved, interpreted, and managed[13].

ICOM's conceptual references

Firstly, ICOM's debate refers to the concept of landscape and the guidelines expressed by UNESCO's World Heritage Cultural Landscapes definition (Mitchell et al., 2009): *«Landscape is designed and created intentionally by*

[12] See: Garlandini, 2017 and the Final Report of Milan's General Conference on the ICOM website: https://icom.museum/wp-content/uploads/2018/07/Past-General-Conferences.pdf (accessed on 8th October 2018).

[13] See also the *Carta di Siena* on the ICOM Italy website: http://www.icom-italia.org/la-carta-siena/ (accessed on 8th October 2018).

man»; *«Landscape, whether of aesthetic value or not, provides the setting for our daily life»*.

A second reference is the European Landscape Convention[14]: *«Landscape contributes to the formation of local cultures and it is a basic component of the European natural and cultural heritage»* (Preamble of the Convention).

A third reference is the Council of Europe's Framework Convention on the Value of Cultural Heritage for Society[15] (best known as the Faro Convention). The Convention was approved in Faro on 13th October 2005 and entered into force on 1st June 2011. So far, it has been ratified by 17 Member States of the Council of Europe[16]. The Faro Convention proposes the establishment of "heritage communities", consisting of *«people who value specific aspects of cultural heritage which they wish, within the framework of public action, to sustain and transmit to future generations»* (art. 2b of the Convention). In alignment with the Convention, ICOM supports the establishment of "landscape communities" and the involvement of public institutions, citizens and associations in the promotion of landscapes.

The Responsibility of Museums Towards Landscape

At the end of ICOM 2016 triennial General Conference held in Milan, the 31st General Assembly of ICOM adopted the Resolution on the Responsibility of Museums Towards Landscape[17]. Bearing in mind the importance of the UNESCO Conventions, the ICOM Code of Ethics and the ICOM International Committee for Natural History Museums Code of Ethics[18], the ICOM General Assembly recommended that:

> *«1. Museums should extend their mission from a legal and operational point of view and manage buildings and sites of cultural landscape as 'extended museums', offering protection and accessibility to such heritage in close re-*

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14 The European Landscape Convention was approved in 2000 in Florence and is available on the Council of Europe website: https://rm.coe.int/1680080621 (accessed on 8th October 2018).

15 The Faro Convention is available on the Council of Europe website: http://www.coe.int/en/web/conventions/full-list/-/conventions/rms/0900001680083746 (accessed on 8th October 2018).

16 The States that ratified the Faro Convention are Armenia, Austria, Bosnia and Herzegovina, Croatia, Georgia, Hungary, Latvia, Luxembourg, Montenegro, Norway, Portugal, the Republic of Moldova, Serbia, Slovak Republic, Slovenia, the former Yugoslav Republic of Macedonia, Ukraine. Albania, Belgium, Bulgaria, Finland, Italy and San Marino signed the Convention but so far did not ratify it. The Italian ratification is now in discussion in the Parliament after its approval by the Government in June 2017.

17 The Resolutions approved by ICOM's Assembly are available on the ICOM website: https://icom.museum/wp-content/uploads/2018/07/Past-General-Conferences.pdf (accessed on 8th October 2018).

18 The ICOM Code of Ethics for Natural History Museums is available on the ICOM website: https://icom.museum/wp-content/uploads/2018/07/nathcode_ethics_en.pdf (accessed on 8th October 2018).

lationship with communities.
2. Museums contribute to the knowledge of the values of landscapes, but also to the development of symbolic frameworks that determine them, so that the notion of cultural landscape becomes an instrument for the assessment of what needs to be protected and handed on to future generations, and what will go instead questioned and modified» (31st General Assembly of ICOM. Milan, Italy, 2016. Resolution n. 1: The Responsibility of Museums Towards Landscape).

In the Resolution ICOM decided to give top priority to cultural landscapes in its key documents, such as the ICOM Museum Definition and Statutes, as well as the Code of Ethics for Museums.

5. Museums and ecomuseums

The contribution of ecomuseums to ICOM General Conference in Milan

Milan's 2016 ICOM triennial Conference was the occasion for a fruitful meeting between museology and ecomuseology (or community-based museology, as Hugues de Varine would say). Ecomuseums and community museums organized two events: a meeting with ICME - ICOM's International Committee for Museums and Collections of Ethnography, and a two-day Forum that discussed the new prospects of ecomuseology. The results of the Forum and the following debate were published in a book published by *Politecnico di Milano*: *Ecomuseums and cultural landscapes. State of the art and future prospects* (Riva, 2017)[19]. The volume comprises contributions by Hugues de Varine, Alberto Garlandini, and Elena Mussinelli, as well as fifty papers by ecomuseologists from all over the world[20].

The Forum of ecomuseums endorsed the ICOM Resolution on Landscape and approved the 2016 Milan Cooperation Charter "Ecomuseums and cultural landscape"[21]. In the Charter ecomuseums confirm their commitment to cooperate with museums and ICOM, as well as with ICOMOS:

> *«1. The Forum has endorsed the Florence and Faro European Conventions, as well as the ICOM Resolution on the Responsibility of Museums Towards Landscape approved by ICOM's General Assembly at the end of the 24th*

[19] The ebook can be downloaded for free from the *Politecnico di Milano* website: https://re.public.polimi.it/handle/11311/1041602 (accessed on 8th October 2018).

[20] The papers deal with four issues: 1. The ecomuseums approach to landscapes enhancement: theoretical considerations and experimentations; 2. Projects of ecomuseums and community museums for the cultural landscapes' enhancement: case studies and proposals; 3. Cultural landscapes and local development: activities and best practices; 4. Networking practices and specificity of ecomuseums and community museums.

[21] The 2016 Milan Cooperation Charter "Ecomuseums and cultural landscape" is available in Ecomuseums and Community Museums Forum ICOM Milano 2016: https://www.researchgate.net/publication/315656664_2016_Milan_cooperation_Charter_Ecomuseums_and_cultural_landscape (accessed on 8th October 2018).

General Conference in Milan, the ICOM Carta di Siena and the ICOMOS Quebec Declaration.
2. We consider ourselves capable of being an interface between the world of museums (ICOM) and the world of monuments and sites (ICOMOS). We will work to be associated to the activities of these two organizations and their specialized structures, because of our expertise in the field of participatory management of living heritage and landscape at local level.
3. We will work to maintain close relations with the relevant International Committees of ICOM (ICOFOM, ICME), with the International Scientific Committee on Cultural Landscapes (ISCCL) of ICOMOS, and with the international and national NGOs pertaining to the fields of anthropology and responsible for sustainable tourism» (2016 Milan Cooperation Charter "Ecomuseums and cultural landscape", p. 5).

The Forum decided to set up an interactive platform called "Drops"[22] for exchanging ideas and experiences in the international community of ecomuseums. A permanent international working group was established in order *«to keep watch and make proposals on the theme of territory, heritage and landscape»*[23]. I presented the contribution of ecomuseums to ICOM's Advisory Council at the end of Milan's Conference and it was accepted with a round of applause as one of the documents produced by ICOM General Conference.

Conclusions

Museums and ecomuseums have diverse origins and histories. Ecomuseums and community museums were born disputing traditional museology and criticizing the theory and practice of museums. They regarded museums as closed institutions, run by experts extraneous to the context around them, and focused only on collections of material items. However, in recent years museums and ecomuseums have greatly evolved and their activities are converging.

In order to face the challenges of global change museums and ecomuseums should promote common networks and integrate their disciplines, competences, and experiences. Community activities have become a fertile breeding ground for meetings between museums and ecomuseums. In some countries, such as Italy, they already work positively together.

It is now up to ICOM and the professionals and volunteers of museums and ecomuseums to pass from paper to practice and develop a new era of collabora-

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[22] See "Drops", the international platform for ecomuseums and community museums at: https://sites.google.com/view/drops-platform/home (accessed on 8th October 2018).

[23] The Steering Committee of the Milan Cooperation Charter is composed by Raul Dal Santo (Italy), Hugues de Varine (France), Óscar Navajas Corral (Spain), Karen Brown (Scotland), Heloisa Helena Costa (Brasil), Douglas Worts (Canada), Kazuoki Ohara (Japan), and the Technical Secretariat is composed by Francesca Pandolfi (Italy), Filedelfja Musteqja (Italy), Gordana Milanović (Serbia), Mustafa Dogan (Turkey).

tion and intermingling. A second Forum of Ecomuseums and Community Museums has been organised at the ICOM 2019 General Conference in Kyoto, Japan[24]. It has been a great occasion to improve the collaboration between museums, ecomuseums, and community museums and to promote the Asian network of ecomuseums and community museums.

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3.3 PRACTICING SUSTAINABILITY: THE ECOMUSEUM CHALLENGE

Hugues de Varine[*]

Since the "invention" of the word "ecomuseum" in 1971, many ecomuseums were born, on all continents, as local projects aiming at managing the global heritage through a strong involvement of the communities. The actual objectives varied from one site to another: some privileged the conservation of landmarks or revival of traditions, others intended to attract tourists, many were dedicated to one local industry or product. They belonged to the local cultural scene and were obliged in many countries to respect the standard rules applicable to all museums even when these rules were not really adapted to the innovative treatment and dynamic caretaking of *in-situ* heritage elements selected by the community itself but not acquired for any permanent collection.

In 1984, the creation of *MINOM*, the International Movement for the New Museology, founded by ecomuseum activists from Europe and North America, helped develop a deeper and more specific common understanding of the concept. The Oaxtepec declaration defined already the media "ecomuseum" as an *«acto pedagogico para el ecodesarollo»*, i.e. an educational tool for an ecodevelopment. This internationalization became stronger in 1992, when the First International Ecomuseum Conference was held in Rio de Janeiro, as part of the programme of the Rio Earth Summit. Since that event, various international meetings were organized in Brazil, in Portugal, in China, and *MINOM* Workshops treated particular themes deriving from more significant experiences (de Varine, 2017).

In 2016, the Milan Forum of Ecomuseums and Community Museums, based on the rich experience of Italian ecomuseums, with participants from 25 countries, marked its proximity with the International Council of Museums, whose General Conference was held at the same place and time, but also its difference by a larger perspective including monuments, sites, living traditions, and natural resources, thus clearly covering all aspects and dimensions of the development of the respective territories (Riva, 2017). The Forum has produced the project of a permanent exchange and co-operative platform, "Drops", which

[*] Hugues de Varine, Director of ICOM International Council of Museums (1965-1974), consultant in local and community development, researcher in ecomuseology.

is now operational. A second Forum has been organised in Japan, in 2019.

From this history and from participatory observations obtained from various countries, it is possible to draw conclusions about the present and future role of the ecomuseum in the overall and global sustainable development of our communities.

The four dimensions of development

When considering development at local level, whether urban, peri-urban or rural, we must look at its four major dimensions, environmental, social, cultural, and economic, which interact to make good use of the available endogenous resources and to assimilate the necessary exogenous input.

This interactive process is difficult to achieve, mostly because our societies are organised vertically and subject to top-down decisions. The ordinary citizen is asked to submit to political and technical professionals who are supposed to be able to understand and master the complexities of modern life and the necessary relations between local and higher levels. It is therefore necessary to reinforce, or even awaken, the self consciousness of each of us and our capacity for individual and collective initiative, so that we can share the responsibility of development.

This is typical community work which implies cultivating social capital, cultural creativity, environmental care, and economic productivity. Without the actual participation of the citizens, there is no effective development. They must assert themselves, learn to work together to make projects, resolve conflicts, be capable of empowerment; they have to recognize the values and specificity of their living culture, to promote and revitalize their tangible and intangible heritage, to learn to access to other cultures; they must respect and manage wisely their environment, in coherence with the general and practical recommendations of international experts and conventions; in the economic field, they should exploit all the opportunities offered by the local resources such as traditional skills and productions, welcome intelligent touristic activities, invite and assimilate acceptable external investments, particularly new technologies; they must also qualify the local manpower, both voluntary and professional.

Sustainability of development

This development we are talking about is a long process. It meets with obstacles which often result from the different rhythms of the various categories of agents/players involved: politicians have their elections calendar, public administration is regulated by a succession of officers and technicians, scholars and experts come and go, inhabitants act according to their age, experience, and

needs, external invited or unwanted influences and investments follow the advance of globalization, technology and communication trends change at an even quicker pace. But the living culture and the general behaviour of the community and its members follow a much more extended pattern and slower pace.

This complex multi-factor process might be satisfactory for a limited short term, perhaps also mid-term development, but if we want to plan and act in a much longer perspective, we need to adopt a more stable set of values and methods, and also to determine the limits to the use (consumption) of resources and energies. Of course, education in the family and at school is essential to ensure the future behaviour of the generations to come, but this must begin now (and not only in theoretical or ideological exposés), if we are to reach the objectives of the international, continental, and national declarations and policies: Rio 1992, Paris 2016 (COP 21), European conventions signed in Florence 2000 and Faro 2002, UNESCO international conventions, and so many others.

Remember particularly the Local Agenda 21, recommended by the Rio Summit and now adopted by many urban and rural areas all over the world.

Place and role of heritage in development[1]

Development should always begin with a diagnosis of the territory concerned, together with a careful and critical inventory of the resources available which can be called the "local capital". Diagnosis and inventory need to be realized with the participation and contribution of members of the community, who know better than anybody their territory (even if they are not aware of it).

The local capital is essentially made of the human resources (manpower, competences, skills, memory, etc.) and of the global heritage, whether natural or cultural, material or immaterial, old or new, protected or not. They are the two pillars of the endogenous component of local development and they are the guarantee of its sustainability.

Heritage is particularly vital, because it is the fertile ground, the humus into which all development strategies and any development project should be rooted. We are not talking here of tourism attractions or of treasures conserved in museum vaults, but of the really living heritage, closely linked with the living culture of the people. According to the level of consciousness of their heritage the community and its members have reached, they will be able to look ahead, to envisage a future where the changes imposed by external factors and by the globalization, the different tastes and the new needs of the generations to come, the expected or unexpected climatic evolutions will be mastered and made acceptable.

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[1] I have discussed this subject, at length, in my book *Le radici del futuro* (2005).

In Sweden, the mining and metallurgical district of Bergslagen[2] in Dalarna Province has succeeded in reviving its history and rich industrial heritage after the economic and social crisis which has followed the closing of all traditional enterprises in mid-20th century. A new life has been given to many sites, through active voluntary and professional participation and activities offered to young publics and national tourism. The same happened in Beaufortain (French Alps, near Albertville) where traditional milk and cheese production has been modernized and developed, in association with innovative winter and summer sports; a systematic signalization and restoration of churches and traditional architecture has helped in improving the quality of life and attractiveness of the district (de Varine, 2006).

Sustainability of heritage resources and management

To be sustainable, heritage should be constantly kept alive and cared for, not only for its conservation, but for its transformation to accompany the evolution of society, of environment, of technology, etc. This means a co-operative management of this heritage by the local authorities and the community itself: inventory constantly updated, critical assessment of the state and the use of each element, discussion of the problems and solutions resulting from change of utilization and adaptation to new functions, respecting its historical, scientific, social characteristics, measures to be taken for the preservation of its meaning to the community.

The transmission of heritage from generation to generation is a key condition of sustainability: this asks for what Brazilians call *"educação patrimonial"* (Parreiras Horta et al., 1999): the citizens should be permanently kept conscious of the nature and the value of their common heritage, and of the responsibility they share for its care and transmission to the next generation.

One can give examples of such programmes, created locally under various names and methods; the *"Projeto Identidade"* in the Quarta Colônia (Rio Grande do Sul) (Fangan & Padoin, 2014), or the *"Museu de Rua"* in the small town of Picada Café (also in Rio Grande do Sul) (Sperb & Mallmann Werle, 2004). In these cases as in many others, the fact that the population is aware of the importance of its heritage, to the point that they want to pass it to the next generations, is the best guarantee of the transmission from generation to generation of many elements of their environment and material culture which would not be considered important enough by "heritage specialists" to be labelled officially as heritage and protected by law. It can also be argued that it is more important, in many instances, to make them change according to the needs of society and development, than to keep a limited selected number con-

[2] *Ekomuseum Bergslagen*, Guidebok-Handbok, 1987.

served (locked) for ever in museum collections.

Ecomuseum as a tool for development

An Agenda 21 is a relatively short programme which needs a continuing political will to produce long term results. The ecomuseum, as it has been and is being practiced in Italy or in Brazil, can produce a strong involvement of the population while it offers the local authorities a useful tool for an effective mobilization of the local human and heritage resources to maintain a continuing effort towards a balanced development in its cultural, environmental, social, economical dimensions.

The ecomuseum provides methods and energy to recognize heritage and its potentialities, to make the best use of its components, to share with the community the strategic and on-the-spot decisions which imply heritage; to help protect and/or transform sites, buildings, agricultural traditions, and generally speaking to make the citizens co-actors of the development of their own territory (de Varine, 2017, pp. 215-217).

This is clearly what happened in the Maestrazgo de Teruel (Aragon, Spain), where a dynamic development policy based essentially first on environmental heritage, then on the cultural assets of this almost deserted territory, resulted in the creation of a global development programme[3], of a *parque cultural*[4], then of a new *comarca*[5] (administrative district), in which the population has been taking an active role in the last thirty years. The whole process started as an ecomuseum and is still considered a rich methodological example for ecomuseologists all over the world, even if it is not called ecomuseum.

In our globalized world, the ecomuseum can also bridge the gap between universal standards issues and concrete local preoccupations, thus translating climatic change into simple and understandable energy, weather evolution, consumer's practices. It speaks the language of the people and relates modern trends to past histories and memories, making change more acceptable and easier to adapt locally.

Sustainability of an ecomuseum

To be able to contribute efficiently to the sustainability of development, and particularly of heritage, the ecomuseum must sustain itself and remain able to fulfil its role in the community. It is not easy, because the majority of ecomuse-

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3 *Centro para el Desarrollo del Maestrazgo*, CEDEMATE, 1991.

4 Law 12/1997 of the Autonomous Community of Aragon.

5 Law 8/2002 of the Autonomous Community of Aragon.

ums are fragile[6] and appear quite heretical in the general panorama of cultural institutions. Ideally, they should be supported and defended by the population itself against changes in the support of public administrations and politicians. They should also be recognized and funded by non-cultural public sources, but they are seldom accepted as normal players in the development programmes: usually, our public administrations do not like "horizontal" programmes which seem to reduce efficiency and weaken control, but mostly dilute their power. Even in Italy where many regions have adopted specific laws, it appears difficult to combine subventions from different regional departments like agriculture, education, urban planning or environment.

The word "museum" is so prominent in the word "ecomuseum" that in the mind of cultural agents, it belongs to the museum "family", even if it has no collection, no building and serves the population and the territory before serving research or tourism. To other actors of development, administrations and in general all stakeholders of heritage policies, it is ignored because it has no clear status. At international level, ecomuseums and the *MINOM* are recognized by ICOM, but they have practically no contact with ICOMOS, although the living heritage is essentially made of buildings or sites.

The ideal situation seems to be for the ecomuseum (or community museum, or local museum) to adopt an "hybrid" governance and funding, associating various public and private sources, while developing economic activities in order to produce diversified independent revenues. It would make the ecomuseum a Third-Sector (or Social-Economy) Enterprise whose associates would be both the shareholders (the members of the community, as cultural owners) and the stakeholders (as practical users) of the same common heritage.

This would lead each ecomuseum to undertake serious debates and negotiations within its own structure and membership and also with its external partners and stakeholders, in order to reach creative solutions in terms of sharing responsibilities and assuming for the future the political, financial, and human cost of caretaking for heritage as a common good for the community. It is as important to preserve bio-diversity through local micro-projects as it is to maintain cultural/patrimonial diversity by way of the participatory care of these tangible and intangible elements which are legitimately considered by the inhabitants/citizens themselves.

We may look at the example given by the *Écomusée du fier monde*, in Montréal (Canada), which, in addition to an original governance system and fundraising policy, has recently adopted the principles and field practice of the *"collection écomuséale"* or the ecomuseum equivalent of a museum collection,

[6] Graça Filipe and I tried to analyse this subject in an article published simultaneously in Portuguese and in French: "Quel avenir pour les écomusées?", 2014, 26 pp., in www.hugues-devarine.eu; "Que futuro para os ecomuseus?", in *Al Madan* II, n. 19, 2015, pp. 21-36, Almada; "Qual o futuro para os ecomuseus", in Duarte Candido, M. e Ruoso, C., *Museus e patrimônio - Experiências e devires*, Editora Massangana, Recife, 2015, pp. 47-54.

where the heritage items selected by and with the population are left *in-situ* under the shared responsibility of certain concerned citizens and the institution under signed agreements[7].

There is no model for an ecomuseums: once again, each one is an invention, which finds its own solutions to problems which are specific to a given territory, where a population lives and shares a common heritage. The challenge we tried to define is relatively simple: how to keep this heritage alive, not just to preserve it, but to make it the fertile ground of our future. To achieve this aim, we have to empower the community itself with the consciousness of its importance and the willingness and means to be actively responsible for its care and use, from generation to generation.

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1.4 THE CONTRIBUTION OF ITALIAN ECOMUSEUMS TO SHAPE THE FUTURE OF LANDSCAPE

Raul Dal Santo[*]

According to recent studies (D'Amia, 2017), in Italy there are more than 200 ecomuseums. Twelve regions and one autonomous province hold legislation on ecomuseums and have recognized about 140 ecomuseums with the common trait of the community's involvement in projects that concern cultural heritage.

Italian ecomuseums chose to define themselves as participatory processes that recognise, manage, and protect the local heritage in order to improve social, environmental, and economic sustainable development. Ecomuseums develop creative and inclusive practices aimed at the cultural growth of local communities, based on the active participation of people and the cooperation of stakeholders such as institutions and associations[1]. As such, their primary objective is to re-establish correspondences between techniques, cultures, productions, and resources of a homogeneous landscape and the local cultural heritage.

Italian ecomuseums have the important role of allowing everyone to better understand the relation between landscape and local identity, and of inspiring the future of landscape.

The inspiration of the future needs not only a new point of view on the landscape, but also permanent changes of the present. Douglas Worts describes the museums as "places of the Muses". Humanity historically has turned to the Muses for inspiration, creativity, insight and inner-strength. Since creativity is necessary to address the needs for change, both individual and collective, museums can carve out a new opportunity for inspiration, in which insight from the past as well as creativity of the Muses, help to forge a public vision and consensus for the 21st century (Worts, 2016).

Ecomuseums work to make communities able to inspire changes; ideas or stimuli can produce a change if they are followed by actions and in presence of a breeding ground.

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[*] Raul Dal Santo, Coordinator of the Ecomuseum of the Landscape of Parabiago (Milan, Italy), and of the Network of Lombardy Ecomuseums.

[1] The sentence refers to the Strategic Manifesto of Italian Ecomuseums signed in 2016 (de Varine, 2017).

The humus, the breeding ground, and the root of the future is the cultural heritage. Everybody should take charge of it, through a voluntary process of governance of cultural, social, and economic change, rooted in living heritage, with the prospect of sustainable local development (de Varine, 2005).

The current situation in Italy, which has witnessed a reduction of private goods, dictates to better recognise and enhance common goods. However, on the one hand people do not often recognise such goods as community heritage, and on the other hand, the governance model is often based on the logic of bipolar administration "administrator-administrated"; for this reason, it does not allow the community to mobilise its resources. In this way, the community cannot express ideas and implement changes and actions for the solution of problems that, due to their complexities, cannot often be solved by the institutions alone. A new governance paradigm, the "shared administration" of the cultural living heritage, based on participation and active citizenship, is needed (Arena, 2006).

Therefore, cultural heritage, a participatory process, and permanent changes of the present are all necessary to inspire the future. Changes can concern both methodological dimension (the working method) and relational and social aspects (cultural changes); these kinds of changes could originate changes in the physical dimension (improvement of cultural heritage).

The contribution of Italian ecomuseums

In light of these premises, it is possible to analyse how Italian ecomuseums have tried to carry out the delicate task of shaping or inspiring the future of landscape.

1. Let the landscape be the focus

Landscape lies at the heart of ecomuseums' concerns. In the theory and practice of ecomuseums, the involvement of landscape represents a topic of universal consent, within the Italian scenery more than the rest of the world (de Varine, 2017).

This Italian peculiarity is due to the fact that since 1947, the Italian Constitution articulates safeguarding of national landscapes and the historical and artistic heritage as the State's principal duties (art. 9). The concepts of "landscape" and "cultural landscape" have been widely spread in Italy since the early 21st century with the European Landscape Convention (2000). Moreover, the Siena Charter (2014) is based also on the Italian context and practices and thus plays, to date, an instrumental role in the safeguarding of landscape on a national scale (Dal Santo et al., 2017a).

In 2018 a national convention about the state of landscape policies in Italy was held in Rome. Finally, the report shows both the considerable contribution

of ecomuseums to the landscape care and planning, and the used tools (Baratti, 2017). Italian ecomuseums have actively participated in promoting a better understanding of the relationship between landscape and identity. Since the ecomuseum should master all landscape components, whether natural or cultural, tangible or intangible, it is a good instrument for public mobilisation and education, landscape observatory, local visitor mediation. Moreover, the inventory of heritage or parish maps, properly registered in a geographic information system, has proved useful for urban or landscape planning.

2. Responding to a need

Landscape is a cultural concept, but it is also a specific level of biological organization, a system of interacting ecosystems with proper functions, apparatus and diseases.

Loss of biological and cultural diversity, imbalance and physical separation between human and natural habitats, severe disturbances of landscape apparatuses are symptoms of the failure of the so-called "invisible landscape". The "invisible landscape" is constituted by social relationships, the consuetudinary use of places, and common resources, especially of the territory, rules and practices of cohabitation and reciprocity, way of intergenerational communication and knowledge transmission (Clifford et al., 2006). It is therefore necessary to operate directly on the disease to intervene, albeit indirectly, on the symptoms. Since the disease is cultural, it is necessary a cure that firstly intervenes on the community and then affects the whole landscape.

Ecomuseums answer a need of the community. In many cases, and in particular in the (post)industrial and urban context, ecomuseums are tools to cure the "placelessness" cultural syndrome: inhabitants are unable to recognise in the territory not only the area available for building, producing and moving, but also the landscape to take care of and improve (Dal Santo, 2009).

3. Planning and taking action with citizens

Ecomuseums, as museums of the community, are legitimated by the participation of people. This is the reason why ecomuseums are designed and working without following the traditional logic (institution planning and acting "for" the community), that often excludes people from the decisional and design processes. The plan and the work of these ecomuseums are carried out "with" the community, according to the logic of participatory planning and active citizenship.

Public forums and other ways of participation were created. Owners of lands and cultural heritage, municipalities, museums, parishes, water treatment companies, associations, farmers, traders and artisans, public and private educational institutions and single citizens, were encouraged to be informed, to discuss and interact, to shape the idea of the ecomuseum, to design multi annual action plans and to activate their resources, knowledge, and skills in order to realise the planned actions.

From the point of view of ecomuseums, the participation process is at least as important as the results and the outcomes of the planned actions. In fact, the interaction of the local actors is essential in order to create both a sense of place and community and to release energy to achieve the planned goals.

Italian ecomuseums designed its own participation toolkit. Some of the tools (i.e. parish maps) were implemented for a long time in several Italian ecomuseums. Other tools, like cooperation agreements, are newer, but deserve attention because they can bring significant contributions to spread the concept of active citizenship.

Mapping the heritage - In Italy about 40 ecomuseums designed a parish map (D'Amia, 2017). This is usually one of the first programmed action in the planning phase of Italian ecomuseums. The parish map both documents the present situation of a place and helps people to understand the past that made it; it also helps the community to plan long term agenda aimed at improving and enhancing places and landscapes. In the map, it is possible to detect the wishes of the community (Clifford et al., 2006). Working group of adults, school children educational paths, and population surveys make ecomuseums able to record the elements of cultural and natural living heritage. The result is a participatory inventory of heritage, in which the elements to include in the map are chosen according to cultural and social criteria. Local artists design maps that are printed and distributed to citizens or published on the websites. Many parish maps do not end with their publication. They are participatory processes, permanent and updatable "archives", of the tangible and intangible heritage of a territory. To update and implement their contents, some ecomuseums realized multimedia maps. They contain the follow-ups related to the heritage included in parish maps (Dal Santo & Vignati, 2017; Bresciani & Micoli, 2017).

Cooperation agreements - The aim of ecomuseums is not only the realisation of participatory activities, but also to trigger cooperation agreements with citizens, for the care, management, and regeneration of the cultural heritage and the landscape. Ecomuseums arrange human resources, skills and personal knowledge of its partners, that are working together with full independence. Through cooperation agreements, the network of stakeholders can build a community and new energies can be released and valued in the local community. In this way, the ecomuseum becomes a tool of "shared administration" of living heritage and common goods. Ecomuseums become facilitators that make people able to release energies, and share resources inside the community itself, for the common interest. The agreements that were concluded until now were both formal and informal. Some ecomuseums approved regulations for the active citizenship participation and the shared administration of the living heritage. This is an important development of the community participation idea, within the framework of the Italian movement that have tried to apply and promote the shared administration of common goods and the subsidiarity princi-

ple[2]. According to this logic ecomuseums carry out not only their "own" projects or events; They also help and empower citizens to carry out heritage-based projects that are in line with the long term participated plan of the ecomuseum (Dal Santo & Vignati, 2017).

4. Networking

Significant efforts have been made in strengthening and constituting relational networks between ecomuseums at regional, national, and international levels.

Since the 1990s the Italian ecomuseum movement has been characterized by strong cooperation. Conferences, cooperation charters, formal and informal networks, working groups and communities of practice both at regional and national level have contributed to significantly increasing the number of Italian ecomuseums (Dal Santo et al., 2017a). For the time being, over 100 ecomuseums are part of regional or provincial networks (D'Amia, 2017).

These networks are also the interlocutors of regional and national public authorities; they are also places for mutual formation and exchange of good practices and methods. In fact, thanks to cooperation, ecomuseums acquired common instruments and methodologies such as the participatory inventory of cultural heritage and landscape.

In 2016 the Italian Network of Ecomuseums has produced a Strategic Manifesto that aims to contribute to the creation, development, and evolution of ecomuseum experiences that can produce virtuous models of sustainable local development[3]. The Strategic Manifesto recognises also tools used in Italian ecomuseums. This is perhaps the most advanced text aimed at defining a national ecomuseum policy; it was elaborated by ecomuseums without the intervention of public authority or the academic world (de Varine, 2017).

In 2016 the Italian Network of Ecomuseums managed the 1st Forum of Ecomuseums and Community Museums at the 24th ICOM General Conference, held in Milan around the theme "Museums and cultural landscapes". With more than 70 contributions from 25 countries this was a new stage in the history of ecomuseology and of ecomuseums (de Varine, 2017).

5. Focusing on sustainable development

Many Italian ecomuseums aimed originally at facilitating both social, environmental, and economic sustainable development. The Strategic Manifesto of Italian Ecomuseums shows the realised work and the programmed actions.

The goal was achieved both directly and indirectly by empowering and inspiring communities, companies, and institutions.

The main actions lines are food production and short food supply chains,

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[2] See: http://www.labsus.org/ (accessed November 2018).

[3] The Strategic Manifesto is available in Italian, English, French, and Spanish at this link: http://www.ecomusei.eu/?page_id=1591. It was also published in de Varine, 2017.

the traditional productive activities, tourism, training and education, landscapes protection, management, and planning (Dal Santo et al., 2017a; Dal Santo et al., 2017b; de Varine, 2017; Riva, 2017).

For some time now, ecomuseums have also played an important role in the conservation of biodiversity, with an emphasis on community-based projects and citizens' science initiatives.

Italian ecomuseums should pay more attention to the economic dimension and to the industrial-related living heritage (de Varine, 2017).

They should also work together to better promote awareness, mitigation, and resilience in the face of climate change and to achieve by 2030 the 17 UN Sustainable Development Goals, the largest and most "global" effort to make changes capable of setting humanity and the biosphere on a path towards a sustainable future[4].

6. Involving institutions

Ecomuseums are cultural institutions managed by associations or by public institutions, like municipalities or provinces. On a local scale, an ecomuseum cooperates with local public institutions like municipalities, museums, monuments, and sites, as well as with other actors of heritage protection on a regional and national level. It brings its own specific experience and expertise in the field of managing living heritage and landscapes.

7. Evaluating results

Recently, in some regions such as Lombardy and Piedmont, the second generation of legislation has come into force. It is contributing to shape "ecomuseums 2.0".

The new laws have highlighted some common issues, for example the role of ecomuseums in the care, management, enhancement, and preservation of living heritage and landscapes, while engaging communities, and the need for a monitoring system that would control the achieved results and the preservation of minimum requirements.

Nowadays, a periodic monitoring system and training activities are organized only in some regions and provinces, such as Lombardy and Apulia. However, some other regions are adopting, with recent laws, a similar scheme of monitoring, like Piedmont region.

8. Publishing with free licenses

Ecomuseums make available to everybody, through their websites or publications, a great deal of multimedia documentation. A huge number of stakeholders, both from the local context, and from all over the world, can benefit from this documentation; the Creative Commons licenses let the public of some

[4] See: https://www.un.org/sustainabledevelopment/sustainable-development-goals/.

ecomuseums share, use, modify, and create with every tool and format, for every purpose, also commercial, simply by citing the source (Dal Santo & Vignati, 2017).

Literature - Italian literature on ecomuseology is rich, but little known. A real critical and updated review of the bibliography would be essential and would facilitate a better understanding of the Italian experience in this sector (de Varine, 2017). Recently, thanks to the 1st Forum of Ecomuseums and Community Museums held in 2016, the Network of Italian Ecomuseums achieved the goal to produce documentation in English on ecomuseums all over the world, with a good representation of the Italian reality. Subsequently, thanks to *Politecnico di Milano*, many contributions were published (Riva, 2017; D'Amia, 2017). Moreover, since 2017 the Network of Italian Ecomuseums is managing the international "Drops Platform" for cooperation, exchange, and experience sharing between ecomuseums and community museums[5].

Since the www.ecomusei.net website was closed, at the moment in Italy there is not a documentation centre aimed at preserving the traces of the action and methods of Italian ecomuseums.

Conclusions

The vision of the Constitution of the Italian Republic requires many efforts to be fulfilled in the everyday life, and so do the 17 UN Sustainable Development Goals. Changes are needed in the relational, social, and physical dimensions to empower communities and release energies to achieve these goals. On a local scale, ecomuseums all over the nation are working as "constitutional agencies". In fact, from the point of view of the Constitution, it is possible to define a cultural institution, such as the ecomuseum, as a process of active citizenship that, through the principle of subsidiarity (art. 118), aims at the care of landscape and local heritage (art. 9) for the material and spiritual progress of society (art. 4) and the human person development (art. 3).

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4.
RESEARCH EXPERIENCES

4.1 A SUSTAINABLE MODEL OF URBAN GOVERNANCE

Irina Rotaru[*]

From innovative public approaches and urban mobility to cultural heritage management for liveable cities and happy communities

Over the past three decades humankind knew a series of radical changes eventually resulting into the upheaval of its very structure. The unprecedented progress and diffusion of the virtual world (internet and media industries) complemented by the increase of mobility possibilities (and their democratisation) had a strong impact not only on the nature of work and leisure activities, but also on people's level of awareness, expectations and perceived needs generating unique challenges not even thought about before.

The exceptional acceleration of the rhythm of transformation evident in every field together with the enormous inflow of different elements and the multiplication and diversification of exigencies led to augmented complexity. In some cases, the important discrepancies and inequalities resulted in and were reinforced by the "privatisation" of public effects, attributions and roles conducing to a loss of public sense and legitimacy already visible since more than 10 years ago. «*There is tendency to the dissolution of the city as a public good. The "Americanization" of the European City seems to be under way, and this would mean the convergence to the market-led organization of the cities*» (Häussermann, 2005, p. 247).

In this ever-challenging situation, there are progressively more social movements and protests of all kinds, but also a wide range of alternative ideas, proposals, and initiatives that could bring added value helping to overcome this multilevel crisis.

France, for instance, hosts many forms of civil society activities, some of which having an important role for community cohesion and empowerment. Some of such meaningful organisations are *Collectif Etc*[1] and *Atelier d'Architecture Au-*

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[*] Irina Rotaru, President of the Cities on the Move (CiMo) organisation.

[1] See: www.strabic.fr/Collectif-Etc, www.strasbourg.archi.fr/events/collectif-etc, ambassadeturfu.com/presentations/collectif-etc/, www.collectifetc.com/.

togérée (studio for self-managed architecture)[2]. Both of them are focusing on the participative experimentation of cities and grassroots regeneration of abandoned public spaces for the benefit of the local communities that are directly involved in the entire process. The intent is to advance towards a more democratic and ecologic city with more accessible proximity spaces less dependent on top-down processes (Edet, 2017).

Micro-events started to be often progressively initiated in order to make people notice various problems, test and develop solutions. An experience of this kind, *RiconquistaMI*, has been implemented in 2013 in *Piazza Leonardo Da Vinci* in Milan. Through a series of urban performances all of them freely open to the general audience and questioning in some way the possible future of the hosting place (Şuteu & Moro, 2013), the huge former parking space in front of *Politecnico di Milano* was converted into a living public area.

A more recent experiment of this kind was done by the "Ion Mincu" University of Architecture and Urbanism from Bucharest in partnership with Bergen School of Architecture and with the support of Brăila Municipality. It consisted in a set of 15 low-cost small-scale play installations developed under the name *"Brăila Parasitism"* and addressing some immediate needs or reflecting some contradictions in people's values and actions. They were meant to contribute to the animation and revival of the Danube waterfront in Brăila (Tseng, 2015). Among them, the most controversial one was a parking box suspended on pillars on the river beach as an irony towards people's exaggerated pride for cars and the associated facilities at the cost of public space and general urban comfort.

An informal but inspiring example that eventually evolved in an agreement with the authorities has been provided since a long time by *Reitschule*[3] (autonomous socio-cultural centre) that presently is the biggest cultural venue in Bern, Switzerland, with 1-3,000 visitors weekly. The validation of *Reitschule*'s utility was provided by its fast integration in the local landscape with the consequent support of the local community and long-term popularity. *Reitschule* broke through because it responded to some actual needs of the population by providing the missing variety of up-to-date cultural activities (INURA Bern & AG-Wohnen, 2008).

In Romania, the Street Delivery movement launched by the Order of Architects from Romania together with Cărtureşti Foundation since 2005 was meant to render Bucharest more people-friendly by connecting and comforting the use of its central public spaces. It took the form of a cultural event testing alternative vocations of urban spaces than dedicated to motorised traffic. Its goal was to enable the creation of a pedestrian itinerary in the central area of Bucharest,

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[2] See: www.urbantactics.org/about/, www.urbantactics.org/, currystonefoundation.org/practice/atelier-darchitecture-autogeree/, www.spatialagency.net/database/why/political/aaa, www.youtube.com/watch?v=7Li6eeJUgCo.

[3] See: www.reitschule.ch/reitschule/info-en.html.

linking a series of urban parks, public spaces and cultural facilities. It accompanied an approved Zone Urban Plan (ZUP)[4], in order to render it operational (Zeppelin Association, 2011). It survived the changes of political power and continued to play the role of a powerful instrument of communication and education of people for sustainable urban mobility and lively cities (Grosu, 2012; Canters, 2014). It was progressively enriched in content and attendance and was also replicated in other Romanian cities (Cluj, Timişoara, Iaşi, Baia Mare)[5].

These are only a few examples as similar initiatives are rising progressively often all over the world, and in the most evolved cities efforts have been made to capitalise the grassroots intelligence.

Innovative public approaches

The example of the New England House (NEH) in Brighton informs about how a public authority can identify and capitalize the positive grassroots initiatives and incipient tendencies enhancing the liveability of places (Rotaru, 2014 and 2017). Everything commenced in a spontaneous way through the concentration of many inventive ventures into a former light industry building. Around the 2000s, the council noticed the clustering tendency and, in order to support it, allocated money for the redecoration of the hallways and the division of the floor areas into smaller units, which subsequently became very popular for digital companies, despite the exterior degradation problems was yet to be solved. In 2010 a business plan was made by the city so to encourage the advancement of this project already naturally shaped as a media hub (that was going to bring in a short time to Brighton the unbeatable reputation of creative city). The idea was to create a joint venture vehicle aimed at supporting the workspace, training and growth needs of the digital media sector in the city (dedicated network and business support).

Among the main issues raised was how to make the needed improvements while keeping the rent rates down enough so that not to discourage the small innovative firms that have given the prised character and fame of the NEH. This was also the main reason for which the City Council remained very keen to maintain the ownership over the building rejecting even a partial privatisation as suggested by the higher (regional and national) levels.

A notable effort of integration of the new stakeholders and ways of regenerating public spaces and city life in the current public plans, policies and programmes was provided in France by the *"Reinventer Paris"* (Reinventing Paris) action launched in November 2014, the success of which encouraged the sub-

[4] See: www.arhiforum.ro/proiecte/puz-pictor-arthur-verona.

[5] See: street.delivery/, blog.carturesti.ro/category/proiecte/street-delivery/, www.bucharest-tips.com/places/388-culture-cultural-centres-street-delivery.

sequent replication into *"Reinventer la Seine"*, *"Reinventer Paris 2"* focusing on the underground of Paris (*"Les dessous de Paris"*), *"Imagine Angers"* and the international initiative "Reinventing cities". Started in 2015, *"Reinventer Paris"* aimed to generate new funding sources and promote value in the conditions of a reduced time for the implementation of public projects. Thus, the municipality organised a complex urban operations competition for 12 neglected sites in its property. The candidates had to present their ideas in detail together with the associated operational, financial, and time planning aspects. Each team had to associate architects, urban planners, backers, construction companies, NGOs, and civil society representatives. For each site, a jury was set up that included, along with the usual urban regeneration professionals, different other intellectuals (such as philosophers, journalists, artists, and so on). Thus some abandoned areas would be revived in a relatively short time (maximum 5-7 years) with no public investment, while the public budget would be supplemented by money coming from the sale of the respective areas, as well as from the different taxes corresponding to the selected real estate developments. Last but not the least, the publicity around this innovative initiative fostered the image of Paris as an international level reference (Poggi, 2018).

Furthermore, a promising kind of grassroots initiative more and more encouraged by French cities is the so-called temporary urbanism, that allows to test and optimize the uses of spaces and buildings (and thus foster innovation) while waiting for more important works and large urban projects. Besides, such initiatives represent an occasion to provide missing facilities, teach people about their cultural heritage and minimize costs as a building or space that is lived in tends to be better conserved.

Moreover, sharing (spaces, services, goods, time etc.) gained progressively more popularity as a way to address the very uneven distribution of resources and enable their better use. The erosion of old structures opened the way to innovative models and behaviours, frequently in search of a more just society. Recently, several cities tried to become more up-to-the-minute and prosperous by promoting themselves as shareable places and including "shareability" criteria in local procurement tenders and other municipal contracts (Rinne, 2014).

Mechanisms putting the basis of collaborative governance

In the present age of knowledge and creativity, a major challenge is to proficiently capture, organise, and manage the tangible and intangible resources as well as the huge amount of (possibly available) raw data. In order to address this, Boonstra and Boelens (2011, p. 99) are lobbing for a shift of perspective from the exclusively government-focused one (inside-out) to the one bringing to the centre the citizens and businesses themselves (outside-in).

A certain number of mechanisms were put into place in order to capitalize

the positive inputs of various sectors through the integration of the alternative proposals into the current urban management practice. Among these, many of them refer to cultural heritage viewed as an element of stability and coherence in this ever-changing world.

The most popular such mechanisms that proved their efficiency are:

1. the "participatory budgeting" (PB) consists in the reservation of an amount of public money for projects decided by inhabitants. This mechanism allows citizens to identify, discuss, and prioritize public spending projects, and make real decisions about the allocation of a part of the city budget. It has been first applied in Porto Alegre (Southern Brazil) in the late 1980s in the effort to establish democracy after decades of military dictatorship. Subsequently it has enjoyed an extensive popularity, being spread all over the world and applied in many European cities. The most innovative aspect about Porto Alegre's PB was its conception not as a finalised product, but more as a process enabling to solve conflicts, sometimes even converting adversities in advantages. Thus, it got a high level of flexibility which allowed its implementation in a comprehensive range of situations.
   «PB does not reverse the roles in local government but creates a synergy in the knowledge of public interest between politicians and citizens […] (it) creates opportunities for greater effectiveness in the distribution of public funds and increases social cohesion» (Russo, 2013, p. 6). In the UK, PB was considered as a strong communication mechanism *«opening up new channels of communication between the public sector and "hard-to-reach" community members»* (Harkins & Egan, 2012, p. 5);
2. the "neighbourhood plans" were introduced in 2011 in the UK and give the possibility to the members of a community (residents, businesses and employees in an area) to decide on the priorities and uses of different parts of their ward (where new houses, businesses, and shops would be best suited and what they should look like). These plans can be very simple or go into considerable detail but have to respect the superior regulations (like the national planning policy and the strategic vision for the wider area set by the local authority). The plan is then subject to a referendum and if approved by a majority of the voters is then brought into force by the local authority. When neighbourhoods draw up their proposals, local planning authorities are required to provide technical advice and support;
3. the "community relevant heritage list" - recognising the relevance that minor heritage might have for the identity and cohesion of a group a people, the Localism Act requires local authorities in the UK to maintain a list of assets of community value (nominated by the local community). In case such a building is intended to change ownership, the locals are provided several facilities that enable them to buy it;
4. the "community right to challenge" (in the UK since 2011 through Localism Act) is meant to enable various groups to run local services if they want to.

Voluntary groups, social enterprises, parish councils, and others can express an interest in taking over council-run services, the local authority having to consider it;

5. the "State of the city" is a synthetic rapport of the city activity over the year, its results and future priorities and projects that mayors have to present publicly each year. In the most evolved cases it represents a debate opportunity between public authorities and all the ones that want to participate (inhabitants, investors, NGOs etc.).

A different way of doing projects - insights from Civitas PROSPERITY

The complexity and instability of the present context are also imposing a change in the urban management and project culture, which have to be coherent with the system of values. The various mechanisms allowing the optimal capitalisation of grassroots intelligence and positive energies have to be complemented by an integrated organisation enabling the sustainable cooperation of peers as well as of all levels of urban governance at various scales.

In this sense, some valuable insights were offered by Civitas PROSPERITY European project. Getting inspiration from the Sustainable Urban Mobility Plan (SUMP) philosophy as promoted at European level (European Commission, 2007; 2013a and 2013b) and based on the input provided by similar projects further advanced, PROSPERITY team proposed and tested a methodology and governance model that proved to be very effective in the sustainable use of resources and can be extrapolated for other fields of urban management including cultural heritage sector.

Civitas PROSPERITY focused on rendering SUMP a really effective operational tool especially in countries, regions, and cities where the essence and potential of this instrument were not yet fully understood and enhanced. It started from a comprehensive analysis of the urban mobility situation at national, regional, and local levels conduced in the partner countries in order to support the proposition of tailor-made solutions best answering the various specific issues, but widely informed by the international experience and theoretical and practical advancements in the field (Rotaru, 2019).

The main principles that were validated through PROSPERITY for sustainable urban mobility are:

- "enhanced connectivity/multilevel networks replacing strict hierarchies" - horizontal (between peers) and vertical (between governance levels). Through PROSPERITY, regular exchanges were facilitated between cities in various Countries, but also between peers at national or regional level in charge with urban mobility issues so that to arrive to a common understanding and shared vision. In each project country a SUMP national taskforce was created including all the ones working in the field at various levels (representa-

tives of ministries, regional agencies and cities, but also of NGOs, public transport companies, consultants etc.) so that to bridge the gap between those making the rules and those supposed to apply them. This proved to be very effective for the exchange of information and collaborative promotion of effective SUMP national programmes;

- "comprehensive integrated perspective" - multi-time scale correlation (long term perspective guiding short- and medium-term planning), spatial correlation (building - neighbourhood - city - territory) and broad assessment (of direct and indirect, internal and external costs, and impacts). The project focused on the correlation and interoperability of the measures proposed in various fields (urban mobility, energy efficiency, land-use and spatial development) with the implementation of an efficient monitoring and evaluation system (identification and use of relevant comprehensive indicators);
- "function prevailing over administrative limits" - this principle was validated through the positive impact of the functional area SUMPs tested in Flanders. The latter inspired the adoption of this instrument in other countries. In Romania for instance the dedicated legislation and mechanisms are being adapted so that to facilitate the preparation and implementation of SUMPs for different type of territories (functional areas, metropolitan areas etc.) depending on the traffic flows and functional relations rather than considering the administrative borders as it used to be done before the inception of PROSPERITY;
- "tailor-made approach" - adaptation to the local context, integrating the existing practices and regulatory frameworks. The training and coaching sessions as well as the various promo events were in local language and personalised depending on the specific problems and challenges in each target area. In the choice of the measures and projects to be included in the SUMPs, the full range of possible options were considered, the final decisions favouring a maximal adaptability in the context of the future evolution of the territory;
- "extensive participation (and crowdsourcing)" - structures enabling people contribute (express and develop ideas together). In the framework of Civitas PROSPERITY the SUMP city network, SUMP National Focal Points and SUMP national taskforces play the role of dedicated exchange platforms, enabling the transfer of knowledge and experiences as basis for increased awareness and informed (shared) decision making. These structures enabled the preparation and promotion of the SUMP National programmes in the project countries;
- "role models" - selected best performing cities were acknowledged as champion cities and invited to share their experience, serving as reference and inspiration for the follower ones. Among them, Vitoria-Gasteiz provided policy makers, having participated in the implementation of the Superblocks scheme (at the core of their SUMP) who advised their peers from follower

cities. A dedicated innovation brief was published on Civitas PROSPERITY website and a project meeting and study visit were organised in Vitoria-Gasteiz for local, regional, and national level representatives in the project countries. Moreover, a special denomination, SUMP ambassadors, was launched, including people who were successful in their urban mobility initiatives and willing to share their experience and possibly act as advisors[6]. Authentic role models, the SUMP ambassadors helped build confidence and inspired tailored-made good practices;

- "production of references" - one of the core elements of PROSPERITY was represented by the innovation briefs published on the project website in several languages and used as reference in the trainings, but also in the coaching sessions and promotional events. Those are informing in a simple language about the most successful measures identified, while providing all necessary information for possible adaptation, replication and advancement;
- "experimentation/flexibility of thinking as well as of the infrastructure provided/place for creativity/experimentation and reversibility (the right to mistake)" - PROSPERITY partner cities functioned as living innovation labs, testing and further advancing the various promising ideas and solutions identified through the project;
- "shared strategic vision" - interdisciplinary approach and correlation of the various sectors. The project guided the correlation of the various urban mobility measures as well as the harmonization of the SUMP with SEAP (Sustainable Energy Action Plans) and land-use and spatial development plans and solutions, by using the input from SIMPLA project. Additionally, special attention was dedicated to the cooperation of the different departments directly or indirectly connected to urban mobility in the same municipality for the adoption of a shared integrated vision;
- "inclusive approach" - a balanced development of all modes of transport was promoted, while favouring environment-friendly and inclusive mobility and giving priority to more vulnerable users (children, seniors, impaired people);
- "political and inter-departmental buy-in" - the co-optation of the political level was considered as a key element of PROSPERITY. Ministries have been actively involved in the project being created all the conditions for European exchanges;
- "collaboration with similar projects and capitalisation of the best practices" - PROSPERITY was developed based on the results of the previous projects and used the SUMP European guidelines contributing to their update. Furthermore, several activities and outputs were developed together with the so-called sister projects (funded in the same period and having similar objectives);
- "anticipative thinking" - PROSPERITY integrated and further advanced the

[6] See: sump-network.eu/ambassadors.

"vision and validate" approach explained by Lyons and Davidson (2016) in replacement of the traditional "predict and provide" theory. This consists in the identification of several possible scenarios and following of the phases determined through the back-casting process in order to get to the desired situation (preferred scenario) (Rotaru & Husch, 2019).

This case study was considered particularly resourceful as it seems easier to understand by general audiences. If cultural heritage (especially the intangible one) and energy may seem abstract topics for many, urban mobility distinguishes as a very "real" part of our everyday life and the consequences of each dedicated infrastructure or measure are more palpable. Furthermore, one of the major actual concerns is that the higher levels of development are requiring increased consume of resources, energy and footprint, and this situation is difficult to change especially in the transport area.

A culture shift - new ways of understanding and acting for liveable cities

The SUMP philosophy introduced a new approach of planning, starting from which Civitas PROSPERITY developed an effective model of urban governance based on extensive communication and inter-sector, crossed vertical and horizontal cooperation with the association of high-level decision making in the collaborative effort (Rotaru, 2019). In line with the actual trends, its principles cited above can frame the development of new initiatives responding to the actual challenges in variable contexts.

The circular economy is not to be applied only regarding the material resources and their efficient reuse, but also concerning the intangible ones. Successful experiences can efficiently serve as input for further initiatives for the same territory or for different ones. In this sense, the innovation briefs may act as project synapses summarizing successful ideas in order to render them operational in different contexts.

Sharing (translated into multi-purpose spaces, mixed uses, collective services and eventually through the shift from individuality back to community) not only can enable economies, but also vivacity, allowing resourceful exchanges and fostering creativity through random encounters of people, ideas, and activities.

Beyond favouring a more rational use of the various assets, temporary arrangements are also rising awareness regarding less obvious (and frequently more advantageous) possible solutions preparing for permanent arrangements.

Given the ever-accelerated pace of transformations, the preoccupations regarding future, futurology, and anticipation are stronger, nourishing new approaches and solutions. Especially in the urban mobility field it has become evident that forecast (corresponding to the regime compliant "predict and provide") can no longer work because it is based on past and present trends and

patterns considering their continuation in the future and thus excluding change which has become an essential component of our realities. In this sense, an analysis on what has been forecasted in urban mobility and what actually occurred and how the big investments done in the field proved as not being adapted to the actual challenges, is very expressive (Jones, 2016).

Through back-casting, cities may play an active role instead of just trying to respond to demand and adopting a reactive attitude. The very idea of scenario is fostering the flexibility of thought and approaches making people aware that there may be many possible solutions, the choice of one or another depending on the specific context. As an example, urban mobility should be regarded as a mean (together with physical proximity and digital connectivity) and not a final aim (Lyons & Davidson, 2016). By considering it as an ultimate goal, one might miss the solution.

Furthermore, PROSPERITY experience has proved the relevance of soft measures (governance, operational framework, communication). Extensive participation is source of capital, also imposing the repositioning of stakeholders and ensuring the legitimacy and sustainability of an intervention and of its results on the long run.

The actual context is demanding the advancement from quantity to quality, from entropy (characterised by high levels of energy consume and large environmental footprints) to harmony (defined by low levels of consume and pollution due to a more effective organisation and use of assets), from hierarchy to network, from stability to flexibility (reversibility), and from national decision to the local one guided by the national level and informed by good practices and similar examples.

A city is a complex system that cannot be successfully understood and managed fragmentary exclusively limiting the intervention to one field of action. Therefore, the correlation of the measures in various fields together with the long-term thinking becomes unavoidable. Additionally, due to the increased variety, it is more efficient to think about tailor-made solutions informed by a broader national and international perspective instead of trying to find "passe-partout" ones.

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4.2 COLLECTIVE (RE)ACTIVATION

Gianpiero Venturini[*]

The figure of the architect and the architectural profession - which has been affected by the economic crisis of 2008 - become crucial when related to the topic of urban regeneration. The so-called "Starchitect system" that has dominated the architectural debate in the 1990s and early 2000s, tends to disappear, in favour of radical changes of a profession that is today more participatory. The redefinition of the architect's classic model passes through the rethinking of the concept of public space: a term that brings together the interests and concerns of architects and collectives, public administrations, entrepreneurs, and citizens. In addition, we cannot speak of systemic thinking and participatory design regardless of the themes of ethics and responsibility: ethics is a word etymologically connected to living, which for Heidegger meant care - because the fundamental trait of living is to take care. This article explores the dimension of the participatory project through a selection of relevant European case studies characterised by innovative approaches based on communal processes, bottom-up initiatives in which architects become mediators in complex urban processes, proposing new ways of thinking not only of urban planning, but also of working with communities, re-activating and re-claiming public and private spaces which have been abandoned or unused in recent years.

Towards an ethical approach to the participatory design process

The world is divided between detractors and enhancers of the technology: the problem is not about finding a solution between demonization and celebration of technology, but to trace and explore possible paths. They will aim at overcoming a self-referential conception of the technological progress and helping to create the conditions for an ethic of responsibility, in order to define the limits to orient the relationship with the technique (Causarano, 2017). In this sense, Heidegger considers the technique an unstoppable process of man's dominion

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over nature, but nevertheless sees the possibility of finding in the same technique a way of salvation.

Heidegger considers indeterminacy as the possibility to recover the experience of the phenomenon of opening through technique, to the event of being, from which the man has the possibility to return to express his own essence.

On the contrary, Heisenberg, through the uncertainty principle, determines an epistemological revolution that redefines the way of conceiving the relationship between subject and object, re-evaluating the role of scientific subjectivity and forcing science to take a step back in the philosophical field of possibilities.

The awareness of the limit suggested by Heisenberg and the possibility of a meditative thought as listening, have different aims. They can guide not only technical scientific research, but also architecture towards new paths of sustainability, growth, development, and towards a use of technology not as a tool for the mitigation of the negative effects of the human intervention on the environment, but as a means to define new balances between nature and artifice, artefacts and the living world. The new epistemology outlined by science starting from Heisenberg places the relationship at the centre of every cognitive and creative process: overcome the top-down logics and open to bottom-up ones - which simulate natural processes - means to conceive the nature of the project as an instrument able to encourage interaction between elements linked to the context and fruition.

Participation, framing the context

The economic crisis of 2008 has had a direct effect on the architectural profession at a global scale. The figure of the architect as we knew it is declining and undergoing a deep renewal process. The so-called “Starchitects” that dominated the architectural debate in the 1990s and early 2000s, tend to disappear, in favour of radical changes of the profession. We witness a change in the approach to the profession, that is today more participatory, collective, shared: these are keywords that have now become part of the vocabulary of common terms, and which define a shared approach to architecture. At the same time, these last few years have been marked by a fast-paced and unprecedented change in the political, social, and technological models to which we were used to, and which defined our modes of perceiving and living the urban environment. Tahrir Square social movements in Cairo, Egypt - as well as the occupation of *Plaza del Sol* in Madrid, provide just few examples of a new season - a new social and political paradigm - that has been affecting the perception of the urban space. These ongoing dynamics have been affecting three intertwined issues: the social aspect, through which citizens have been experiencing an increasing awareness of their living spaces; the economic one, defined by new conditions generated by the crisis that has challenged the models on which the city was

based and the relations between the different actors that defined its natural evolution; and finally the technological field, and all the opportunities emerged since the Internet has become a common good. These three points have been recently pointed out by Flavien Menu, which says that in many European cities, the need to find alternative resources for producing new types of public goods forces individual young architects to group into collectives and take responsibility for taking action within civil society. Menu also consider social media as a crucial tool, thanks to which local activism has found global echoes and a worldwide community able to offer a support that was sometimes impossible to find *in-situ* (Menu, 2018).

European case studies

In this sense, the recent intervention on the spaces of De Ceuvel in Amsterdam by Space&Matter[1] introduces a new concept of the public realm: a project realised between 2012 and 2014 for the urban and environmental re-activation of an area located in North Amsterdam. An urban playground for innovation, youth entrepreneurship, social enterprises, technological and environmental experimentation. The project stands on an old shipyard in a public property area, assigned through a public call with a 10-year tenancy agreement. The industrial area has been reclaimed from 2012 through innovative environmental reclamation technologies. It is a unique experiment in Europe, divided into several phases: the public area allocation through a public call; the reclamation of the project area and the realization of the structures with various functions; the introduction of urban metabolism technologies and circular economics. De Ceuvel[2] is an urban reactivation project that highlights the management model of intervention areas, through the involvement of the community of inhabitants, and the creation of new economies and relationships on several levels (reclamation, introduction of new functions, experimental models of environmental reactivation and gradual awareness of the citizen for these practices).

The economic crisis has led to the need of rethinking new sustainable working models. The lack of traditional clients has brought new opportunities - generating

[1] Space&Matter is an architectural practice founded in Amsterdam in 2009 by three partners Sascha Glasl, Tjeerd Haccou and Marthijn Pool.

[2] The initiative started by subscribing a shared Manifesto between users and companies participating in the project to define some basic rules for waste stream management. De Ceuvel presents a biodiesel plant, which allows the production of biogas and biofuel from organic waste; heating of buildings is possible through a system that re-emits the heat dissipated inside the environments in winter, until it is recovered by 60%; the reclamation of gray-water produced by the kitchens through the use of natural filters; the creation of a "forbidden garden" using plant species which gradually contribute to the decontamination of the deeper layers of the soil; the installation of solar panels that contribute to giving energy to most of the areas, by producing about 36,000 kWh of energy per year.

unsolicited businesses, where the architect works more as an artist, searching for freedom of expression outside the traditional market dynamics of offer and demand - best practices in terms of alternative economic patterns, self-initiated, unsolicited commissions. This topic relates to the previous one finding application in recent projects. *ZUS - Zones Urbaines Sensibles*, an architectural practice founded in Rotterdam by Kristian Koreman and Elma van Boxel, - worked on alternative governance models in the public space. An interesting example is represented by the "Schieblok"[3] and by the recent "Luchtsingel", a bridge partially built thanks to a crowdfunding campaign. Luchtsingel is one of the first completed public infrastructure in the world at this scale. The proposal for the reactivation of this building, occupied by the Dutch studio *ZUS* in the years before the crisis, was presented at the Venice *Biennale* in 2008 through a critical article. The article depicts the Rotterdam of the future, but the contemporary city is different from that proposed by *ZUS*, which for the first time introduces the concept of "permanent temporality"[4]. Destined to demolition during the years of the crisis, *ZUS* treats the building as an unsolicited architecture. Reactivation starts with the opening of a new cultural space for the city - "The Dependance" - which resembles the concept of permanent temporality, by being able to change skin and adapt according to external instances. Schieblock becomes a building open to experimentation through the gradual introduction of pilot projects to test the intervention. In this process of transformation, the role of the designer becomes crucial, as he/she is the mediator of the process of accompanying and managing the intervention that promotes the introduction of pilot projects, and he/she follows their evolution. The intervention generates a direct impact on the surrounding area, favouring the emergence of new economies involving the local community of citizens. The on-going MARES[5] project in Madrid, for the renewal of four peripheral areas of the Spanish capital introduces some key topics to the contemporary discussion about architecture, ranging from sustainable mobility and city resilience to urban metabolism forms that aim at improving our cities. Those projects clearly outline a new scenario: the architect seeks more and more for horizontal collaborations. He/she is not a *Deus ex machina* anymore, but a professional figure that looks for new forms of collaboration, connecting with other professionals.

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[3] See more information about the Schieblock and the Luichtsingel bridge at: www.schieblock.com, www.facebook.com/schieblock and www.luchtsingel.org/en.

[4] Permanent temporality, intervention in public areas can become an instrument to test pilot proposals directly on site. See also: Koreman & van Boxel, 2015.

[5] MARES is an innovative pilot project of urban transformation co-financed by the European Regional and Development Fund through the Urban Innovative Actions Initiative. It develops through initiatives of social and solidarity economy, the creation of proximity and quality employment and the promotion of an alternative model for the urban environment. MARES develops in four districts of Madrid: *Villaverde*, *Vicálvaro*, *Puente de Vallecas* and *Centro*. For more information: www.maresmadrid.es.

Participation, collaboration, sharing are today key terms, also thanks to the rapid rise of digital media, which has become a short-time daily tool at every level, for every kind of user. They are changing the way we work in an unprecedented way, having a direct impact also on the architectural profession. The distinction between public and private has often been understood in spatial terms, mutually opposing: the house versus the agora, the private group juxtaposed to the public administration, the private collection against the public library, and so on. The diffusion of digital technologies has helped to reduce these distances more and more, especially when expressed in terms of dualism. The distance between two ever-separated worlds tends to reduce, and the digital media become a tool that favours this process of transformation, often used to experiment in the public space (Floridi, 2014).

Towards new models of multi-disciplinary collaborations

We cannot address systemic thinking in architecture regardless of the themes of ethics and responsibility: ethics is a word etymologically connected to living, which for Heidegger meant care - because the fundamental trait of living is to take care. In the architectural project, limiting oneself to the application of technologies and regulations means reducing the architect's work to instrumental and neutral, losing the poetics of living, which for Heidegger represents the true foundation of building. The poetics of living means to open oneself to listening, to the relationship, to the search for the true essence of things, to make ethical aspects prevail over technical issues, and to found not only a sustainable architecture, but also a sustainable culture, an ecological conscience that is a complex thought, which does not separate the problems concerning the quality of life, growth, the protection of the environment, the problems of social organization, which is capable of combining eco-biological reflection with anthropological and social problems. The answer should not be sought in the sphere of technology but in the sphere of the human (Causarano, 2017).

These concepts are key to understanding some of the most interesting successful experiences of urban reactivation at the European scale. Experiences that see communities of people, experts, activists, so-called "city-makers", translate their knowledge into shared and participated projects. Wolfhouse production initiated Nod Makerspace, a centre for innovation and technology experimentation in Bucharest (Romania), re-using an abandoned building and attracting new activities that have in turn revived the whole neighbourhood; Saskia Beer launched ZO!City Platform in Amstel III (Amsterdam), sharing tools to promote and realize neighbourhood ideas, in which everyone can access and make a contribution. In Lisbon, *Largo Residencias* offers a place for innovation, exchange and creativity to local and international artists, tourists and inhabitants of the area of *Intendente*; in Rotterdam, Mark Slegers and Siemen

Cox co-founded RotterZwam inside the *Tropicana* - a former swimming pool, used for many years, in which they are now growing mushrooms from coffee waste, and fostering new micro-economics relations with local entrepreneurs and citizens.

The new generation of architects works fluidly and openly without too many constraints. The classic architecture office, defined by strict hierarchies, tends to disappear in favour of a model open to multidisciplinary collaborations, looking more and more to new disciplines. The comparison between architects and orchestra conductors or film directors does not work anymore. With the new conditions arisen during and after the crisis, the energy needed to keep the control of everything has been dissolved into thousands of conversations, emails, Skypes, etc. Our work today is closer to a DJ, using fragments, identifying moments, confronting inputs and information from very different people and knowledge (Herreros, 2018).

Several initiatives addressing key issues in the renewal of the architectural profession take place across the globe, bringing hope and small signals of change, but they are often missing an overview of matters and methods that connect them altogether. They take place simultaneously and independently without knowing what the others are doing. This is the next challenge to accomplish, to create the conditions for working on a common, collaborative project, capable of creating large-scale innovation (Venturini & Venegoni, 2016). Once again, Causarano insists on the new social role of the architect, explaining that the designer's aim is less and less to predict, to program both the form and the performance of the building and more and more to start, integrate, diversify, and multiply processes that involve both the material configuration and the management of the dynamics that regulate the use of those spaces. The role of the designer, therefore, is to make a choice between different possible solutions. Just as the computer in parametric design becomes a tool for cognitive mediation between the human mind and the environment, collaborative design technologies can also be an instrument for mediation. Technique as a means through which the form is realized, a vision turned towards the future, but capable of questioning its limits.

Recognizing the encroachment between observer and observed, between producer and user, between creation and execution, as well as between architecture and environment, between artifice and nature, means to elaborate a research that participates in the becoming of nature, knowing how to seize the wealth, promote and feed the unpredictability of the outcomes: and therefore no longer just architectural objects, no longer, in general, urban plans, but projects of living environments - projects of relational conditions.

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4.3 SHARING ECONOMY AND EMERGING HOUSING BEHAVIOURS. DIFFUSIVE RE-ACTIVATION OF HISTORICAL URBAN CENTRES HERITAGE

Joseph Di Pasquale[*]

The process of progressive functional emptying of the historic centres, as well as the shifting of residential and commercial functions out of the city centres, has introduced the important topic of resilience and protection of the consolidated and historical urban fabric. This has caused a deep issue in preserving the heritage of historical centres, conceived as the whole of historical and architectural values and their social and economic structure.

The general trend to interdict vehicular traffic (congestion charge) and the progressive pedestrianisation of increasingly larger areas of urban centres, implies the necessity of a precise planning of an adequate logistic support. The latter to attract a structured and rooted network of commercial activities: in short, of neighbourhoods that guarantee adequate conditions of daily vitality proximate to the urban tissue.

The often contradictory dynamics induced by the financial crisis in the changes in land and real estate values of the central urban areas, have been important factors causing the abandonment of the consolidated urban areas by large sections of the population, often surrendering the historical centres to a surrogate attendance predominantly touristy and, in any case, not rooted.

The progressive spread of collaborative economics could be an important factor in a widespread revitalisation "from below".

Through innovative use and management of the built space, new business models linked to shared working spaces (co-working), as well as new housing behaviours (co-living) have allowed in other contexts to widen the categories of income that can access a residency even in central urban areas. This has led to new and different modes of residence that tend to reproduce and progressively revitalise even the central urban fabrics, withdrawing them from exclusively tourist functions.

This article intends to give a brief theoretical overview of the phenomenon of co-living; from this point of view, it also aims to analyse the case study of the company *DoveVivo*, together with the diffusion of the housing model it in-

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terprets, one located in the consolidated urban fabric of Milan.

Introduction

In the last two decades, important changes have occurred in the social and economic structure of Italian cities (Calafati, 2014). Different factors have gradually and smoothly transformed the role and the way people live and work in the urban context. The process of globalisation influenced deeply the structure and the connections between cities all around the world. From this point of view, cities have been ranked as global cities in accordance with their role of hubs between their territories and the global trading system (Sassen, 1994). In Italy, more then in other Countries, the network of cities is particularly dense. Therefore, Milan has entered the global network system as main hub (Alpha city) of a network of cities (including Rome and others minor centres) that have actually spread the effects of globalisation on different urban systems (Antoine et al., 2017). Moreover, the explosion of low-cost travels and worldwide leisure tourism have had a deep and diffuse impact on the entire national urban system (Savelli, 2004; Barberis, 2008).

The diffusion of the sharing economy applied to mobility and space sharing is another important process which has been occurring in Italian cities in recent years. This has actually changed the way citizens perceive the urban space.

Historical centres as material and immaterial cultural heritage

The scientific and political debate concerning historical city centres in Italy has a long tradition. In the 1950s and 1960s, because of the post war reconstruction debate, all the scientific fundamentals concerning this topic have been established and structured (Benevolo, 1960; Vassallo, 1975; Cristinelli, 2013)[1]. Since this foundation season, the idea of preservation of cultural heritage for historical centres has been conceived as an extended concept including architectural and artistic values as well as social and economical features (Tafuri, 1964). This approach was conceived in the framework of a demographic growth and of intense urbanisation, where the main threat was the cultural disruptive potential of real estate speculation (Ceccarelli & Indovina, 1977).

The following legislation and its application in the next decades actually focused on pedestrian mobility, basically targeting environmental objectives such

[1] *«In the period 1991-2011 (ISTAT data) the percentage of unused housing rose from 21.3% to 41.8%. A growing phenomenon that affects the entire Italian territory involving apartments and buildings located in the urban centres, whose historical-artistic value and precarious state of conservation limit the possibilities of revamping, with the related energy and seismic adjustments, making them less appealing to the average buyer»* (Bettini, 2018, translated by the author).

as congestion charge and traffic limitation (Scotto, 2008), and reactivation of exhausted former industrial large areas (*piani di recupero*), mostly concentrated on large empty spaces of dismantled industrial settlements (*aree dismesse*). At the same time the legislation became very strict in terms of preservation of architectural heritage, imposing strong limitations to modification and refurbishment of historical buildings (Pedretti, 1997). Differently, not enough has been done at the legislative level to preserve the social and economic structure of historical centres, which for the most part have been lost (Micelli & Pellegrini, 2017).

At the beginning of the 2000s the historical city centres almost disappeared from scientific literature that considered the topic theoretically completed. However, the general framework had already completely changed compared with the origin of the debate: the urban expansion process had totally finished and had been already replaced by a gradual substitution of inhabitants and related economic activities from the centres to the surroundings of the cities[2]. This processes have caused a progressive functional emptying of the historical centres starting from residential (Bettini, 2018) but also involving the related small commercial businesses network unable to hold high rents, as well as to compete with large retailers and shopping malls[3], public and private big companies as well left the central zones to find better and more visible facilities, also building their new headquarters in the regenerated new districts around them[4].

Therefore, the late effects of the legislation concerning the preservation of historical centres have been the preservation of the historical and architectonical values and the progressive pedestrianisation of large parts of central areas; however, at the same time they have led to a loss of the social and economic micro structure of the resident urban life (Voci, 2017)[5]. This emptiness has been filled by a process of reverse gentrification and by a sense of surrogate tourist residency. The common features of this two phenomena are the eradication of resident citizens from the places having greater symbolic and identity

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2 *«If it is considered primary to regenerate the heritage already available today through its physical and social re-qualification, then the ancient centre of Italian cities becomes a fundamental test of adaptation to the contemporary stock of primary cultural, economic and social value»* (Micelli & Pellegrini, 2017, translated by the author).

3 In the last 8 years Italy have lost almost 158,000 small businesses active in the city centres. Of these, more than 145,000 worked in the craft industry and just over 12,000 in small business. A burst of closures that led to the loss of the job for just under 400,000 workers (data source: CGIA of Mestre, 2017).

4 In two decades (1991, 2011) the presence of public and private institutions historical city centres in Italy have decreased about -70% in number of units and -34% in terms of staff. This value is basically stable along the entire national territory (data source: *ISTAT*).

5 *«A haemorrhage (in the historical centres, Ed.) that hit the residential patrimony, unused for percentages equal to 40%, with estimated value losses (if projected on the national territory) in some tens of billions»* (Voci, 2017, translated by the author).

urban value.

Foreigners and tourists represent now the new boosting population of the urban centres' scene, which is becoming increasingly similar to a historical theme parks (Semi, 2015).

New housing behaviours in urban context

The new system of global trade supported by the network of global cities has caused a deep social change in conceiving work and professional activities in cities. The worldwide connections have actually shaped a new class of professionals linked to financial services, international trading, design and communication services operating in a new condition of fluidity and extreme mobility (Sassen, 1988 and 2006). However, the accessibility of professional face-to-face relationships requires that new urban centres be designed to this scope. Based on market evidence, new housing behaviours are emerging to provide working and living services for this new way to conceive professional life. Co-working and co-living companies have grown fast in recent years. Co-living represent a new lower step for millennials, as well as young professionals, to access all-inclusive accommodations packages focused in the centres of the cities (Talkington & Plowman, 2016).

Sharing economy and new diffusive urban re-functionalization

These shared economy-based business models have a deep and diffusive effect on the social and economic structure of the urban context (Indovina, 2009). In fact, they are affecting the use and the social structures rather than the physical appearance of the city. Therefore, unlike the classical real estate regeneration processes, urban transformations triggered by a sharing economy are affecting historical centres, as well as the other areas of the city.

The consistent establishment of peer-to-peer services in Italy such as Airbnb, HomeAway and other subjects in the field of tourist accommodation outside hotels, have confirmed that socio-cultural context is ready to accept forms of collaborative economy also in the real estate sector, especially in the main urban contexts. The diffusion of Airbnb and similar business model is particularly wide in the historical centres (Gainsforth, 2017). The strong rents values, caused by the high symbolic and cultural values of historical centres, are a big incentive for owners to let their properties for touristic purposes. At the same time, foreign immigrants in minor cities take advantage of the empty spaces left by stable residents, temporarily absent, by settling in the abandoned building stock (Micelli & Pellegrini, 2017). In the early 1990s, foreigners living in the minor city centres were an irrelevant fractional part. In the sec-

ond decade of the 2000s their number showed a tenfold increase (cf. *ISTAT* data). The effects of the touristic diffusive regeneration caused by space sharing models are evident, albeit still ephemeral and unable to invert the trend of residents' eradication from the ancient urban cores. However, the aftermaths of the sharing economy have been wider and have also affected more stable urban housing behaviours.

The spread of co-living should also be noted in this framework. Co-living is considered the most significant phenomenon that is interpreting the accommodation needs of emerging urban housing behaviours in terms of management and living model (Shafique, 2018). The most important international players of co-living (Welive, The Collective, Ollie, etc.) are not yet present in Italy. However, the diffusion of sharing of stable housing accommodations is growing fast also in Italy. The company *DoveVivo* seems to be the most advanced case operating in this field on the national scenario[6]. It operates in five Italian cities (Milan, Rome, Bologna, Como, and Turin) with characteristics that makes it somehow unique in its kind and particularly significant in relation to the effects on historical city centres[7]. According to the sharing economy classification we could define the *DoveVivo* as a hybrid between business to consumer model (provide a product to users) and a peer-to-peer model (provide an exchange platform for users). In fact, *DoveVivo* is both ensuring a fixed lease to single large apartments owners, and providing integrated housing services to users, re-conceiving the space management so that more users can share the same apartment. Therefore, owners and tenants never come into direct contact with each other.

What is particularly relevant about the *DoveVivo* model is the way the business model is actually re-using the existent housing stock according to the actual housing behaviours. Apartments that had been thought for a totally different structure of society, are now re-conceived in terms of services and management to make them suitable for the needs of actual new generations of urban users.

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[6] Founded in 2007 by Valerio Fonseca and William Maggio as a solution to the personal housing needs of the company founders when they were university students, *DoveVivo* has experienced a strong growth. In the first six years, the number of real estate units managed grew from 4 in 2007 to 120 in 2012 (yearly average +100%) and has continued to rise to over 600 units currently managed (yearly average +40%). The total number of users is now around 2700 spread in 5 cities, Milan mainly but also Rome, Bologna, Como, and Turin (data source: *DoveVivo*). In 2018 *DoveVivo* acquired H4U, another shared housing company, achieving the number of 3,500 rooms managed (Real Estate online, 2018) *DoveVivo* has had a turnover of 22 million euros in 2018, with the goal to achieve 60 million by 2021. The target audience of *DoveVivo* corresponds to the 18 to 35 years old age group, with a tendency to grow upward to the 40 years old age target. 55% of users are university students, while 45% are professionals. 71% come from Italy, 15% from the rest of Europe, and 15% from the rest of the world (source: *DoveVivo*).

[7] *«The company is characterised by a client/tenant panel with a high percentage of young students (80%) with medium-long term lease contracts and with a portfolio in central and strategic areas»*, interview to Valerio Fonseca (founder and ceo of *DoveVivo*).

The aftermaths of the application of this business model to the central cores could be relevant. In fact, the penetration of *DoveVivo* in the historical centre of Milan is definitely comparable to the touristic Airbnb target, unlike the average period of staying, totally incomparable (few days for Airbnb, at least one year for *DoveVivo*). Therefore, the most significant difference between the two models is that *DoveVivo* pursues the diffusion of a more stable and rooted resident housing.

Conclusion

Since the beginning of the Italian scientific debate, the heritage of historical city centres has been considered as a whole, composed by the architectural components, together with the related social and economical micro-structure. Following legislation basically preserved the architectural and artistic heritage and aimed pedestrianisation to reduce congestion charge. On the other hand, economic activities as well as resident housing progressively left the centres to move in the suburban areas. This emptying process of historical centres involved small business as well as public and corporate buildings. Different kind of social processes have interested this empty space in the ancient cores of urban fabric. At the same time, a reverse gentrification process affected historical centres. Tourists and foreigners greatly increased their presence in ancient cores of Italian cities. The large diffusion of Airbnb apartments available also in central areas is consistent with the paradigm of the city historical centre as main touristic attraction of the city. However, sharing economy is also producing more stable housing behaviours. A new class of professionals generated by globalisation processes started to resettle the centres of the cities bringing with them new needs and new working and housing behaviours. The sharing economy applied to a semi-permanent accommodation and to a co-living model could potentially give a contribute to the growth of a more stable resident habitation also in historical city centres. This could play an important role to reactivate a social and economic micro-structure, which is the missing part in historical city centres heritage preservation. Many possible actions could be activated by municipalities to multiply and amplify the positive effects on historical centres of this ongoing phenomenon.

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4.4 THE GREEN HEART OF NOVARA: THE PUBLIC SPACES SYSTEM FROM THE CASTLE TO THE CHILDREN'S PLAYGROUND TO THE CITY'S BOULEVARDS

Matteo Gambaro[*]

The public spaces system and that of a city's green areas make up the backbone of their infrastructure, along which collective life takes place and functions aimed at public interest and engagement are carried out. The acts of maintaining, renovating and adding value to such systems are essential for Public Administration, not only with regards to the physical fruition of these spaces but also to the cultural and educational implications that derive from such a fruition. The level of care and attention with which the inhabitants experience these collective spaces is proof of their awareness of the importance these places hold in view of the sustainable development of their communities and of the city as a whole.

In the case of Novara, the city's public green areas are concentrated in the south-western section of the historical town centre and follow the direction of the Spanish fortifications from north to south, embracing the Visconti-Sforza Castle and the *Martiri della Libertà* town square, the public city's true heart offering the Coccia Theatre, the *Borsa del Riso* palazzo and the emblematic *Generali* insurance building. All part of a public spaces system which also extends to the east with the Puccini town square, the area around the bishop's palace and the tree-lined walkway along the castle walls and to the north-west with the post office building, the *Costituente* square and Novara's Toll booths. An important piece of the broader "Novara Integrated Cultural System" project, funded by the *Fondazione Cariplo* in 2011[1] and focused on encouraging and adding value to cultural heritage by means of an integrated cultural asset management strategy both with regards to its protection and to its value. An effective method, capable of inspiring virtuous processes of local economic development.

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[1] The project is funded within the broader context of the *Fondazione Cariplo*'s "Promoting the rationalisation and renovation of the cultural offer" Plan of Action, focused on "Adding value to cultural heritage through integrated asset management", leading Novara Province body, funding equals 750,000 euros, project timeframe 2012-2015.

In line with this cultural approach, in 2015 the Novara Municipality took part in the "Most Emblematic" competition held by the *Fondazione Cariplo* by proposing an articulated redevelopment project for the Children's Playground, the Spanish Fortifications and the green area system surrounding the Castle, entitled "The Green Heart of Novara. Constructing its public spaces system from the Castle to the Children's Playground to the City's Boulevards"[2]. In order to complete the informative dossier required for applying to take part, a framework agreement was stipulated with the Department of Architecture, Built environment and Construction engineering of the *Politecnico di Milano*[3]. This text conveys the results of the study and research activities carried out.

The urban green system and public spaces from the 19th century to today

The Castle area, along with that of the Children's Playground, have been the subject of numerous urban redevelopment and transformation projects since the end of the 18th century, most of which never made it past their design phase. The first significant green system redevelopment project dates back to 1780 and focused on Novara's tree-lined public walkway along the eastern and southern walls of the Castle, which was partially realised and has lasted to this day (Viglio, 1924). Further expansion and transformation work on the Saint Luke and Saint Joseph Bastions dates back to the first half of the 19th century; at that time the green system and public walkway were already configured as they are today. At the beginning of the 20th century, particularly during the Fascist years, a number of interventions transform the *Fiera* Green, the broad green area along the eastern fortifications: the creation of the Children's Playground (1928) and the hockey pitch (1938) along the perimeter of the Saint Luke Bastion; the creation of the *Casa del Balilla* (1932) and *Casa Littoria* (1938-41) in the eastern most section of the *Fiera* Green; the creation of the monumental steps (1925) and post office building (1932-35), conceived by Angiolo Mazzoni, partially overlapping with the Saint Joseph Bastion.

These interventions essentially mark the end of the transformations aimed at the south-eastern section of the city of Novara.

The following years saw numerous proposals and projects which for one reason or another failed to be realised; among the most significant, which could

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[2] The project was deemed worthy of receiving funding equal to 1,200,000 euros, co-financed by the Novara Municipality for a total amount of 1,500,000 euros.

[3] The framework agreement between the *Politecnico di Milano* - Department of Architecture, Built environment and Construction engineering and the Novara Municipality, in 2015, was followed by a research contract the subject of which were "Studies and research aimed at further researching environmental design in the context of urban green system redevelopment, with a particular focus on the Children's Playground, in the Novara Municipality, supported by the *Fondazione Cariplo*". The activity was coordinated by Elena Mussinelli and Matteo Gambaro.

have really affected the cityscape, worthy of note are the transformation project for the bishop's palace area, conceived by Marco Zanuso on behalf of *Fondazione Cariplo* (1983); the two competitions for redeveloping and pedestrianizing the *Martiri della Libertà* town square, which were assigned but never left the drawing board, the last of which was in 2014; the projects by Vittorio Gregotti and by the studio AA, at the end of the 1950s, aimed at redeveloping the area known as *"Pistino"* at the end of the tree-lined path, now *Viale Turati* (1955-56); the competition for the new town hall in the Gallarini Conservatory area; and the recent project for underground parking at *Largo Bellini*, between the Castle and the hospital, which also hit the rocks due to legal delays. A separate chapter looks into the many transformation, restoration, re-use and even demolition projects for the Visconti-Sforza Castle which at the end of the 19th century had reopened the debate regarding its use, up until the recent project by Paolo Zermani, inaugurated in the 2017.

The Green Heart of Novara

In line with the requirements of the "Most Emblematic" competition held by the *Fondazione Cariplo* in 2015 for the Novara Province, the project aims to initiate an articulated process of redevelopment with regards to the green system and urban public spaces, particularly the Children's Playground named after the child educator "Marcella Balconi" and the Spanish Saint Luke and Saint Joseph Bastions. Importance will not only be given to the physical redevelopment of the spaces, but it will also be given to their educational function, the theme of which will be focused on words: the Playground will become a poetic landscape to be explored through play and will have stories to tell through the words, sounds and voice of the "talking trees" which will come together to form an interpretative journey of an educational-fun nature. The dynamics of this projects will take place through the development of a network of public and private subjects: from school - conception phase - via the community and the productive context - operational phase - to the public space, a place for experimentation.

Equally significant is the design method which will see the direct involvement of the final users, that is, the children themselves, during the conception phase, the outcome of specific creative workshops.

The project will be enacted in a system of three integrated actions: two design-related dedicated to the Children's Playground and the Bastions and one cross-project governance action[4].

[4] The preliminary project was elaborated by the architect Romina Emili, appointed by the Novara Municipality in 2016.

Action 1 - Children's Playground

The Green Heart project starts with the areas surrounding the Visconti-Sforza Castle, from which the narrative and thematic journeys begin, set to create an innovative vocabulary of forms used to decorate the public space, the greatest expression of which will be in the Children's Playground. The Playground will be an area dedicated to games, a garden of words, the words of the five senses, since the dialogue between public spaces and those who experience them is mutual and continuous: the Playground will tell stories through sounds and words, through the voices of the trees, the stories' first main characters. The Parks system (Castle Park, Children's Playground and the Vittorio Veneto Park) will become a poetic landscape to be explored and understood through play: the visitor will be able to identify a story among the most prestigious arboreous essences, carefully inserted into the network of fun-learning paths which guide users towards the Children's Playground, a collectively appreciated piece of historical and environmental heritage to be cared for, maintained and protected, the heart of the public space, a hub for the daily lives of the city's inhabitants.

The "talking trees" - interconnected via sound tubes, pictures and shapes, which every now and then change - will make up an interpretative journey of a fun and educational nature aimed at reinforcing the identity of the area where the narration takes place. The "talking trees" will be the most relevant aspect - the most ancient, beautiful and representative of the history and quality of the park (Bini & Galli Mancini, 1994) - and will become the leading characters of a tale thanks to the creation of an interpretative path system for children and adults alike. A number of the sound tubes, key elements of the educational journeys, will converge towards the central area where the park's fountain can be found, intersecting the new pergola structure, called the sound pergola, a nod to and elaboration of the pre-existing version in the 1960s, which will be the heart of the Children's Playground.

The visitor, on an ideal path without interruptions in its continuity along the park's various paths, will have the opportunity to discover small objects, aptly integrated into the context: an aviary, a gazebo, a tunnel and the miniature world theatre, transformed into rest areas, within the thematic paths.

Completing the Playground's design will be three play areas, each with its own separate approach to creativity: one will be a classic play area, with play equipment linked to body movement; another with sound-related games and water jets and, finally, a free play area, albeit confined by a fence, in which organised fun-learning activities will take place, aimed at inspiring the imagination through the use of elementary materials and shapes.

Further work will include the creation of an object conceived by the children themselves, the outcome of creative workshops, a small open-air theatre for shows every now and then, the restructuring of existing objects and the start of maintenance work.

Action 2 - Spanish bastions

The analysis of historical maps of Novara from the 17th and 18th century shows how they are all almost exclusively focused on the new walls aspect and that of the city's fortifications (Oliaro & Coppo, 1983). It becomes apparent, in particular, how the *forma urbis* has remained crystallised for over 150 years around the issue of defence preparations, a problem which involves a rather large portion of the city, both within the walls and without, with regards to the creation of bastions surrounding the entire historical town centre, and that of surrounding defensive space which was required to be left untouched by constructions in order to not interfere with the trajectory of the cannons placed on the bastions.

Many town buildings outside the old walls, including churches and monasteries, were demolished in order to leave room for a defensive ring, leaving a trace of the 19th century city as an organisational element for the development of the urban fabric. The recovery and value given to the portions of bastions that have survived on the Spanish walls (the Saint Luke Bastion and the Saint Joseph Bastion) have a twofold meaning for the city: on the one hand, the conservation of a material element of absolute historical and documentary value and, on the other hand, the recovery of the memory of the city's shape which through the signs and connections with following transformations regains its meaning and role. It is therefore worth recognising the importance of recovering the material and visible shape of the walls, while also acknowledging the recovery of the possibility to look out from such a privileged viewpoint of the cityscape. In this way, the relationships connecting the castle, the city park, bastions and the built city itself can regain clarity and abundance of meaning, both historical and spatial. Thus a fundamental action in this project is to take care of the top section of the walls and of the public park which corresponds to it: for today the excessive presence of vegetation has almost entirely erased the upper profile of the walls towards the park and from the outside, creating a condition of disrepair which is not only harshly damaging to the conservation of the walls themselves, but also such that it hides the perception and sense of connection with the overall context.

Action 3 - Immaterial projects

Cross-project activities, which include overall governance action with regards to the initiative and all the various fundamental activities aimed at adding value to the described actions. This is an activity which begins on the first day of the project and ends at the end of the outcome overview phase. These projects will include activities aimed at governing the project, dissemination, control, monitoring and assessment. The project's overall realisation will be carried out via the creation of a specific Control Room, of mixed composition (from within the Novara Municipality and without), the functions of which will include coordination and control. Specifically, the Control Room will be assigned roles con-

cerning the coordination of communication and human resources involved in the project, fundraising and sponsoring research activities, activity monitoring and technical management with regards to actions within the project and collaboration and support to municipal offices in managing the process.

Participatory design

The Green Heart project was born with the intention to engage those directly interested in public spaces in an active way when it comes to the design process, particularly primary school children. The objective is twofold: on the one hand, to promote participatory design applied to the real world with concrete results, thus allowing participants to witness the realisation of these designed objects and spaces; on the other hand, to educate children about the significance of the public space and the respect it deserves as the collective's heritage, thus enriching their ordinary curriculum.

Historically, the city of Novara has been a pioneer in design and applied arts research and teaching with the significant experience of the Art/Industry Research Centre, Italy's first school for design and communication with a curriculum based on the *Gestalt-Psychologie* principles, founded and directed in 1954 by Nino Di Salvatore in Novara and later relocated in 1970 to Milan and renamed the Polytechnic Design School (*Scuola Politecnica di Design*, *SPD*)[5] (Lambertini, 1992). To recover this piece of information and interpret it means to transform a historical memory, now almost forgotten by the inhabitants of the city, into a concrete valuable activity applied to the real world. The spontaneous thoughts of a child's world will be the creative core of the design phase and schools will take on its leading role.

The first educational project aimed at primary schools in the Municipality of Novara is entitled "ArchiLab - architecture and photography for the city" and is focused on stimulating and adding value to creative experiences applied to the field of the arts required by the project. The students from year 4 and year 5 of the primary school developed a design process articulated into theory lessons in the classroom, inspections of the Children's Playground, photographic surveys and design seminars. Particular attention was given to the recovery and re-use of a man-made underground tunnel, originally used for storing a miniature train which since the late 1960s travelled along the park's paths. The workshop results were then re-elaborated, rationalised and became the design basis for the creation of a new public space dedicated to books and reading, available throughout the year due to the fact that it provides heating and lighting, along with wooden furniture especially designed and created.

[5] In 1954 the Art/Industry Study Centre of Novara took part to the 10th International Triennale of Milan and was awarded the Gold Medal Diploma, upon proposal of Marco Zanuso, Gillo Dorfles and Augusto Morello.

The second design experience involved the students studying at the Architecture Design and Construction Workshop - started during the second year of the *Laurea Magistrale* (equivalent to Master of Science) in Architecture at the School of Architecture Urban Planning Construction Engineering, *Politecnico di Milano*. The theme for 2015-2016 was to design the urban green areas and public spaces system of the Municipality of Novara, starting with the requests made by the Municipal Administration and with the results and ideas that emerged from the primary school workshops. This activity, which began in the month of October 2015 and ended in February 2016, took the form of a design experiment in real intervention contexts with rules, ties and requirements which were derived from the informative dossier required for applying to take part in the "Most Emblematic" competition held by the *Fondazione Cariplo*.

Even with the adaptations and simplifications that were deemed essential, being an educational exercise, the students were able to conduct a design experience that was similar to an actual public project, assessing the advancements in their work in view of the design limitations imposed by public construction regulations. Once again, in this case, the proposals put forward were the subject of reflection and critique in order to be integrated into the overall project, once they were adequately adapted.

The Green Heart of Novara project was selected during the 2015 Public Space Biennial and was presented in the seminar dedicated to "Children's Cities"[6].

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[6] 2015 Public Space Biennial, 3rd edition, seminars and workshops "*La città delle bambine e dei bambini*" (Children's Cities), Department of Architecture, Roma Tre University, 21st May 2015.

Fig. 1 - Summary table for the design process of "The Green Heart of Novara" (elaboration by the author).

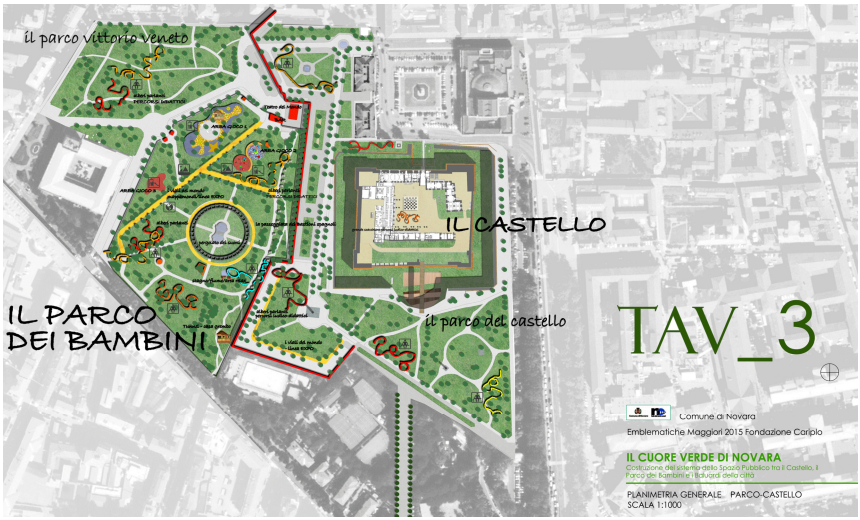

Fig. 2 - Overall plan for the "The Green Heart of Novara" project (elaboration by the author).

Fig. 3 - Workshop summary table for "ArchiLab architecture and photography for the city", with the Municipal Council of Children and the Novara primary schools (elaboration by the author).

Fig. 4 - Redevelopment project for the fountain and new pergola within the Children's Playground (elaboration by the author).

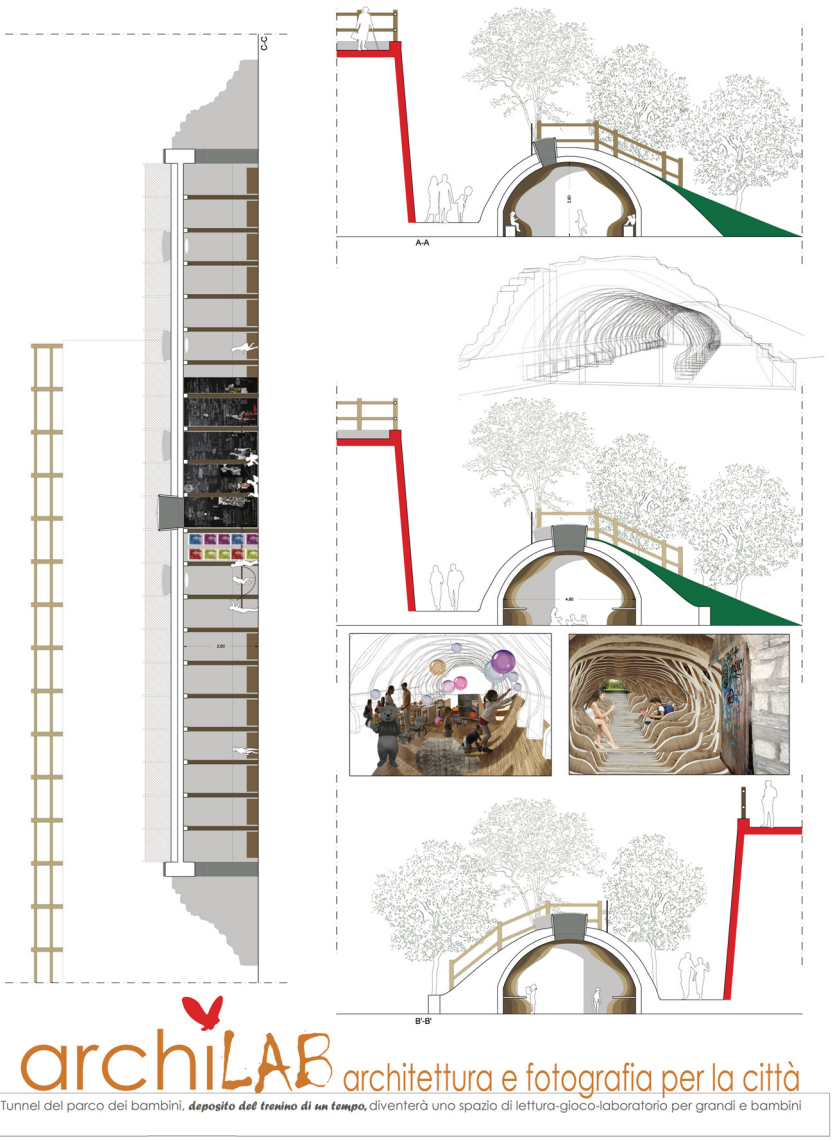

Fig. 5 - Redevelopment project for the tunnel within the Children's Playground, resulting from the "ArchiLab architecture and photography for the city" workshop (elaboration by the author).

4.5 A PROJECT-PROCESS FOR SUSTAINABLE REGENERATION OF THE ABANDONED MILITARY AREAS: THE PIACENZA EXPERIENCE

Matteo Tagliafichi[*]

The abandonment of military areas is a phenomenon that in most cases coincides with a real city fragmentation. This phenomenon attracts many researchers and designers who want to experiment new regeneration projects able to transform the abandoned assets into new attractive spaces for citizens. In recent years, Italy has been very active in recovering discarded assets by developing strategies and laws which facilitate the assets recovery process. Piacenza is so much rich in available areas that it has became a case-study and it has taken part in the "Military Areas as a Public Spaces, MAPS" project (URBACT III). The MAPS project is a European programme launched in 2015 that aims to develop a sustainable and shared urban planning for the recovery of military areas. The experience gained from MAPS has allowed us, as researchers, to test a new model of sustainable and shared transformation, in line with the European requirements.

Introduction

"City in the future" was the topic discussed at the recent *CNAPPC* National Congress[1]. It was underlined the importance of working on urban voids, in line with the development policies implemented by many regions that encourage projects to land zero use, through a regeneration programme of the existing buildings.

The question arises as to whether the military areas abandoned or about to be decommissioned are included in this idea of recovery. In Italy the abandonment of military areas is definitely a problem. In fact, there are no strategies, actions nor programmes that have solved how to recover these areas inside and

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[1] The reference is made to the 8th *CNAPPC* (*Consiglio Nazionale degli Architetti, Pianificatori, Paesaggisti e Conservatori*) National Congress, available at: https://www.cnappccongresso2018.it/ (accessed September 2018).

outside cities. The reasons for the failure of many initiatives and re-use projects are to be found in the unclear national legislation and the crisis that affected the real estate market in 2008 (Gastaldi & Camerin, 2017).

Therefore, at the current stage, they appear as large empty and degraded containers and they are more likely to be a problem than an opportunity for the property. However, something has changed in recent years. At a regulator level, the 85/2010 decree introduced the so-called *"federalismo demaniale"*[2] (the implementation of federalism to state-owned properties) that simplified the procedures for transferring properties. The purpose is to allow local authorities to become owners of State assets on their territory by ensuring the promotion of the areas and buildings. In light of these considerations we could reconsider abandoned areas as an opportunity for social, cultural and economic development and no longer as a problem.

The *Agenzia del Demanio* is an Italian agency very active on the theme of the recovery of disused areas of different nature. It encourages recovery projects able to transform architectural buildings or entire areas into opportunities for the social creative and cultural growth and development. In the wake of this initiative at a national level, the local Administration of Piacenza presented itself as a candidate for the European "URBACT III" programme for the recovery of disused military areas in 2015.

Piacenza obtained the leadership of the MAPS project which involves eight European partners sharing challenges for the recovery of abandoned military sites on their territories. Piacenza is a peculiar case because its urban structure is strongly characterized by military sites which occupy about 4.5% of the urban area[3]. However, they are not all abandoned since many of them are still operating. The local Administration included three military areas in the European programme: the *"Caserma Lusignani"*, 85,000 square metres, the *"Pertite"*, 270,000 square meters and the former *"Laboratorio Pontieri"*, 45,000 square metres (Fig. 1).

From the URBACT objectives towards a sustainable regeneration project

The URBACT network[4] aims to a more aware and participative urban planning. In line with the most advanced regeneration models, we try to encourage a bottom up approach through the active involvement of citizens. The objective is to cre-

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[2] See: http://www.agenziademanio.it/opencms/it/progetti/federalismodemanialeeculturale/ (accessed September 2018).

[3] The data refer to the document present in the Piacenza's urban planning available at: https://www.comune.piacenza.it/temi/territorio/psc/psc-documento-preliminare/allegato-2-masterplan-aree-militari/view (accessed September 2018).

[4] The URBACT network funded by the European Union promotes international cooperation in urban development, encouraging the link between cities to develop local action plans and projects on common challenges.

ate a sustainable urban development from the economic, environmental and social point of view. Participation is the key for guaranteeing a regeneration project because it means bringing new ideas and making the transformation processes stronger and more shared (European Union, 2013).

The URBACT method considers the creation of a group called ULG (URBACT Local Group). It is fundamental for the transformation process as it ensures more sustainability and speed in achieving the plan.

The aim is to stimulate a comparison between the partners and the territorial ULG reference, through a mutual exchange of experiences and procedures. More specifically, the MAPS project, beyond Piacenza, involves eight other European partners who share similar military real estate assets, regional structure and problems (Fig. 2) (European Union, 2018).

The group of Piacenza is composed of different subjects, both citizens and people from Universities such as the *Politecnico di Milano* - which has made available the creation of a research group comprised of researchers and professors[5] -, schools, economic associations (traders, artisans and farmers), social and cultural associations and professional associations.

The district of Piacenza took the lead and it had to organize the policies and the drivers of the urban development. At first the district led the ULG and the actors involved in the urban regeneration process, considering the ideas for the strategic development defined in the municipal plans and urban development policies. However, it was very difficult to identify how to include the theme of military areas within an urban strategy.

The contribution led by the research group helped to understand that the regeneration of these abandoned sites is a problem affecting at the urban, neighbourhood and architectural scales which constitute the city structure. Therefore, any isolated initiative would have been ineffective as it was disconnected from the concept of city redesign. For these reasons the research group, in synergy with the ULG group, identified what were the actions and strategies useful to reactivate the areas at different scales. They deeply examined the relationship between the city and the military sites, in order to define urban regeneration solutions, new connections and a new urban role for the areas (Comune di Piacenza & Politecnico di Milano, ITL Group, 2018).

New urban role means the introduction of new functions in line with the needs of citizens; the fundamental elements useful for the growth of Piacenza in the future have been defined. They include the themes of culture, innovation and the environment.

At an urban scale, the infrastructural and environmental connections will be fundamental for the reactivation of the areas concerning the urban fabric. The connection includes: a new mobility plan offering sustainable innovative mod-

[5] *Politecnico di Milano* group: Dario Zaninelli, Guya Grazia Maria Bertelli, Vincenzo Emilio Zucchi, Paola Bracchi, Pasquale Mei, Chiara Locardi, Mario Morrica, Michele Roda, Anna Solimando, Matteo Tagliafichi.

els and services; an urban plan connecting the green areas scattered in the urban context to the recovery of the historical vault that runs along the Farnesian walls. The plan consists in increasing the vegetation and generating new pedestrian routes and cycle paths. The new connections will become transit and social meeting places.

The general purpose is the definition of an Integrated Action Plan for the development of a shared sustainable transformation landscape specified in the following chapter.

The interpretation of the Integrated Action Plan methodology

The Integrated Action Plan (IAP) is the final result required by the URBACT network and, in line with the "New Urban Agenda"[6], it is considered the fundamental tool for a sustainable urban development. It is a different method for a reconsideration or a new designing of a city or parts of it. Just a few years ago the development of complex urban projects was based on procedures of ideas created by experts, which resulted in bankruptcy projects causing a great waste of public funds.

The European strategy identifies the integrated approach as a solution to avoid wastes and non-functional projects that do not reflect the needs of citizens. In fact, this type of approach involves the participation of citizens from the beginning, useful to identify the best solution in terms of sustainability and utility. The redesign of urban areas is connected to different strategic issues, as well as to development drivers that present challenges for the future, generating an impact on different aspects. Thanks to the IAP it is possible to convey these aspects into a single landscape of an inclusive and shared development.

The IAP is very flexible and it adapts to any need as it gives the possibility of making changes. However, the URBACT methodology is based on economic, social and environmental factors. The URBACT methodology starts transformation processes from the bottom (subjects involved) but it does not provide the necessary tools for the construction of a re-use project. The contribution of the research group, in this sense, has been fundamental for the development of a project able to make the ideas concrete. In fact, it has been provided a model who links the actions at different project scales to different temporal factors, in the short and long term. Planning actions over time, allows the sites to be reused in a short time, it reduces the impacts, it generates new economies and services to fight the degradation.

[6] The "New Urban Agenda" is available at: http://habitat3.org/wp-content/uploads/NUA-English.pdf (accessed September 2018).

The definition of the IAP of Piacenza

The conceived integrated action plan is composed of planned actions following the logic of an open project divided into phases -different times of implementation of the re-use programme. Once defined the strategy at the urban scale[7], the efforts focused on the *Laboratorio Pontieri* area (Fig. 3) to analyse in depth the transformation project based on the requests expressed by the district, its free of charge owner since 2015.

As a re-use project needs a deep knowledge of the place, the research group demonstrated its value by highlighting its strengths and weaknesses. The group made available: studies, historical materials, geometric and photographic surveys of the area. In this sense, the work allowed us to identify strategies, tactics and actions useful for a valorisation programme for the military buildings. The programme considers various proposals such as conservative restoration, interventions to hybridize the buildings with the addition of new elements, demolition; the study of new paradigms to turn an unattractive enclosure to an attractive one, new roles that characterize the open spaces, new accesses and new pedestrian and cycle paths (Montedoro, 2017).

The debate with the Administration is still open as certain choices are limited because many of the existing buildings retain a historical restriction. Design choices belong to an open project that requires a future development, whereas the site transformation into a self-sufficient aggregation pole is strongly connected to the urban context. The new urban role considers the transformation of the site into a real *"cittadella"* focused on cultural, social and innovative activities.

The main proposals received are:

- a market for selling local products with a restaurant or a bar;
- a gym, an open space for sporting activities or entertaining events;
- a school;
- a work space for film and photographic production managed by cultural and artistic associations;
- a cultural recreational area with study rooms, group workshops, reading areas;
- co-working spaces and start-ups;
- workshops for artists and craftsmen for the production and sale of ceramics, jewellery, clothes made from recycled materials;
- an outdoor cinema for the summer season, with the possibility of setting up a space for winter shows.

From the requests received from the group we could define specific themes in relation to the proposed functions that represent the main references for the identification of the actions themselves. The actions are based on different tem-

[7] See actions at the urban scale developed in the chapter "From the URBACT purposes towards a sustainable regeneration project".

poralities, both long and short term and they refer to the construction of a flexible project-process divided into themes:

1. culture / innovation and services
   action 1 - short period
   - a temporary re-use of buildings to host new functions concerning the themes of culture, commerce and sport;

   action 2 - long term
   - the recovery and regeneration of architectural buildings through a process of hybridization between pre-existence and contemporary addition;
   - the consolidation of the temporary activities already established considering new functions;
   - the addition of commercial spaces which would make the area more attractive;
2. public space
   action 1 - short period
   - a temporary re-use of open spaces through events, activities, workshops, open days;

   action 2 - long term
   - the recovery of open spaces through the creation of new squares and routes;
   - the creation of a relationship between existing buildings and the open spaces as a continuity between interior and exterior space;
   - the regeneration of pre-existing green areas with the addition of new collective spaces and new forms of green areas;
3. mobility and connections
   action 1 - short period
   - pedestrian and cycle connections linked to a temporary event to connect *Via Maculani* and *Piazza Cittadella*;
   - guided tours for the citizens;

   action 2 - long term
   - new cycle-pedestrian paths with reference to the existing routes of *Via Maculani* and *Piazza Cittadella*;
   - the opening of new routes that favour the relationship between the city and the river Po.

This type of approach permits to be operational at the early stages through temporary re-use projects that can have different impacts in terms of space and time. They can be an economic-social accelerator in the transformation process, reducing the initial costs as much as possible.

Why temporary re-use in the short term?

The practices of temporary re-use in the short term allow from the critical early stages- to introduce new life cycles between the old and the new destination, avoiding degradation becoming a widespread and critical phenomenon. The military buildings preserve aspects of historical memory and their architec-

tural quality must be saved. Moreover, as their structures and general installation are still in good condition, they need only an adjustment according to the latest legislation.

In light of the above considerations, the temporary re-use of the transformation hypothesized in the IAP is a very effective strategy because it allows both to test the new functions and to open the area. It is also true that *«projects in temporary spaces can be considered subsidiary and they cannot substitute permanent services for the benefits of the community»* (Inti et al., 2014). Temporary re-use can be of different nature with different timings that range from activities of a few days for events, events, workshops, open days, exhibitions, to activities that require few months or years for the development of new enterprise ideas such as start-up, laboratories and new functions of public interest.

The *Agenzia del Demanio* is also working on this line, and it opened a new "temporary use"[8] section to encourage the integration of these practices in the processes of valorisation of the abandoned real estate assets. However, in Italy there is no specific legislation regulating the granting of the spaces; in fact, the spaces management is regulated by concessions granted by the State or by the administrations, based on the needs and factors that affect the space in question.

Conclusion

This paper attempts to offer a contribution that is the result of a research distant from the static self-referenced projects, which do not conform to a society in constant metamorphosis. As a result, the experience obtained the experimentation of a flexible and shared project - able to intercept local urban development policies - which involves actions at different design scales (space), according to a principle based on different time intervals (time), to implement a process of sustainable transformation.

In line with the proposed model - which involves short and long-term actions - in the short term, in synergy with the district of Piacenza and the members of the local ULG group, it was possible to organize, as the first temporary activity, a two-day event "Open Day"[9] which allowed the opening of the *Laboratorio Pontieri* area to the citizens. On that occasion, the programme included: a series of guided tours, digital presentations (case studies) and several debates.

The intervention tactics necessary to define an urban and architectural project need a further study that will be carried out at a later time in agreement with the local administration. The MAPS project ended on May with a final

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[8] Available at: http://www.agenziademanio.it/opencms/it/progetti/temporaryuse/ (accessed September 2018).

[9] The event was held in April 2017, on that occasion around 600 visitors registered.

synthesis document elaborated in synergy with the district of Piacenza. At the moment, the project has stopped because of the change in Administration, and the new Administration is examining the results obtained and the future impacts for the areas in relation to the strategies of development foreseen by the political programme for the city.

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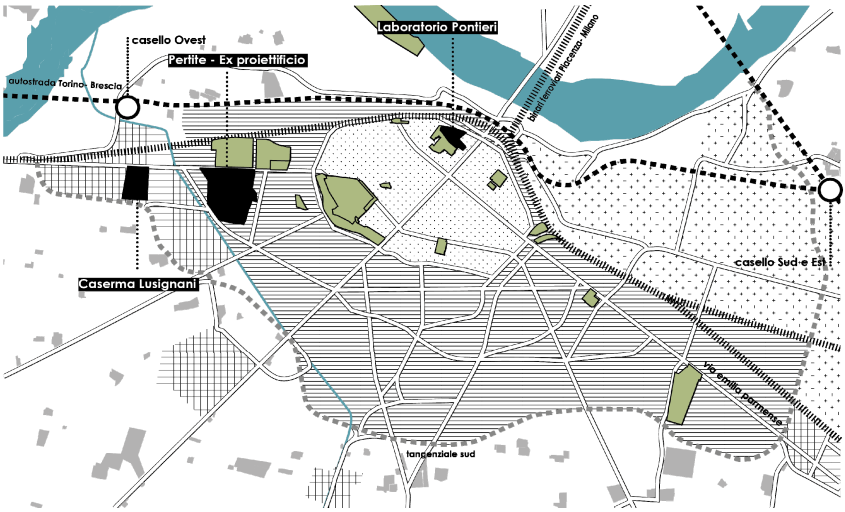

Fig. 1 - From the URBACT purposes towards a sustainable regeneration project.

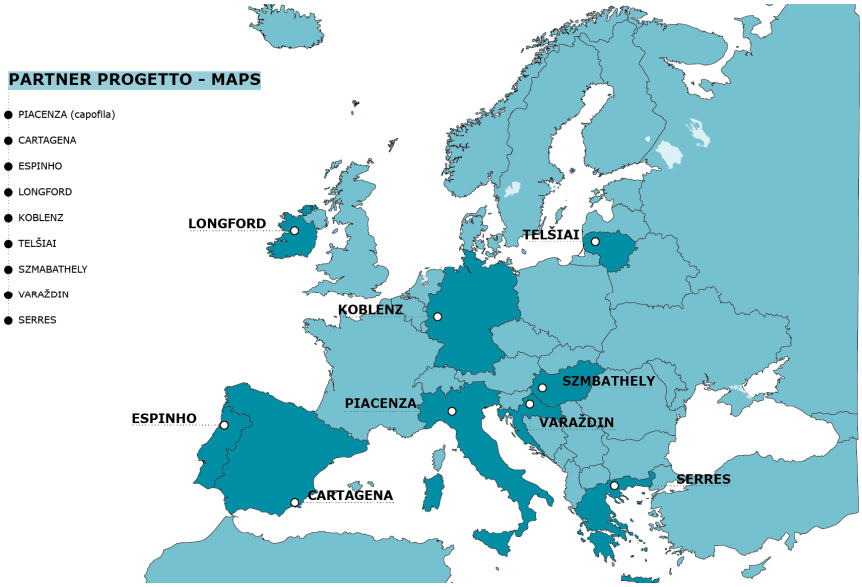

Fig. 2 - European partners part of the MAPS network.

Fig. 3 - Piacenza, the Laboratorio Pontieri area, (photograph by Matteo Tagliafichi).

4.6 OVERVIEW ON THE SUSTAINABILITY OF ENERGY RETROFIT CHOICES FOR BUILT HERITAGE CONSERVATION

Alessia Buda[*]

In recent decades, the energy efficiency and cultural heritage binomial has assumed an increasing importance in the conservation planning process. Historic buildings are complex and delicate systems to handle; this necessitates careful consideration when determining retrofit measures, with a preference for actions that are able to ensure the best conditions of the heritage itself.

This paper is designed as a position report, built through the exploration of a large number of significant studies. The challenge is to find retrofit projects and solutions that are able to balance all aspects of sustainability (environment, society, economy and culture), going beyond the limits of a pure technical vision to approach a multidisciplinary and diachronic perspective, in order to highlight potential lines of research.

Introduction

This study aims to explore the ways in which sustainable development is encouraged and achieved through the retrofitting of architectural heritage. Historic buildings are complex systems, expressions of material knowledge that are unique and unrepeatable in regard to their cultural value because they are linked to a specific context and society. The intention of this discussion is to examine the retrofit criteria that guide our choices, as well as methodologies, in order to achieve a conservative and sustainable approach.

One of the critical issues of conservation is the balance between protection objectives and enhancement measures, which often include other targets enforced by norms and standards (Della Torre, 2013). In recent years we have seen an accelerated interest in the topic of energy efficiency of the existing heritage. Following the last "Climate Action Program 2014" objectives, European legislation on energy efficiency of buildings picked up this topic (EPBD 2010/31/EC), boosting the reduction of CO_2 emissions, the rise of the share of

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renewable sources and the retrofitting of existing buildings. The directives introduced only the broad principles for interventions, leaving to the local legislation the definition of policies (as Italian *decreto ministeriale* 26th June 2015).

Even if the same standards foresee the possibility of excluding historic buildings, this occurs only under specific conditions: «*in so far as compliance with certain minimum energy performance requirements would unacceptably alter their character or appearance*» (art. 4, EPBD). This phrase demonstrates how standards can give the misleading idea that preserving historic value is just a visual and aesthetic issue. In recent years, the absence of a methodology by which to assess historic buildings is slowly finding a resolution with the definition of Guidelines for improving the energy performance of historic buildings - EN 16883 (currently under revision). The interest of the European community in defining an assessment method feasible for all countries seems to demonstrate the particular attention on this problem and the importance of a shared approach.

This makes the task of preserving the authenticity and integrity of historic buildings a challenge. The balance between sustainability actions and heritage preservation is a topic that cannot be ignored without discussing the impact of retrofit on historic buildings. Is it possible to identify best practices which consider conservation as the premise for a sustainable refurbishment?

This paper aims to be a position report on the field of sustainability, addressing the issue of conservation transversally, with an overview on the energy efficiency of built heritage. Given the complexity and breadth of the field, an exhaustive presentation of all topics is not possible; hence, this paper aims to outline a picture of how the scientific community is progressing, to define possible delimitations and outlets of the research.

Which sustainability for conservation?

Historical architecture has to be considered sustainable in and of itself: the use of the existing and local resources and the link with the context (climate, anthropological factors, constructive memory) are essential characteristics that need to be preserved (Pracchi, 2016). As highlighted in the last ICOMOS report, heritage, both economic and social, is a driving force for the construction of a sustainable society. Conservation is therefore a dutiful practice: Paraphrasing the words of the Brundtland Report (1987), it is to be understood as a process of optimization of resources, directed toward the protection of heritage for the future and linked to the enhancement of the present (Lombardini, 2014).

According to these premises, the integration of a set of well-calibrated efficiency solutions could be intended as an activity aimed at ensuring optimal conditions for using the heritage itself. But the relationship between "sustainability" and "heritage" is often reduced to the mere energy efficiency of the

building. This complex problem is simplified into the exclusive matter of energy and cost saving, applying products and technologies (Franco, 2014).

On the contrary, it is fundamental to consider energy efficiency and actions aimed at sustainability not as an act of violence against historical heritage, but rather as innovative forms of protection of the heritage itself, an integral part of the restoration project (Della Torre et al., 2010). The refurbishment of built heritage, which since ancient times has been rooted in a social responsibility to cherish and safeguard cultural goods, nowadays should balance historical values, implement efficient energy consumption and satisfy the users' comfort and social inclusion (Blagojevic & Tufegdžic, 2016).

In literature and in scientific debate, the sustainability of historic building retrofit is evidently becoming a new challenge: many researchers have been asking how best to sustainably preserve cultural heritage, while balancing several aspects. Many sustainability certification systems designed to assess building performance have been developed in recent years (e.g. BREEAM, LEED, DGNB, etc.). However, their rating methods are not suitable for the conservation of historic buildings, but can be used to compare different options in new, converted or renovated modern buildings. For example, they can be used to assess the improvements in energy and materials before and after refurbishment. The recent system developed by LEED, GBC Historic Buildings, features an interface designed to provide a verification of sustainability performance of historic buildings, but a scoring method for rating restoration projects has not yet been produced. Moreover, it does not consider the favourable impact retrofit can have on things like social cohesion and education or on the management of the structure or on its cultural enhancement.

As expressed in the Project "Cultural Heritage Counts for Europe" (CHCfE Consortium, 2015), decisions on conservation, restoration and retrofitting interventions in HBs need to take into account a broader range of benefits that sustainable development can have on historic, artistic, cultural and social values. The preservation of authenticity and use of materials compatible with the originals should also be taken into account. The more diverse the support is for cultural heritage preservation actions, the more those actions will contribute to sustainable development and the more sustainable the preservation of that heritage will be. This has led to an "upstream approach" (Fig. 1) which argues that cultural heritage preservation can benefit from a variety of resources which do not necessarily have to be remarked a priori. This urges us toward a holistic and integrated approach, which requires acknowledgement of the complex nature of managing heritage values into an overall development goal (Van Balen, 2017).

It is well known that preserving existing buildings means respecting each pillar of sustainability (environment, economy, society and culture), all key tools for a long-term and "slow conservation" over time (Moioli, 2015).

This concept of a multi-objective conservation is perfectly linked to the definition of "enhancement", which consists *«in the exercise of the functions and*

in the regulation of the activities aimed at promoting knowledge of the cultural heritage and at ensuring the best conditions for the utilization and public enjoyment» (Code of Cultural Heritage and Landscape law 42/2004, art. 6). According to this vision, conservation and valorisation cannot be considered as two different activities, in charge to different subjects, but must be integrated within the restoration project. As conservation is understood as a process, the point of view shifts from present time to future and widens the boundaries to economic planning, to cultural activity design, and to impact evaluation of conservation and enhancement.

Methodology

To deepen the connection between energy refurbishment projects and pillars of sustainability, a selection of papers on the retrofitting of built heritage has been performed. Attention is focused not only on the theoretical aspects of the topic, but on improvement actions, analysing both cultural and environmental impacts through a review.

The first step was to select the papers dealing with sustainability and energy refurbishment of historic buildings. A customized search was carried out through three web databases (Web of Science, Scopus and Google Scholar) where a set of keywords (Sustainab*, Retrofit, Historic* Building) has been used. A limited range was fixed for publication year (2010-2018), language (English), subject area (Social science, Environmental science, Business and Energy) and document type (Article, Review).

After analysing abstract and contents, only articles related to building heritage retrofit were selected: 45 references were reviewed in total. Parameters identified were: Country; subject; scope; assessment method; retrofit measures.

Results

The survey revealed- perhaps not surprisingly- a large number of studies from across Europe (just 2 were no-EU), of which the majority come from Italy (45%): one of the possible causes of this high percentage could be the high concentration of heritage in our country (33 every 100 Km^2). A number of papers deal with university buildings (28%) and museums (24%): the former are mostly academic works, the latter experimental studies on microclimate monitoring and building refurbishment, commissioned by public administrations and local owners. Residential buildings are less frequently discussed, representing only 21%: this datum is due probably to a minor interest in the private sector for the evaluation of sustainability impact. Other categories, such as monuments, libraries and churches, do not reach 10%: they mainly consist of excep-

tional case studies dealing with microclimate aspects.

The survey shows a significant difference in the scope of research (Fig. 2): the topic of "sustainable refurbishment of historic buildings" involves different research communities and different fields. In this collection of cases, the most recurring goal is the amount of energy savings (39% of papers - between them: 18% try to reach nZEB performances, a 30% to reply the case study results on urban scale). In the second position we find cost savings (21%), followed by the environmental impact, meant as CO_2 emissions reduction (16%). Just 14% of the papers expressly define heritage preservation as one of the objectives of the study; just 10% the users' involvement as a goal in the decision-making process.

The range of studies and fields examined demonstrates the ways in which scientific publications are focused on economic, social, cultural, and environmental domains. The result is that few documents try to reach two or more sustainable domains, trying to combine several aspects of the projects.

This data collection reveals another interesting feature: beyond the selected studies, there is a lack of definitive consensus about the assessment method of retrofit choices. The evaluation criteria are mainly limited to cost-optimal evaluation of direct benefits, which focus on energy consumption (environmental) and cost savings (economical). Other aspects such as social involvement and building management are scarcely debated (Tomšič et al., 2017).

Analysing the papers' content in greater detail, it has been possible to identify categories of popular interventions, to understand which is the most common working strategy adopted by retrofit designers (Fig. 3). Retrofit measures are mostly interventions on the envelope (41%) or plants (28%). There is an evident prevalence of technicism, moving away from an effective cultural advancement and whole sustainable approach. When we consider the system of public incentives which has been driving the economy for many years, it is not surprising that almost all of these interventions include window replacement: although the high environmental and cultural impact that this operation implies in terms of dismantling the old window, with its concomitant loss of material testimony, it is presented by the majority of studies as an efficient operation. This means that the repercussions of individual choices on the entire building system are not taken into account.

Another notable feature is an increasing interest, evident in a couple of studies, in behavioural change as a retrofit low-impact option. They highlight the importance of the homeowner and users in the decision-making and the building improvement, including also the possibility to define a "management booklet" to save energy and control internal comfort. It has been demonstrated that conservation behaviour change induced by policy and retrofit strategies could potentially bring substantial energy saving, significantly higher than that from physical improvement (Rota et al., 2015).

Other particular and non-common case studies are those related to the adop-

tion of low-impact measures: in Negro, Cardinale T., Cardinale N. and Rospi (2016) they decide to reuse the existing air-ducts to introduce a new ventilation system, inserting tents and window films and adopting simple measures of maintenance. Finally, just 6% of documents include restoration measures and planned maintenance: although a constant maintenance is fundamentally good for conservation, it is not reflected in current policy (Forster & Kayan, 2009).

Some examples in the literature show good results in terms of a sustainable conservation model: the Spinning Mill of Sulbiate (Moioli, 2018) is a preventive conservation example, where every single planned strategic action is monitored. The intervention began with a definition of the quality of the procedures and a collaboration among public bodies and the local community. Two buildings were restored and given a new life, changing them into sustainable buildings, with low-impact measures and new cultural and economic functions. Preventive conservation is the best sustainable and cost-effective strategy to reduce energy demands and operative costs, without jeopardizing conservation and human comfort. Implementing planned conservation, therefore, is something more effective than implementing maintenance: it means setting a totally new scenario, posing questions about strategies and links between preservation activities and local development processes (Della Torre, 2010).

Discussion and conclusions

Analysis of the literature revealed a lack of an integrated vision of energy retrofit projects in a sustainability framework. In fact, with the exception of few cases, the projects failed to address all the aspects in a coherent and complete way. Conservation action has to be ensured through a coordinated and planned activity of study, prevention and maintenance, a complex process that built the foundations for refurbishment intervention. These actions not only must be part of the long-term vision of the project, but also must be verified during the planning and start-up phases.

Presented here are the four fundamental conclusions that emerged from this study (Fig. 4):

- context - the intervention on heritage buildings must consider all constraints (legal, constructive, cultural, financial, etc). It is important to start with a good knowledge of the historic asset and the resource availability;
- stakeholders - actions must be regulated in accordance with who manages the building (owner, public body, moneylender);
- criteria and objectives - specific criteria and objectives have to be defined according to building context, stakeholders and intended use (e.g. artworks preservation, users' comfort etc.);
- outcomes - an intervention is not a single planning moment, but could have an impact on environmental, societal, cultural and economic domains.

An holistic approach is required: with this approach, we consider many factors and their implications for the building when incorporating energy efficiency measures on heritage buildings. The analysis of the information collected, combined with the availability of resources for the building (construction behaviour, personnel, budget), may lead to the elaboration of a conservation plan. This plan must necessarily highlight priorities for action that will be organized on the basis of time (short, medium, long) and on cost evaluation (low, medium, high). The actions of a sustainable conservation must therefore be determined on a case-by-case basis, pinpointing as primary goals its maintenance and enhancement.

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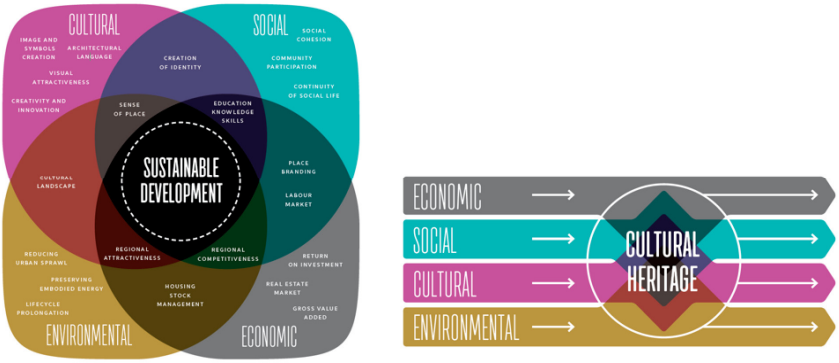

Fig. 1 - The different subdomains identified in the collected studies mapped in the holistic four domain approach diagram (left); Upstream perspective on cultural heritage impact (right) (source: CHCfE Consortium, 2015).

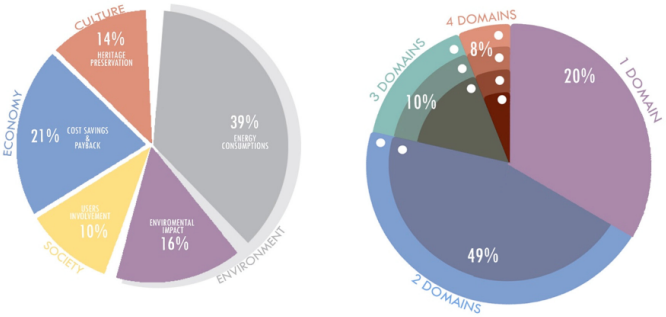

Fig. 2 - Analysis of the retrofit goal (left); The interrelation of all four impact domains as identified in the collected studies (right) (elaboration by the author, based on the survey).

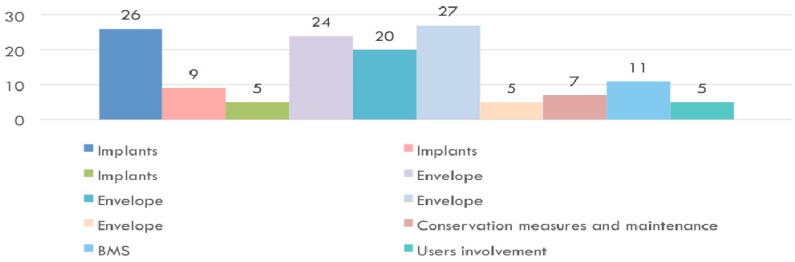

Fig. 3 - Analysis of the retrofit measures (elaboration by the author).

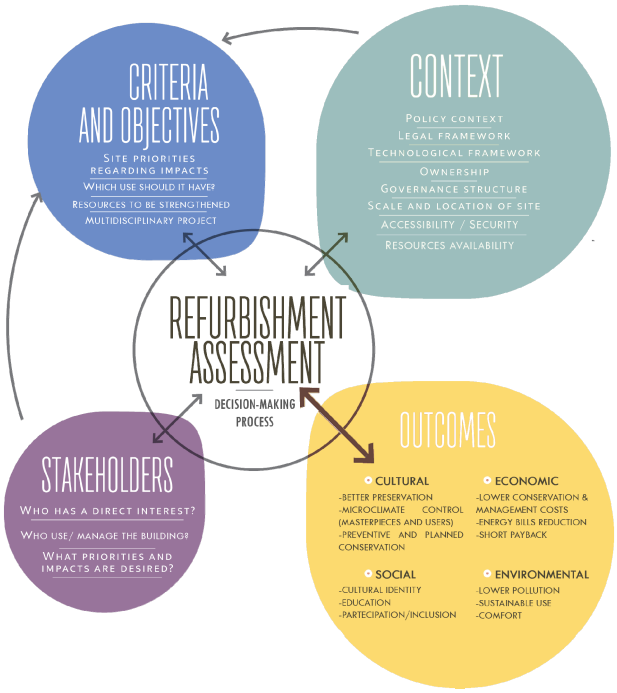

Fig. 4 - Refurbishment assessment decision-making process (elaboration by the author).

4.7 IMPACT INVESTING. INNOVATIVE FINANCIAL TOOL TO SUPPORT REAL ESTATE PROJECT

Genny Cia[*]

The 2030 Agenda for Sustainable Development focused on matters affecting the world and urged solutions. Nowadays we are aware that charities and donations are not enough to face global issues and that we need more sophisticated instruments. That is why «*Social Impact Investing is considered an alternative way to invest resources*» (Finance in Motion, 2014).

The findings of the present work contribute to highlight how crucial is the impact investing segment in real estate, even if it is considered nascent in comparison to ripe real estate investing in the European market.

Introduction

The 2030 Agenda for Sustainable Development and its Sustainable Development Goals[1] have recently highlighted problematics affecting the world and the urgency to solve them as soon as possible, laying the foundations for starting changes.

Nowadays it is largely diffused the idea that just charities and donations are not enough to face global issues. The need of more sophisticated instruments bringing resources to the cause is the only solution to recover from mistakes of the past, being aware that today actions will irreversibly affect the future.

In the last ten years, the social impact investment sector has become increasingly important. The causes are determined by several factors including socio-demographic and socio-economic changes, such as increasingly weighing on social spending, highlighting the need for a renewal of the current welfare system.

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[1] SDGs: Sustainable Development Goals. On 1st January 2016, the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development, adopted by world leaders in September 2015 at an historic UN Summit, officially came into force. Over the next fifteen years, with these new Goals that apply universally, Countries will mobilise efforts to end all forms of poverty, fight inequalities and tackle climate change, while ensuring that no one is left behind. Source: http://www.un.org (accessed September 2018).

The research by Eurosif (2014) argues that impact investing will play an important role in the world economy. Martin (2013) and J.P. Morgan Global Research (2010) estimate that the global market for impact investing can reach one trillion dollars in 2020 and represent 0.1% of total financial assets. As far as the Italian context is concerned, the impact of investing market could, in 2020, reach 1% of the total assets managed, equal to approximately € 28.9 billion.

Guzzetti[2] at the conference held on November 13th, 2017 for the presentation of Cariplo Social Innovation, introduced the theme, that brings together the challenge of the United Nations in considering impact investing the tool with which develop a social economy, putting people at the centre of the project:

> *«We live in a time of maximum profit, which increases the fracture of social classes and poverty. The time has come to discuss whether traditional finance is still useful for peoples' development or whether we need to start discussing new finance, based on a paradigm shift that puts man at the center. Today we call it impact investment, but the meaning is the man at the center of the project, the development of the social economy, the finance for the common good and for the future, for the elimination of social inequalities».*

The evolution of impact investing

Despite the youth of this movement it is fairly difficult to identify Impact Investing's birth date. What it is surely evident is the exponential growth of interest for these themes from 2007. Indeed, global financial crisis empowered social problems such as raising in unemployment level, increase of social divide, inefficiency of welfare structures, scepticism, and discontent diffusion among citizens. Public and private companies and institutions felt the need to reconcile economy with society and environment (Petrick, 2013; Social Impact Investment Task Force, 2014).

In 2009 J.P. Morgan jointly with Rockefeller foundation and the United States Agency for International Development, created GIIN[3], and then, the needs for regulations and standards led to create the Global Impact Investing Rating System (GIIRS) and the Impact Reporting and Investment Standards (IRIS). Successively, also nations and governments implemented strong strategies supporting social and environmental activities.

In 2011 the United Kingdom approved the Dormant Bank and Building Society Account Act that brought to the creation of Big Society Capital[4]. At the

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[2] The President of *Fondazione Cariplo*.

[3] Global Impact Investing Network is a non-profit organisation dedicated to increasing the scale and effectiveness of impact investing around the world in order to support research to accelerate the development of impact investing industry. Source: https://thegiin.org/about/ (accessed September 2018).

[4] Society Capital aims to improve the lives of people in the UK by connecting investment to charities and social enterprises that are creating social change investing up to now £ 600 mil-

same time in USA the Private Investment Corporation was created, providing $ 285 million for impact funds, and the Small Business Administration started the Impact Investment Initiative. In the same year also the governs of Australia and Europe moved toward impact investing implementations respectively through the introduction of the Social Enterprise Development and Investment Funds and the approval by commission of the Social Business Initiative[5]. In 2013 the G8 established a special task force, to bear impact investing initiatives, now replaced by the Global Social Impact Investment Steering Group (GSG) that continues the task force engagement of catalysing a global social impact investment market. In the last years big financial companies entered the impact field, such as BlackRock Inc and Bain Capital LP, confirming the increasing interest for impact investing not only at the political level but also as alternative investment instrument[6]. Finally, in January 2016, the Sustainable Development Goals by United Nations mobilised efforts in order to face global problems (i.e. poverty, climate change, and inequalities).

Impact investing definition and process

Often, investments having social and sustainable objectives are traced back to philanthropy without any distinctions among them.

A definition is proposed by *Polisif*, the observatory of the *Politecnico di Milano* that studies the ecosystem of social impact finance:

> *«The term social impact finance refers to a strategy of allocation of resources in which capital is intentionally intended the financing of initiatives that generate a so-called blended value (Emerson, 2003), combining the creation of a measurable social and environmental impact, economic sustainability and, in certain circumstances, the achievement of a financial return for the investor».*

The most diffused definition is provided by GIIN:

> «*Impact investments are investments made into companies, organizations, and funds with the intention to generate social and environmental impact alongside a financial return. They can be made in both emerging and developed markets and target a range of returns from below market to market rate, depending on investors' specific objectives*».

It underlines the importance of the financial returns as necessary elements, albeit not sufficient, but emphasises the creation of social, environmental, and

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lion. Source: https://www.bigsocietycapital.com (accessed September 2018).

5 Social Business Initiative (SBI), is a strategic plan aiming to promote and develop a financial system supporting social enterprises and to simplify regulatory framework as well. Source: http://ec.europa.eu/growth/sectors/social-economy/enterprises_en (accessed September 2018).

6 Data and information about impact investment history has been collected from the research of "Tiresia" (Technology and innovation research on social impact) a joint research centre of *Politecnico di Milano*.

financial value.

The structure of impact investments follows that of traditional one; the market dynamics are the same and are governed by the meeting between demand and supply. Supplier of capital are basically investors looking for opportunities. They are developing financial institution, multilateral banks, foundations, high net worth individuals, family offices, institutional investors, corporates, and also retail investors. The meeting of supply and demand is made easier by financial intermediaries and service providers.

Among the main characteristics there are financial return, impact measurement[7], and intentionality.

Financial return is necessary to attract investors and resources. According to the definition of impact investment, returns may be below market or at the market rate. Different investors types have different expectations, not all investments are done for profit maximisation.

The annual impact investor survey performed by GIIN, on 208 impact investors[8], shows that 76% of investors have reached the expected return on investments, whereas the 15% outperformed and only the 9% underperformed.

Besides financial return, impact investments require social and environmental outcomes. The measurement of impact is the key in impact investing field. The evaluation process starts with an input analysis of the required resources; the second step comprises the activities necessary to transform resources into outputs, either tangible (goods) or intangible (services). The next one is the translation of outputs into outcomes, social and environment effects. Lastly there is the impact evaluation that is the definition of the long-term changes resulting from outcomes.

The last requirement is the intentionality. It means the awareness that used resources must reach not only an economic return but also providing prefixed social and environmental benefits. All impact investing conceives social and environmental as a quantitative variable.

The impact investing market dimension

Impact investing is a new market registering year on year growth both in amount and number of investments. The total amount of assets reached $ 114 billion in 2016, with $ 22,1 billion investments only in the last year. Forecasting suggests an increase in capital invested of 17% for more than $ 25 billion in 2017. North America and Europe head the market followed by Sub-Saharan Africa. Assets allocation is odd distributed, housing takes first place with 22%

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[7] The Social Impact Investment Task Force develops ad hoc metrics for impact measurability.

[8] Impact investors are for example: fund managers for profit or non-profit, foundations, bank or developed financial institutions, family office, pension fund, etc.

of assets share far from Energy and Microfinance accounting respectively 16% and 12 % of the share.

As anticipated before, the sector is very young, having been created in USA and United Kingdom ten years ago. In Italy, although there is a good environment to make the impact investing grow, it has been introduced only in 2013 in concomitance to the creation of a task force during the G8. Nowadays, Italy still finds problems to launch impact investing sector, even if there were interesting developments in the last years such as the new legislation bearing innovative and social start-up, the introduction of rules for equity crowdfunding and also projects carried on by public administrations, banks, and foundations. The biggest impact investing interventions are limited yet on social housing, even if *Cassa Depositi Prestiti*[9] (*CDP*) recently issued also the first Italian impact bond, separated from social housing activities, that achieved great success with abroad investors. *CDP*, through its SGR, represents the most active institution in the field of social housing through the creation and management of *FIA* (*Fondo Investimenti per Abitare*) and the recent launch of *FIA 2* still in the phase of resources collection. *FIA* is a fund of € 2,28 billion, investing in social housing, subscribed by *CDP* for $ 1 billion, € 140 million from the *Ministero delle Infrastrutture e dei Trasporti* and € 888 million by banks, insurance companies, and private social insurance institutions[10].

The opportunities of real estate impact investing

The fields of application for impact capital are quite diverse. According to impact investing in real estate (Impact in Motion, 2014) impact capital that intends to achieve both a financial return and a social or environmental impact is most successful in the areas where needs are not being fully met by the state or private markets.

Some fields give more opportunities than others, for example affordable housing, ageing, underserved communities, and green buildings (McKinsey Global Institute, 2014).

According to the ten-year report (2014), the poorest communities are affected by unemployment and low incomes, and private investors are also scarce in these areas. The research shows that EU subsidy programmes and specific investments from national, regional or local governments in local businesses

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[9] *Cassa Depositi Prestiti* (*CDP*) is a particular Italian financial institution. It has the structure of a joint stock company, which is typical for private company, but it is controlled for most of the part, 83%, by a public entity (*Ministero dell'Economia)* and 17% by banks. It is defined as the national promotion institution and its purpose is to provide resources to invest in projects with the common aim of improving the situation of the country.

[10] Source: http://www.cdpisgr.it/social-housing/FIA/caratteristiche-fondo/index.html (accessed September 2018).

characterised by strong links to their community, produce significant local job creation, general business activity, increased income, reduced social exclusion, improved health and education, in addition to reduced crime.

The impact funds find a lot of opportunities in under-utilised property, unmet local demand, local committed workforce, and low competition.

For example, in Belgium there is *Phitrust Partenaires*, investing in Ethical Property Europe (EPE), which turns under-utilised buildings into high-quality, environmentally friendly office spaces for non-profits, charities, and social enterprises, offering tenants affordable rent. This business model was replicated in France with "Etic".

This kind of activities have different impacts, one of them is the innovative scalability business models for underserved communities, being implemented in new markets or new countries.

Impact real estate, like all impact asset classes is very close to the traditional concept of sustainability: economical, environmental, and social (Vecchi et al., 2014).

According to "Sector Report: Real Estate" (2015) buildings account for 40% of global energy consumption and 30% of CO_2 emissions (the real estate industry is one of the largest single emitters of greenhouse gasses), and major players are beginning to recognise the growing environmental and regulatory risks to which they are exposed.

According to the United Nations Conference on Climate Change (2016), green buildings comprise a market that is over $ 260 billion with anticipated growth of 13% per year through 2020, helping to also push sustainability improvements in Real Estate Investment Trusts (REITs).

Alternative financial instruments to implement change

The growth of the market dimension made the level of specialisation more and more elevated, creating sophisticated investment instruments. Among the most innovative: green, social, and sustainable bonds and social and development impact bonds.

Green, social, and sustainable bonds are investment products enjoying a good level of maturity. They are debt instruments financing activities, projects or enterprises able to generate environmental or social impact. In particular, green bonds have the aim to finance or re-finance environmental projects whereas social bonds are addressed to social objectives such as healthcare and social housing projects.

Sustainable bonds are instead bonds encompassing both fields. Many times, they are not considered as impact investments because they are not in compliance with all three requirements of impact investing: financial, environmental, and social returns, measurement and monitoring the impacts, and intentionality.

Bloomberg New Energy Finance forecasted the doubling of green bonds market from 2015 to 2016.

Social bonds have a lower dimension market. In Italy *Cassa Depositi e Prestiti* (*CDP*) has recently launched the first social Italian bond addressed to international capitals market, a bond of € 500 million, in order to support small and medium enterprises placed in deprived areas.

The main characteristic of social and development impact bonds lays on the presence of the Government as promoter.

These products stem from the common need to face social and environmental issues with minimum capital exposition, implementing cost-saving procedures.

In case of success, each Social Impact Bonds (SIBs) should be able to provide both capital gain for investors and cost saving for public administrations or local entities. The feasibility of public-private partnership is implemented through a cost-benefit analysis that translate social and environmental benefits in money. In this way, investors will pay basing on achieved social and environmental targets whereas governments will enjoy solutions to their social or environmental issue in terms of cost saving.

The market dimension of Social and Developments Impact Bonds is still small. From the launch of the first SIB in the UK, up to the middle of 2017, 89 SIBs have been contracted. They were launched in the UK to finance a programme addressed to help and aid the rehabilitation of ex-prisoners from the jail of Peterborough. The targets set up by the government were based on recidivism reduction. The Social Finance collected £ 8 million invested in specific programmes that spanned from accommodation and medical services, employment and training, to other types of support. The repayment of the investors depended on the decreasing in recidivism level. If the level of recidivism dropped by 7,5%, investors would have achieved extra profit from 2,5 up to 13%. Impact outcomes registered a reduction of recidivism of 8,5%, therefore guaranteeing to all investors and the government to earn a profit from the first Social Impact Bond.

Conclusion

The main sectors in which capital is invested are education and health, environment and sustainability, social policies, personal and community services. This means that investing is impacting both sector, which are transversal to traditional market segments. The impact funds will have to find a way to position themselves in a highly mature market. Their success will be determined by addressing social needs that are not being fully met by the state or private markets (Big Society Capital, 2014).

Thanks to the social sector experience and the relationship between risk and

return, they are able to: catalyse private resources in order to de-risking a project, fill gaps and shortages in social real estate[11] i.e. case in affordable housing markets (see Oltre Venture), scale and standardise business model to attract mainstream investors and finally to generate new resources and competences to put back in the local market.

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[11] For more information on Social Real Estate see: Zaccaria et al., 2018.

4.8 DESIGN THE RURAL LANDSCAPE. LANDSARE LANDSCAPE ARCHITECTURES IN EUROPEAN RURAL AREAS

Roberto Bolici[*]

The valorisation project, oriented to the theme of cultural heritage, fits into a constantly evolving scenario, catching unprepared both the operators of the sector and the whole Italian culture accustomed to defending the heritage with public protection measures focused on the institution of constraint. The model is rapidly changing under the impulse of community experiences and the effect of national orientations, which are responding to the new role of management of the cultural heritage of the State and of public and private institutions. The LandsARE transnational project "Landscape architectures in European rural areas: a new approach to the design of local development", which involved seven rural areas between Italy, Germany and Scotland through the cooperation of the LAG[1], bears witness to this[2].

A new way of conceiving the enhancement of the landscape

The positive expansion of "perception of the landscape and its interest" increasingly emerges, in fact the concept of enhancement and protection no longer concerns only landscapes of particular beauty, protected by protective measures focused on laws belonging to the past, but the whole landscape of everyday life (Council of Europe, 2000). In particular, there is now a tendency to consider as a value also the change which, in view of the freezing of forms inherited from the history, in most cases in the past, was pointed out as a questionable and hardly acceptable solution. The progressive change of approach allows attention to be paid to policies, actions, actors, and resources necessary to preserve,

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[1] Local Action Groups. The LAG is a partnership bringing together public, private and civil society organisations from a rural area with the aim of applying *LEADER* (*Liaisons Entre Actions de Développement de l'Economie Rurale*) rural development methods.

[2] This text takes up and broadens the reflections developed in the text "Il progetto, strumento di valorizzazione del patrimonio rurale" (Bolici, 2014).

maintain or retrain existing landscapes, therefore not only more constraints, but real forms of active management that involve, motivate, and empower the many people who in various ways participate and intervene in the construction of the landscape. Basically, the protection and exploitation regimes are calling into question the artificial separation which very often divides them even into operational practice by referring to different subjects and practices but applied to the same territories. Specifically, with the assumption of transformation value, design must necessarily address landscape-related issues in an integrated way, territory, environment, and society and become an instrument for interpreting the values of the existing and the transformation of the landscape. Talking about enhancement project necessarily leads to defining in an innovative way the landscape, in fact despite a strong change is taking place, a predominantly monumental conception that tends to extrapolate from the landscape context the cultural heritage to which public protection measures apply remains fixed in the collective imagination. In this sense, the landscape can no longer be considered the result of the sum of the various cultural goods existing in the territory, but a cultural heritage, in the broad sense, that involves in a relational way the whole territory and that needs intervention strategies articulated and integrated, able to support and value the differences recognizable in the local contexts. In this direction it is possible to consider the landscape as a heritage of identity resources whose understanding requires a deep knowledge of the processes of selective accumulation that have acted over time and above all a knowledge strong interdependencies between environmental frameworks; settlement dynamics, local society practices, and cultural and symbolic values of the era. The landscape defined under this new light is a heritage made up of differences and irreducible diversity, before that of unitary figures. Local landscapes, through the specificities of their relational patterns between culture and society, acquire character and quality of meaning that make them recognizable by difference with other landscapes. In the context described above, the rural landscape is perfectly suited, which is a complex system with production aspects being put in place, cultural and environmental issues and thus constitute the cornerstone between human activity and the environmental system.

The project as a tool for the enhancement of rural heritage

The rural heritage is the ideal tool to be used in the project to implement exploitation processes whose main objective is to maintain the efficiency of ecosystems and the preservation of a representative image of the landscape. Generally, this representativeness is based on the correct return of historical values where it is possible, or on the sustainability of transformations, when necessary, and finally on the creation of new landscapes, where the original values have been completely lost. The project, operationally, is required to maintain the charac-

teristics of the constructive values, constitutive of morphologies, taking account also of the architectural typologies and to provide development lines compatible with the different levels of values recognised and such as not to diminish the landscape value of the territory, therefore with particular attention to the protection of agricultural areas. Finally, it is required to redevelop those parts that have been compromised or degraded in order to recover existing values or to create new, coherent and integrated landscape values.

In this logic reflections have been developed which, overcoming the dualism between conservation and transformation, have found in the transversality of disciplinary contributions, in the interscalarity of planning actions, in the trans-sectoral nature of the programmers' interventions and in the cooperation of the different subjects (Mussinelli, 2014), the possible new methodological approaches, no longer focused solely on material and visual aspects, but which also place the emphasis on perceptible identity values and on the centrality of the man-made landscape (Tempesta & Thiene, 2006). The architectural heritage of the rural landscape is a testament to the relationship between human activity and the environment that characterised the territory in the agricultural economy of the past and therefore constitutes a value of historical identity cultural to be safeguarded.

The architectural heritage of the rural landscape as a territorial identity

In the context described above, in addition to the issue of the protection of cultural goods, it becomes necessary to establish a coherent management of the relationship between the preservation of heritage inherited from the past to make it available to future generations and its exploitation in terms of investment, human, environmental and economic resources (Mussinelli, 2014).

With particular reference to this subject, the European Community, within its sectoral policies[3], proposed the use of cultural heritage as a vehicle to promote and strengthen the identity of the territories and to generate new economic development. The opportunity to consider cultural goods as a resource liable to be managed makes it possible to produce value directly or indirectly in relation to the possibility of their use and conservation. Effective and efficient management of assets, trade-off between protection, conservation, and fruition, within a framework of balanced social profitability of assets is at the basis of the process of "valorisation" of territorial capital (Schiaffonati, 2012).

There is a gap between the opportunities offered by European policies and their effective applicability, as local authorities by their nature are more oriented towards spatial planning and management, in this sense the presence of

[3] The Maastricht Treaty (1993) allowed the European Union, historically oriented towards the economy and trade, to promote cultural actions for the preservation, dissemination and development of culture in Europe.

territorial bodies is fundamental (Riva, 2008) since they have the competences at the local level, the tools and network needed to promote the launch of new economic initiatives and promote the enhancement of the human and material resources of the territory, stimulating collaboration between local authorities, private entrepreneurship, collectivity, and universities. European rural policies have moved in this direction, expressing the need to experiment with new approaches to territorial development, linked to the direct involvement of communities. These directives were responded to in the *LEADER* Community initiative programme implemented by the Structural Funds for economic and social cohesion. The programming allowed the formation of Local Action Groups, actuators of new approaches to rural development based entirely on the bottom up methodology (Paternò, 2010). At the local level, many projects have been activated that have taken the opportunity to protect and enhance the heritage as a response to the approval resulting from the processes of globalization, finding space for its development in policies and instruments of territorial orientation.

Experimentation in inter-territorial and transnational projects for European rural areas

The inter territorial and transnational cooperation project LandsARE "Landscape architectures in European rural areas: a new approach to the design of local development"[4] finds in a partnership of Local Action Groups[5] the ideal protagonists for its implementation, identifying in the territorial capital the leverage on which to base the economic development of the territory and architectural enhancement, landscape, environment, and tourist benefits of the rural heritage. The proposal was born from the need expressed by the parties involved to trigger processes of territorial development, in a sustainable way, to contribute to the enhancement of the landscape. The main objective was therefore the creation of a network to develop and disseminate a method of interpretation of the landscape and of the rural environmental cultural heritage as a lever for growth of the reference territory. In particular, the project explored issues such as the identification and promotion of innovative ways of exploiting the rural heritage, both from an economic point of view, as a lever of attractiveness of tourist flows, both social, as an element of connection with the territorial identity. The principle underlying the activities of the network is the recognition of the rural landscape as a fundamental component not only of the culture of a place, but also of the territorial identity itself.

Having as common denominator the uniqueness of the landscape, the presence of important cultural and environmental heritage and the need to raise

[4] Transnational cooperation *LEADER* 2007-2013.

[5] "LAG Oglio Po terre d'acqua", from 2018 "LAG Oglio Po".

public awareness of a new approach to the sustainable use of the landscape, each participating LAG has developed the theme of enhancing the rural landscape in relation to its own intrinsic characteristics. The question that arose, upstream of the development of the project, was how to identify and value, according to an integrated local development approach, the elements characterising the rural landscape. The development of coordinated territorial development strategies, such as territorial openness according to a systemic logic, the capacity to integrate local micro-economies into virtuous circuits, to involve the rural communities in the paths of valorisation and to offer forms of acceptance and enjoyment based on the valorisation of their rural, cultural and natural heritage, are the answer.

The preliminary phase, common to all projects, has been the cognitive analysis aimed at identifying the strengths, weaknesses, threats and opportunities of the territorial contexts involved. On the one hand, the picture showed the presence of a valuable cultural and landscape heritage, which was not properly exploited and in some cases degraded, and on the other the need to strengthen the strategies of valorisation of these goods as a prerequisite for the economic development of the territory and for the promotion of the area also in tourist key.

Specifically, the project developed in the territory of the LAG Oglio Po has been designed in line with the main strategies of territorial development, as well as with the projects to enhance the cultural and landscape heritage, in a logic of continuity of intervention with some initiatives launched on the territory. Among the projects that have determined an effective model of management, valorisation and promotion of landscape elements emerges "Greenway of Oglio - The river Oglio cycling route from Tonale to Po" which saw the structuring of a slow fruition route along the river Oglio. The same theme was also addressed in the "Single route system", which provided for the identification and upgrading of the routes connecting the towns and the territory. In addition, land-use development activities related to river infrastructure have been developed with the project "*Le Vie d'Acqua del Nord Italia*". The development of these projects has been made possible thanks to the strengthening of the management processes and enhancement of the local cultural and landscape elements in place, to the integrated tourist offer and to the start of joint reflections on the possible modalities of promotion and fruition of the territorial assets.

Phases, actions, activities and tools of the LandsARE project

The LandsARE process, aimed at improving knowledge of the landscape heritage of the Oglio Po area and its degradation, is divided into the phases of knowledge of the landscape heritage of the Oglio Po area and its state of degradation, the promotion of the project activity and finally the dissemination of the

results.

The first phase of knowledge of the landscape heritage of the Oglio Po area and its state of degradation consists of seven actions. The first of these provided for the structuring of a database and the identification of architectural assets through the consultation of institutional sources that recognize such artefacts as representative architectural historical heritage of the local cultural identity. The assets identified have been catalogued by reference to unique typological categories in order to systematise and make comparable the data collected with other existing databases. The information system led to the establishment of an overall census of the architectural and cultural heritage of the LAG Oglio Po territory. The second step was to read the rural heritage in its relations with the landscape resources system, environmental and naturalistic starting from the identification and collection of planning documents prepared at provincial and regional level. The elements analysed covered different aspects related to the characteristics of the territory, also read across each other in order to bring out mutual relations. The third action provided for the structuring and compilation of the forms, which took place from the data collected during the census and recorded in the database. Subsequently, the selection of rural heritage assets was carried out based on criteria that allowed highlighting their particular features in typological, architectural, and environmental terms. Compared to the categories identified, the goods related to specific types have been chosen, followed by a further selection of goods, identifying those that best characterise the environmental and landscape context. The search, through the identification of a series of parameters related to the intrinsic characteristics of the good and the relationship with the context in which it is inserted, has identified the architecture emblematic for the development of possible actions for the recovery and enhancement of the rural heritage of the territory. The fifth activity included the census of the state of degradation of the heritage, determined by an analysis that led to a judgement, expressed in accordance with the principles of preventive and planned conservation, on the overall state of the asset. Indicators were then defined for assessing degradation in order to assess its severity and spread. The last action of this first phase has led to the definition of the list of priorities of intervention on the assets in function of possible actions of building recovery and conservation of the characteristics of the buildings. The combined and weighted assessment of the data, with regard to the severity of the damage and its extent, has made it possible to give a preliminary assessment of the priorities for intervention and to determine their degree of urgency. Priority classes have been defined by cross-referencing data on the conservation status of goods with their degree of use.

The second phase of the research, articulated in two main activities, provided for the promotion of the activities of conservation and enhancement of the architectural and landscape heritage-rural environment and its value as an element of tourist attraction. To this end, a project workshop and a preparatory

training session were organised. In the framework of the preliminary workshop, information on the reference territory and rural heritage was transferred with the aim of providing the working groups with project suggestions. The work of the workshop "LandLAB", organised as part of the final conference of the LandsARE project by the "LAG Oglio Po terre d'acqua", has led to the definition of characteristic territorial areas and their vocations and identities for the development of projects of valorisation. The second activity included the organisation of the "Award for the Idea for the recovery and enhancement of the rural heritage of the territory LAG Oglio Po" aimed at collecting ideas and creative proposals for the area in a fruitive and touristic key. The project proposals have been configured both through the formulation of projects for the recovery and the re-functionalisation of one or more manufactures, both through the definition of strategies and actions aimed at promoting and supporting a more widespread and qualified use of the territory. The ideas proposed within the framework of the Award were the subject of an exhibition and collected in a catalogue delivered during the presentation of the results of the project.

The third phase, of dissemination of the results, provided the creation of both traditional tools (realization of an exhibition, the relevant catalogue and a public moment of presentation of the results of the research) and innovative technological devices for the use of rural heritage (digital application and CoHeSion[6] platform).

For the latter tools, system architectures have been structured.

In conclusion, two considerations can be drawn from the experience developed with the LandsARE project.

The first, it is possible to enhance the rural landscape and architectural heritage through its redevelopment. The project stems from the assumption shared by the partners that the landscape is one of the few key resources for sustainability and improving the quality of life in rural areas. In particular, the partners shared the idea that the redevelopment of the landscape makes it possible to address in a new perspective the design issues of great urgency such as those emerging from critical places of abandonment, the absence or lack of standards and degradation.

The second is that rural landscape and architectural heritage can be enhanced by innovation. In fact, with the aim of strengthening the planning and management capacities of rural areas, promoting the implementation of joint actions and the enhancement of the environmental, cultural, and agri-food heritage, the project aimed to identify and promote innovative ways of exploiting the rural landscape and architectural heritage, enabling economic exploitation, fostering tourism and social attractiveness and strengthening territorial identity.

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[6] CoHeSion (Cloud computing for Cultural Heritage and Tourism in a smarter Region) is an application platform as a useful tool for the discovery and exploitation of the rural heritage of the Oglio Po.

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4.9 THE ROLE OF CULTURAL HERITAGE IN CONTEMPORARY HISTORIC CITY RENEW: HERITAGE-LED URBAN TRANSFORMATION

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In the last 20 years in China, despite cultural spots being well protected physically by conventional conservation plans in the historic cities, such protection is still carried out with well-known limitations. Cultural heritage landmarks are seldom linked with local communities and residents, which facilitates their transformation into tourist attractions and then cut out from the context of urban culture milieu. The heritage-led urban transformation and valorisation aims to implement urban renewal interventions centred and initiated by cultural heritage organisations, by bringing knowledge, identity and economic profits to correlated local neighbourhoods, while reinforcing the original social network. It is a key to stimulate the urban transformation and manage the cultural heritage towards a sustainable future.

By going through the literature and cases worldwide and China, this research investigates success of previous practices, explores culture heritage orientated assessment and design approach. Comparative study and documental analyse is the prime methods to reveal the strengths and weakness from the cases that can also be identified as gained knowledge for this research. Furthermore, suggestions and preliminary proposals regarding heritages in Xi'an can be tailored in this research.

Introduction

It is now well-established that the historic city must go through the necessary urban transformation to adapt to the contemporary urban life. Regarding the urban transformation a heritage-led sustainable design approach needs to be adopted to guarantee the diversity, compactness and most importantly, the identity and characteristic of a city. In recent years, as the large scale intensive urban constructions have been taking place in China, many historic centres have gradually turned into "ancient city without historic landscape". Many culture

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spots which are well protected according to the conservation plan in the physical sense, are unfortunately cut out from the urban context and culture *milieu*, becoming mostly pure tourist attractions. In this sense, cultural heritage is seldom linked with local residents and communities. The walled city is facing the danger of segregation: on one hand, parts of the city which are strongly connected with the acknowledged cultural heritage are falling into the touristic theme park; on the other hand, neglected parts of the city which are not part of the identity nor connected to the heritage spots are left out, as if they were not worth to be considered in urban development. Although theoretically, relevant literature indicates that from 1976 to nowadays, significant focus has shifted from the individual tangible heritage items to intangible cultural *milieu* as a whole system[1], in China, urban interventions are still old-fashioned and fractional. This until 2011, when the Historic Urban Landscape HUL was introduced as a working tool for urban development, and it has been applied in several cities in China like Shanghai, Hangzhou. The common feature underpinning those historic cities is that the culture heritage has intangible influence on the urban transformation. Vice versa, the urban interventions can only be vividly activated when the projects revolve around the heritage places especially in historic cities. As HUL toolkit mentioned, the participation and involvement of residents is a prosperous way to manage the historic city towards a sustainable future for the cultural heritage.

This article attempts to provide guidance, constructive advice and assessment on the heritage related interventions in Xi'an. Comparative study and documental analysis are the prime method to reveal the appropriateness or effectiveness in state of art Xi'an. Both merits and drawbacks can be identified as gained knowledge for this research, furthermore, suggestions will be tailored in particular for the city of Xi'an. Ultimately, this article can be helpful for local and national authorities willing to initiate the urban transformation and valorisation interventions, NGOs (including UNESCO World Heritage Centre, ICOMOS, etc.), as well as professionals such as architects, conservators, policy-makers and so on.

State of the art on heritage-led approaches and HUL

As early as 1970s, a culture-led urban transformation concept has been brought up in response to the economic decline of many urban districts in Western Europe and America. It was supposed to start an urban renaissance with the promotion of heritage-based events and attractions, to bring new opportunities to sustain quality and historic significance of city, to face problems such as dilapi-

[1] Such as the Recommendation Concerning the Safeguarding and Contemporary Role of Historic Areas (1976), the Washington Charter (1987), the Vienna Memorandum (2005) and the Recommendation on the Historic Urban Landscape (2011).

dated built environments, economic depression, urban gentrification, etc. (Miles, 2004). Until the1990s, the term "culture-led" urban regeneration has been used by scholars in many cities, which became the base for the creation of the HUL approach. The engagement of landscape approach to urban conservation was developed around the 2005 Vienna Memorandum (UNESCO, 2005) and reviewed by the World Heritage Committees in 2002, 2012, 2015, which monitor the application of challenges in urban heritage and conservations in contemporary built environments. Several expert meetings were held from 2006 to 2009 (Jerusalem 2006, Saint Petersburg 2007, Zanzibar 2009, Rio de Janeiro 2009). After three planning meetings in (2006, 2008, and 2010), finally on the intergovernmental conference on 27th May 2011, the concept was integrated in 36th UNESCO General Conference into Recommendation as Historic Urban Landscape Approach (Erkan, 2017), seconded in ICOMOS evaluations in 2013[2]. Heritage-led urban regeneration approaches have been broadened to include the culture-led approach and HUL concepts, and it will continue to evolve.

In reality, HUL concept is presented not only as a term but also a set of methods and working tools for implementation. Many successful cases worldwide have used the HUL approaches.

In the case of Cuenca in Ecuador, the Universidad de Cuenca, who used the support and collaboration from DIUC, CINA, vlirCPM and FAUC[3], had an attempt in the frame of HUL in the year of 2012. The whole research project was implemented in three phases.

The first phase was to collect and gather all the information and materials as the fundamental design resource from different perspectives and fields, such as environment and geography. This is a step to overcome the architects' one-sided top-down vision.

The second phase was the delineation of the landscape units. All the information that was collected from the first step is used as references resource. The proposal units share homogenous problems for particular managements; this is a way to validate the methodology to a manageable size and complexity (UNESCO, 2011; Veldpaus et al., 2013; Rey, 2017). The intension is to apply all goals of the interested parties, citizens, and users.

The third phase was "Elaboration of Landscape and Valuation Unit File". This is a feedback phase to edit information into table, charts, and to identify the urban needs such as equipment, uses, accessibility, public spaces, urban connections, green spaces, cultural and leisure spaces in the city, recovery of neglected

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[2] I.e., World Heritage Committee Decisions, State of Conservation Reports, ICOMOS evaluations.

[3] DIUC, Research Department of University of Cuenca; CINA, Research Centre of the Faculty of Architecture and Urbanism at Universidad de Cuenca; vlirCPM Research project World Heritage City Preservation; FAUC, Faculty of Architecture and Urbanism at University of Cuenca.

areas. Moreover, it also works as a monitoring tool in a concrete documentary form that records all the ongoing process constantly. Finally, it reforms a new tool to improve urban landscape and its management from the whole city point of view.

Hangzhou is the 5th largest city in China which has first-hand witnessed dynamic transformations and challenges: large demand on urban sprawl, creating demand for more jobs, education, and housing. Counting on culture to be the key to facing those challenges, Hangzhou hosted the UNESCO International Congress in 2013. The "2030 Agenda for Sustainable Development" was born in Hangzhou 2015 (United Nations, 2015). As an application, the World Heritage Institute of Training and Research for the Asia and the Pacific Region (WHITRAP) under the auspices of UNESCO in Shanghai has developed a "Strategic Cooperation Agreement on the Implementation of HUL". It is the first strategic agreement on HUL in China which was further interpreted into short-, medium- and long-term plans.

The first step in the local practice of the HUL method in Hangzhou was the adoption of the local government. The local government organizes, promotes and supervises the implementation according to the actual situation. Many institutions and publications are created and increasing every year[4].

The second step was to build the cultural identity and unique city landscape. The West Lake is the core spirit of culture in Hangzhou, which includes the West Lake scenic area, pagodas, temples, gardens, forming the overall landscape of the West Lake. From 1999-2012, the landscape of West Lake was recovered through a series of urban projects. Although over 75% out of 60 tourist spots are free of charge, the profits and job opportunities are constantly increasing: the total tourism revenue was 102.57 billion yuan, an increase of 248.4% over 2002, till 2017, it increased another 296.5%. The visiting population also increased 137% from 2002 to 2010, and another 250% from 2010 to 2017 (Hangzhou Bureau of Statistics, National Bureau of Statistics, 2018, Year Book of Hangzhou).

The third step was to promote the participatory and public awareness concerning the heritage of the city. It involves educational publications and participatory surveys, quantitative research and qualitative research done by research institutions for the city. Under the unified leadership of the Hangzhou Urban Studies Research Centre HUSRC, the six branches of Hangzhou Studies were established, while related publications such as literature integration, series, general history, dictionary, research reports are edited constantly. The HUSRC initiated a huge data base to sharing the information with intellectual parties coversg different groups of society.

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[4] Hangzhou municipality has established "Historical Urban Landscape Protection Alliance" with more than 70 members. Hangzhou International Urban Studies Research Centre (HUSRC) and other universities, the special publications such as "Historical Urban Landscape", "China Historical Urban Landscape Conservation and Development Annual Report".

	2002	2010	2017
Revenue (billion *yuan*)	41.29	102.57	304.13
Visiting population (million/person)	46.02	63.05	158.84

Table 1 - Tax revenue in tourism industry and visiting population to Hangzhou (source: Hangzhou Bureau of Statistics, National Bureau of Statistics, 2018, Year Book of Hangzhou).

On the basis of that, there are many successful cases in different level and scale in Hangzhou. On the small scale, Fayun Ancient Village conservation is a good example. It was built in the period of the Republic of China (Minguo) and is located within an area of more than 60 square kilometres of the West Lake Scenic Area (Fig. 1). Fayun Ancient Village retains many historical and artistic values of the West Lake traditional mountain residential buildings. Under the premise of not destroying the integrity of ancient dwellings, it was equipped with humanized infrastructure and service facilities.

On the district scale, there's Xiaohezhijie Historical-Cultural Conservation Area districts. The houses of more than 20,000 square meters in the block are protected. The residential area has increased significantly, and the per capita living area has increased from 13 to 20 square meters, nearly 65% of the original residents have moved back[5] (Fig. 2).

Heritage-led approach in Xi'an

As we can see, the top-down directions are the most common way to apply the heritage-led approach in Chinese urban practices, which means through the budget mainly provided by local government authorities. Nonetheless, when urban transformations involve a third party with funding, such as a private developer, it becomes very difficult to balance between the profits and whatever is valued for heritage conservations. It requires an open minded and updated vision on urban managements from local authorities. They can set up a platform and are responsible for cross-discipline sectors cooperation and resources provisioning. Thus, there are three level to be considered when government authorities decide to initiate urban transformation projects: each level has particular actors and players to be involved.

Starting from the neighbourhood (micro) level, bringing local culture awareness to the community, generating and guiding the self-built transformation to materialize the transformation. As the culture carriers, the involvement from the local population shows how much the heritage connects to the local culture and the ability for self-sustainment. Much work still needs to be done in the

[5] The Xiaohezhijie Historical-Cultural Conservation Area was awarded the "China Habitat Environment Model Award" by the Ministry of Construction of China in 2007 and was awarded the "Human Environmental Model Award" by the United Nations in 2009.

sense of community participation, but it's never late to start. In Xi'an, there are many community-oriented experiments that have already started, led by Xi'an University of Architecture and Technology. A series of educational urban interventions, exhibitions, and community workshops take place as enlightenment and disseminate the knowledge about the heritage on site (Fig. 3).

In the district (meso) level, the key players will be the local decision makers and professionals (architects, conservators, etc.). They must identify the role of district in a larger context and the meaning of the heritage sites for its surrounding regions, meanwhile they also must anticipate the consequences out of previous micro level interventions based on evidence. To be able to look through the cases critically, solid professional knowledge on the specific sites is essential. In Xi'an it is materialized by Historical-Cultural Conservation Area in the conservation plan.

Finally, we might achieve the goal of harmonious architectural integrations as well as the historic landscape in the city (macro) level. To clarify, cultural heritage may generate as much future profits as the brand-new buildings, sometimes even much more for the policy-makers. Xi'an is a hot tourist destination, cultural events organized by the city municipalities, aim at emphasizing the role of the city's heritage (Fig. 4).

It is important to point out that it might highlight the value of the local cultural matrix and bring new actors and investments to improve the physical environment and reconstructing cultural network on one side, events like those are very often short-term, after the events, there is nothing concrete left to the heritage.

Conclusions and outlooks

From the paper we can see that the application on heritage-led urban transformation is more and more common and considered to be the promising direction to go. Combining with the state of art findings worldwide and the specific situation in China, the following strategies can be highlighted:

Policy making must be evidence-based. Considering the strong power in the Chinese decision-making system, it is easy to fall into impulsive actions without well-grounded evidence and proofs. It will require much solitary works and surveys that coming out of field works. In the Chinese system, policy makers must be aware that their actions have to be supported by facts and data rooted in serious survey and researches.

Another crucial point is to share and disseminate data from all resources. In China, it is sensitive to talk about material sharing to the public or even use for researches due to security considerations. Nonetheless, authorities with open mind are taking leading roles for the rest of the country, such as Hangzhou, Suzhou, etc. Here we should note that there are several regional differences in

China now between the coastal region and inland region. The good news is that many successful cases have set up the model for their followers.

Last but not the least, trying every resource to maximize the heritage impacts to the city. The heritage is not only contributor to attractiveness for tourism to the city, but also creates jobs and innovations for the sake of whole city. It provides us the win-win situation: heritage brings identity for the citizens while providing good investments and tax revenue for the public authorities.

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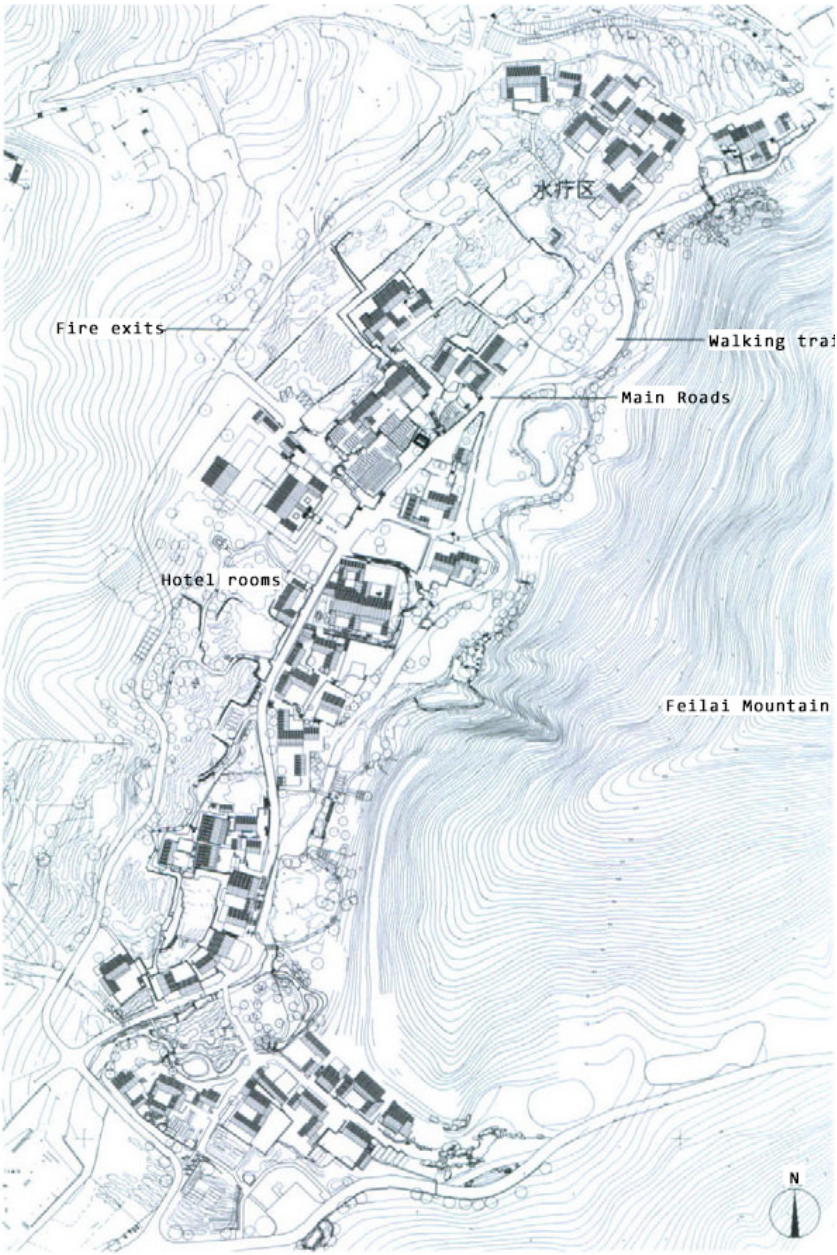

Fig. 1 - Master plan of Fayun Ancient Village (source: Zheng & Chen, 2012).

Fig. 2 - Plan of Xiaohezhijie Historical-Cultural Conservation Area (source: Xiaohezhijie Historical-Cultural Conservation Plan and Text - Wu & Deng, 2016).

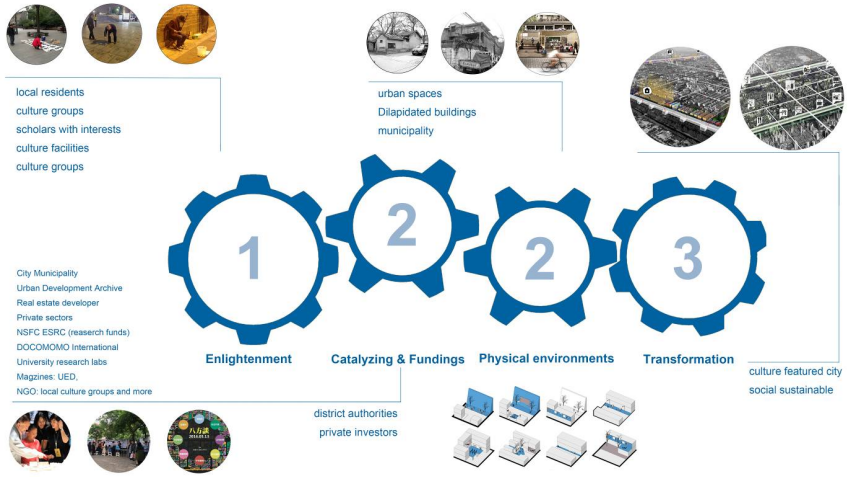

Fig. 3 - Mechanism chain on heritage valorisation in Xi'an.

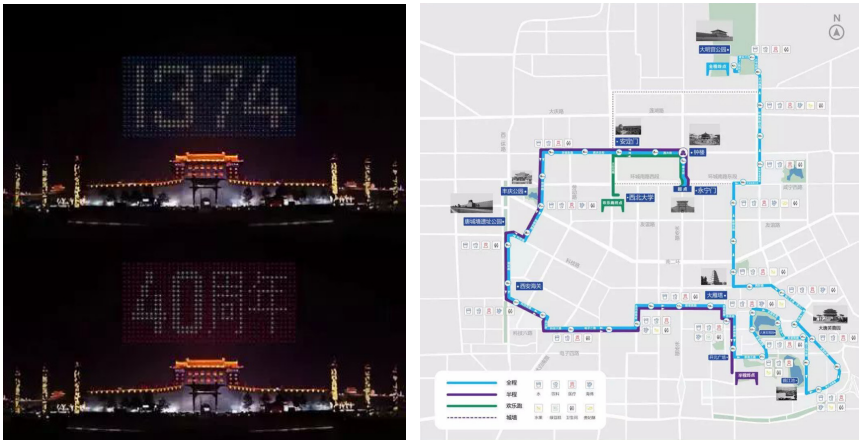

Fig. 4 - Events set up with heritage sites in Xi'an: lighting show in city wall (events organized by Xi'an walled City), and International Marathon (marathon routes designed to pass though all scenic sites in Xi'an) (source: http://k.sina.com.cn/article_1750353854_685447be019006txx.html?cre=tianyi&mod=pcpager_news&loc=39&r=9&doct=0&rfunc=100&tj=none&tr=9and).

4.10 HOLISTIC APPROACH FOR CULTURAL HERITAGE: CO-CREATIVE METHODS TO BRING TOGETHER VARIOUS PARTIES

Anastasiia Sedova[*]

Engaging stakeholders, practitioners, and academics who work on allied disciplines is a critical factor for the heritage governance success. Nowadays several studies, such as Cultural Heritage Counts for Europe, promote holistic approach for cultural heritage: *«Participatory governance needs to be reinforced through the structured and systematic inclusion of all stakeholders»*. Moreover, according to the 2030 Agenda for Sustainable Development, an important aspect of sustainable development is the strong cooperation of different stakeholders and private and public parties. Hence, finding answers on the following questions is becoming one of the most important issue: *«Who has a direct interest? Who has a power to influence changes? What priorities and impacts are desired?»*. Next, it is becoming significant to analyse how various parties answer to the above questions and how to consider all their interests. To sum up, the paper discusses co-creative methods to bring various stakeholders together in the recognition of European cultural heritage.

Introduction

Cultural heritage is a capital of irreplaceable cultural, social, environmental, and economic value (CHCfE Consortium, 2015). Understanding and assessing the value of European cultural heritage is associated with providing visibility to its benefits and outcomes. Mason (2002) stresses the importance of the questions of stakeholders in value assessment, since stakeholders do the valuing. Thus, the processes of identifying stakeholders and finding the way to reach them are essential in valuing heritage (CHCfE Consortium, 2015). Freeman's definition of a stakeholder is probably the most cited (Roloff, 2008). Stakeholders are *«any group or individual who can affect or is affected by the achievement of the organization's objectives»* (Freeman, 1984). Europa Nostra (CHCfE Consortium, 2015) considers cultural heritage as a key resource for

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sustainable development. It may safely be said that the impact of cultural heritage is a point of interest to many stakeholders within Europe who take interest into local, regional, and national levels. The need of heritage cooperation is highlighted in 2030 Agenda for Sustainable Development (2015), goal 17 "Strengthen the means of implementation and revitalize the global partnership for sustainable development". Namely, developers, governments, private owners, non-governmental organisations, civil society organisations need to defer to each other's opinion and work on assessing heritage values and sustainability by joint efforts.

The paper introduces the role of a multi-stakeholder approach in value assessment of cultural heritage projects and proves its role in sustainable development. The goal orientation enables the project to create a structure to accommodate stakeholders and their contributions (Keeys & Huemann, 2017). Thus, taking heritage projects out of their separate box and making them a part of wider debates though the attraction of various parties is an aspect that is central to the vision of the Faro Convention (Fairclough, 2008).

Co-creation: theoretical framework

Defining of stakeholders

Organisations - and companies in particular - have always been the focus of stakeholder management (Roloff, 2008). On the one hand, different researchers suggested different variations of Freeman's (1984) stakeholders: Mitchell (Mitchell et al., 1997) collected 28 stakeholder definitions of which 25 refer to an "organisation", a "firm", a "corporation" or to "business". The other three definitions cite "contracts" (Cornell & Shapiro, 1987), a "relationship" (Thompson et al., 1991) and a "joint value creation" (Freeman, 1994) and thus connect stakeholders with a focal organisation indirectly (Roloff, 2008).

On the other hand, Wheeler and Sillanpää (1997) distinguished primary stakeholders, who have a direct stake in the organization, and secondary stakeholders, whose stake is rather representational than direct. Dohnalova and Zimola (2014) state that primary stakeholders are those who have an interest in the creation of an enterprise's value. Actors in the wider business environment including the competition, the government, the media and other specialised organisations are considered to be secondary stakeholders. Traditionally, benefits are associated with the primary stakeholders, project owners, suppliers, contractors and customers (Keeys & Huemann, 2017).

In the cultural heritage sector, the process of defining stakeholders should be associated with the following questions: who participates in heritage value assessment?, whose values are counted?, thus, who has the power to shape conservation outcomes? (Mason, 2002).

Value assessment

The question of stakeholders is an essential issue in value assessment. The importance of stakeholders to the notion of values and value assessment is clear - stakeholders do the valuing (Mason, 2002). Keeys and Huemann (2017) stated that the amount of value created depends on the subjective perceptions of actors or stakeholders - individuals, organisation or society (Lepak et al., 2007).

According to Mason (2002), there are several different sources of heritage value: community and other culture groups, the market, the state, conservators, other experts, property owners, and ordinary citizens. Stakeholders are involved in the heritage project planning process during the defining aims which can be modified after the attraction of several stakeholders, then the process has to pass through site documentation and the description stage, that leads to the stage of value assessment. In assessing values, the simplest political guideline is trying, as a matter of equity and accuracy, to work toward a wide participation and account for the views of all the relevant values (Mason, 2002). This stream of literature suggests a change from the traditional sender-oriented paradigm of marketing management to a network-oriented approach where the marketing manager is only one active player in an ongoing process of joint creation of value to all participants (Kornum & Muhlbacher, 2013).

Moreover, insiders and outsiders have to be integrated not only in how their responses to value elicitation are expressed and recorded but at the level of how they frame questions of value (Mason, 2002). Keeys and Huemann (2017) would suggest the need to engage in co-creation outside and inside stakeholders through learning and adaptation (Bagheri & Hjorth, 2007) to meet broader stakeholder value concerns (Hart & Milstein, 2003) regarding the creation of benefits. To sum up, wider participation in the heritage project planning process allows a wider value assessment.

The paper analyses two co-creative methods to bring together various parties in order to address wider participation. First, a thorough constituency analysis is needed to identify all stakeholders (Mason, 2002): directly and indirectly linked, near and distant, actual and future. This method aims to involve as many stakeholders as possible during the project's planning stage. As discussed above, two types of stakeholders (Roloff, 2008) should participate: those who are defined as a group by their relation to a corporation (e.g. workers, shareholders, customers, suppliers) - primary stakeholders -, and those who become stakeholders by claiming a stake in the corporation (e.g. civil society actors) - secondary stakeholders. The basic purpose of the second methodology is to engage many stakeholders in the assessment of heritage values (Mason, 2002) driving cultural projects planning and management, accommodating values of diverse stakeholders through collaboration methods that they tend to hold. The quality of the stakeholder engagement will influence the understanding of stakeholder value perceptions, benefits determination, and ultimately the extent and nature of co-creation with stakeholders (Keeys & Huemann, 2017).

Importantly, that co-creation methods have to consider difficulties mostly using the first above-mentioned approach. Having networks that can share experiences is essential to learn both from success and failure (Myklebust, 2008). In a multi-stakeholder participatory process diverse and often conflicting opinions emerge (Wallner & Wiesmann, 2009). Gebauer, Fuller, and Pezzei (2013) empirically study the dark and bright sides of co-creation (Kornum & Muhlbacher, 2013). It is important to note that "online stakeholders" are more and more seen as valuable participant that offers added value to a heritage project. As Gebauer, Fuller, and Pezzei (2013) show, collaborative innovation within communities may also create frustration and evoke angry reactions. The members of the online context have shown both positive and negative behaviours that can directly influence co-creation members actions and their sense of the project. To sum up, an open public dialogue and online and offline announced co-negotiation that welcomes everybody could help to manage and overcome cross purposes.

Co-creation as an aspect of sustainable development

Keeys and Huemann (2017) analysed aspects of sustainable development shaped through co-creation, sustainable development is a process that addresses holistically the integrated dimensions of economic growth, environmental safeguards, and societal wellbeing of all development activities, commercial and non-commercial and which incorporates values of participation, transparency, and equity (Clifton & Amran, 2011). It is an obvious point that multi-stakeholder participation becomes a pillar of sustainable development since it "incorporates values of participation" and "social wellbeing of all development activities", while focusing on heritage sustainable development will force a holistic stakeholders' approach for cultural heritage.

Sustainable development requires co-working on the part of actors involved in the project, the project creates benefits through stakeholder collaboration as no actor-individual or organization has complete knowledge or controls all aspects of the sustainable development system (Keeys & Huemann, 2017).

Russian Orthodox Church (ROC) as a case study to implement multi-stakeholder analysis of ecclesiastic heritage

Since ancient times Russian Orthodox Church (ROC) had played a key role in the social life. Nevertheless, when the Bolsheviks took power in 1917 and proclaimed the organisation of the USSR, strong persecutions on the Church began. Nowadays, after 26 years since the collapse of the USSR, Russian society still has Soviet's holdovers - 7,932 abandoned churches. The multi-stakeholder method was applied for the churches' adaptation project.

The identification of all the participants fostered the understanding of who has direct power and can potentially influence the project. The research meets the di-

verse needs of different stakeholders, highlights difficulties and threats in their relations. Co-creation of the case study can involve joint action in the context of the project where the project does not attempt to predict benefits (Keeys & Huemann, 2017). Implemented stakeholder analysis shows the process of identifying heritage problem answering the questions: Why, since 26 years have passed since the collapse of the USSR, are there still abandoned churches?, What bodies and interrelations are missing for developing the project of churches adaptation?

What is more, the research can pretend to be a large-scale project as it involves the net of 7,932 abandoned churches. Undoubtedly, every large-scale project has to be seen from the sides of various stakeholders and parties, both public and private. All the stakeholders were divided into 6 big groups: conservation/restoration, Russian Orthodox Church, geography context, monitoring of cultural heritage, governance, non-profit organisations and users (Fig. 1). Several face-to-face interviews were done with representatives of each group and it was highlighted that different functional groups have different stages of development (on the scheme interviewed parties are in frames). On one hand, the group “non-profit organisations and users” is present in its entirety in Russia which means that the research faces the high interest to the problem of abandoned churches in issue from users, volunteers, and supporters. On the other hand, the functional group “geography context” is not well-studied in Russia, there is only one current research about sacred urbanism with relevant results, but it was conducted only in the Moscow area. It means that churches in many cases are not considered as particular urban elements. There is a gap in sacred architecture knowledge about the relation of a church and the urban realm, its structure and morphology. It makes difficult to accurately diagnose the net of sacred buildings of the city.

Fig. 1 - Stakeholders.

This identified vacancy in sacred urbanism's knowledge is, most probably, the first reason of the presence of a spate of abandoned sacred properties. In fact, it was found that within the ROC, which is registered as legal entity, a Property Management Department is missing. Thus, ROC is not able to manage properly its buildings and lands.

If we are talking about "conservation/restoration" and "monitoring of cultural heritage" it is regulated by the Federal Law of June 25th, 2002 n. 73. There are several good practices in restoration of cultural heritage in general in Russia, for instance, the Kizhi Open Air Museum is carrying out the unique restoration of the Church of the Transfiguration built in 1714[1]. The works are being performed with the use of a unique technology, customised to the complicated configuration of the structure.

Russian bodies who study and perform different scenario of "governance" are in development stage. Some initiatives, such as "Public-Private Partnership (PPP) Development Centre" that is the unit of the Ministry of Economic Development of the Russian Federation and "PPP Research Centre" were established in order to consolidate all the stakeholders to develop public infrastructure by means of public-private partnership. On the one hand, 27 projects were implemented in culture sector and 14 cultural heritage objects were restored with the use of public-private partnership mechanisms both on regional and municipal levels. On the other hand, the research faced the lack of sacred properties' governance. Hence, in ROC there is the lack of finance policy, business plans, property control. What is more, in Russia no governance scenario that involve public and private partners has been implemented for sacred buildings, proving that governance bodies for religious properties are missing in Russia nowadays.

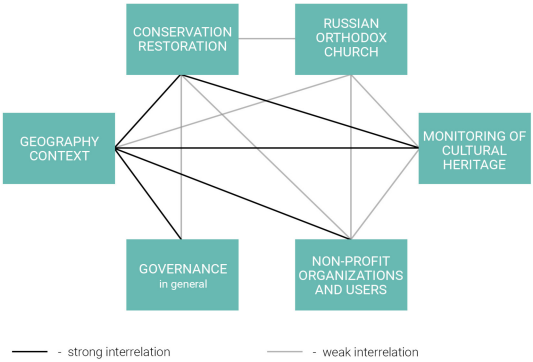

Fig. 2 - Interrelation.

[1] Kizhi is the largest open-air museum of Russia, the collection includes 83 wooden architecture monuments. The basis of the museum collection is the UNESCO WHS Kizhi Pogost (18th-19th centuries).

The scheme (Fig. 2) represents interrelations between the six functional groups that should be considered in the process of churches' rehabilitation. It is evident from the scheme the governance bodies have less relations with all the other parties. The above fact argues that the lack of proper governance strategy is considered in this study as the second reason of the presence of a spate of abandoned sacred properties.

Conclusion

The quality of the stakeholder engagement will influence the understanding of stakeholder value perceptions, benefits determination, and ultimately the extent and nature of co-creation with stakeholders (Keeys & Huemann, 2017). To sum up, stakeholders' cooperation should be one of the most important starting points of a heritage projects, namely during the project initiation in order to have a wider overview of the issues. Nevertheless, it is important to note that multi-stakeholder participation did not end with the definition of objectives and values (Wallner & Wiesmann, 2009), it should last during the whole life cycle of a project and in the ex-post evaluation of results (Mourato & Mazzanti, 2002). Moreover, co-creation should be considered in project management, project structure, project orientation, etc. Sustainable development could be achieved only in case of a holistic project's co-creation.

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4.11 CULTURAL HERITAGE AS A STRATEGIC RESOURCE FOR TOURISM ATTRACTIVENESS AND SOCIO-ECONOMIC DEVELOPMENT

Elisa Panzera[*]

Cultural heritage is nowadays gaining increasing importance in the economic debate. In recent years, the literature highlighted the considerable potential of cultural heritage as a possible key factor for local development. However, it is still hard to find comprehensive quantitative measures of this relationship. This paper gives a first contribution towards the identification and evaluation of the link between the endowment of cultural heritage and the regional socio-economic development in the EU. Starting from the assumption that cultural heritage represents a potential strategic resource for local socio-economic growth, this work investigates the link between the presence of material cultural heritage (i.e. monuments, cultural landscapes and museums) and regional tourism attractiveness, which represents a channel for regional growth. In this way, a preliminary measure of this relationship is provided.

Introduction

Although a great interest towards the relationship between cultural heritage and economy has been showed by the literature in the past few decades, the field is still quite blurred and with uncertain outcomes. What seems to be obvious and widely recognised by the scientific literature is that cultural heritage can be considered as an engine for development (Capello & Perucca, 2017; Throsby, 2001; Ashworth & Larkham, 1994).

As argued in the European report *Getting cultural heritage to work for Europe* (European Commission, 2015) *«cultural heritage must be seen as a special, but integral component in the production of the European GDP and innovation, its growth process, competitiveness and in the welfare of European society»*.

However, many difficulties arise from the challenging purpose of capturing the causality nexus between cultural heritage and economic growth and, above

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all, of measuring and quantifying the potential impact. The aim of this paper is to identify and empirically investigate one out of the many possible channels through which material cultural heritage could have an impact on local socio-economic development, namely tourism attractiveness.

Cultural heritage and socio-economic development: a challenging connection

It is very ambitious to find a clear and straightforward definition and taxonomy capable to include the multiple aspects, characteristics, and facets of cultural heritage.

The concept of artistic and archaeological heritage has been considered for the first time during the Athens Conference in 1931. From that moment on, the notion of cultural heritage witnessed a continuous evolution and enlargement. Starting from the recognition of historic monuments as cultural heritage, UNESCO and ICOMOS progressively included museums, groups of buildings, landscapes, sites, historic urban areas, folklore, traditions, performing arts, and many others as integral part of cultural heritage.

As far as this article is concerned a choice has been made to include in the analysis material cultural heritage only. More specifically, borrowing from a taxonomy developed by Capello and Perucca (2017), monuments, museums, galleries, landscapes, and aggregate tangible heritage will be considered in this work. The following figure (Fig. 1) shows in box A and box B the categories in which we are interested.

The second reason why the identification and quantification of the relationship between cultural heritage and socio-economic development is not a trivial task is represented by the peculiar nature of cultural heritage as an economic

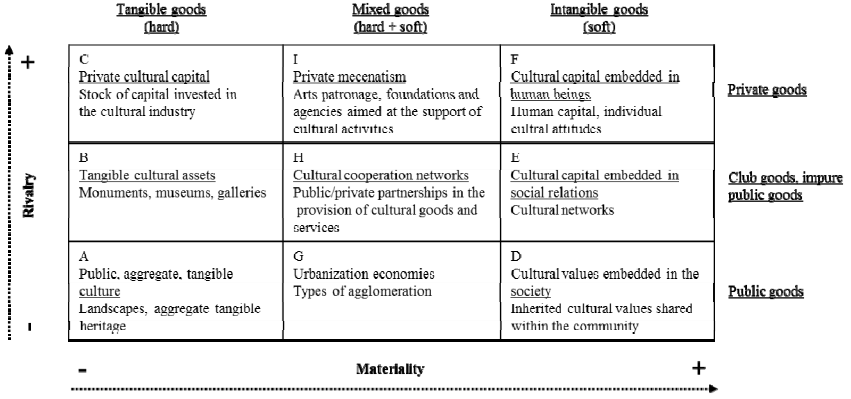

Fig. 1 - A classification of cultural capital assets (elaboration by the author on Capello & Perucca, 2017).

good. As the literature broadly argues (Throsby, 2001; Vecco, 2011) cultural goods can be considered as public goods in the sense that they are characterised by two main properties: non-excludability and non-rivalry. Different types of cultural heritage vary in the degree of these two properties (Navrud & Ready, 2002). Cultural goods have been defined also as common goods (Nypan, 2003) and social goods (Klamer, 2013). Consequently, doubts emerge about the suitability of market mechanisms to regulate cultural goods and to grant socially desirable outputs (Towse, 2003).

The last cause of difficulties in the identification and measurement of the nexus between cultural heritage and socio-economic growth is due to the concept of value and it is the reason why a few empirical comprehensive studies can be found in this field. The whole cultural heritage economic value can be split in two macro-classes: use and non-use value (Throsby, 2001; Mason, 2002). The use value can be assessed with market-based data or with the willingness to pay. Non-use value includes: bequest, option and existence value. Focusing on one kind of value, to the exclusion of the other, will produce incomplete results which may lead to sub-optimal decisions about the allocation of resources. Apart from the economic value, cultural heritage is embedded with socio-cultural values such as aesthetic, spiritual, social, historic, authenticity, symbolic and locational (Throsby, 2001; Mason, 2002). As Della Torre (2015) explains, built heritage produces many externalities derived from its multiple values which impact on the whole society not just on the heritage industry.

Due to the unique nature and peculiar values that cultural heritage is endowed with, we believe that several channels could be identified through which cultural heritage plays a role in regional socio-economic growth. The aim of this work is to develop an empirical model able to in-depth analyse one out of the several channels through which cultural heritage could impact on local socio-economic development: the tourism attractiveness. More specifically, we are interested in understanding whether the endowment of material cultural heritage of a European region leads to a higher tourism attractiveness.

It is widely recognised that cultural heritage represents a strong boost for tourism, being an exclusive place-based factor and a place identifier (Ashworth, 1994). As it is written in the European report *Cultural heritage counts for Europe* (CHCfE Consortium, 2015) *«Cultural heritage provides European countries and regions with a unique identity that creates compelling city narratives providing the basis for effective marketing strategies aimed at developing cultural tourism»*. Even though a considerable interest has been given to the tourism demand determinants, which in few cases include cultural heritage endowment (Patuelli et al., 2013; Yang et al., 2010), less attention has been dedicated to the supply determinants. Following Camagni's idea, from a theoretical point of view, supply elements strictly linked to the local territorial structure assures a regional differential development, i.e. the capacity of a region to grow more than its nation (Camagni, 2009). The definition of development strategies for

regions, cities or territories necessarily has to leverage on local assets and potentialities, namely on its "territorial capital". Therefore, we are interested in figuring out if the endowment of material cultural heritage, which can be considered as an element of territorial capital, has an impact on tourism attractiveness and, consequently, on local socio-economic development. Being an idiosyncratic good (Santagata, 2004) and an element of local differentiation (Della Torre, 2013), cultural heritage is part of territorial capital and territorial capital only exists in power and it needs complementary mechanisms to be transformed in effectively usable capital. If the presence of material cultural heritage can play a positive role in the enhancement of tourism capacity supply, this will stimulate demand for tourism activities and therefore lead to local socio-economic development. This would mean that European regions are able to exploit their endowment of material cultural heritage to attract demand, generate income and therefore local development (Fig. 2).

Fig. 2 - Material Cultural Heritage and Regional Socio-Economic Growth relation through tourism attractiveness.

Model and empirical results

The proposed model investigates the link between the presence of material cultural heritage and regional tourism attractiveness. More specifically, our hypothesis is that tangible elements of cultural heritage play a positive role in the tourism attractiveness of a region. In order to test our hypothesis a standard OLS regression model will be applied to a cross-section database of 283 NUTS2 European regions in which the explanatory variables are one year lagged. The model can be written as follows:

$$Attractivenesstourism,\ r=\beta 0+\beta 1Z'r+\beta 2X'r+\varepsilon r$$

The dependent variable of our model is the touristic attractiveness of a region in 2015, measured through the number of bed-places available in each region and the number of employees working in touristic activities (air transport, accommodation, travel agency, tour operator reservation service, and related activities).

As far as the explanatory variables are concerned, they can be divided in two classes:

- a group of variables of main interest ($Z'r$) referring to material cultural heritage (i.e. number of per capita monuments, number of per capita cultural landscapes, number of per capita museums);

- a group of control variables ($X'r$) added in the regression due to the fact that the regional tourism attractiveness can possibly depend on other aspects rather than the presence of material cultural heritage alone. GDP per capita, representing the wealth of a region, could play an influence allowing, for instance, richer regions to have more touristic facilities. The population density is included in the model to control for the presence of cities and therefore to control for the business tourism starting from the hypothesis that the main business activities are located within the cities. A multimodal accessibility variable controls for the opportunities to reach the region and/or for the possible congestion problems of an area. A variable measuring the criminality rate of a region is included in the model hypothesising that a high criminality rate discourages tourism attractiveness. Finally, a variable representing education is included. To avoid forgetting qualitative aspects such as cultural heritage legislation and quality of the institutions, we divided the regions in five main European clusters, and we added a categorical variable in the model indicating if the region belongs to Northern, Central, Western, Eastern or Southern Europe.

The data used to estimate the model come from two main sources: Regional Statistics section of Eurostat online platform and ESPON (European Spatial Planning Observation Network) databases. An original database has been built using these two sources which includes 283 observations corresponding to the European NUTS2 level regions plus Norway NUTS2 level regions. All the variables in the model are expressed in logs, aside from multimodal accessibility and criminality rate.

The regression results are reported in Table 1. The estimation has been done in 3 steps which corresponds to Model (1), Model (2) and Model (3) in the table.

Model (1) includes the material cultural heritage explanatory variables only. All the three variables we included in the model (i.e. number of per capita monuments, number of per capita cultural landscapes, and number of per capita museums) seem to have a positive and statistically significant association with the European regional tourism attractiveness.

In the second model we included a set of control variables. The coefficients of our cultural heritage variables are still positive and statistically significant, they nearly keep the same value meaning that this result is quite robust and noteworthy. The other positive and statistically significant coefficient is the one associated with GDP per capita, supporting the idea that the richer the region the more possibilities to provide touristic facilities. As far as the criminality rate is concerned, the negative coefficient is in line with the assumption that the higher the criminality rate the lower the number of tourists willing to visit the region. As per the multimodal accessibility of a region the negative coefficient could be due to the high level of congestion in areas endowed with many transport infrastructures. The last negative coefficient is related to the percentage of people with tertiary education and could be explained by the fact the

VARIABLES	Model (1) Attractiveness	Model (2) Attractiveness	Model (3) Attractiveness
Monuments per capita	0.137***	0.097**	0.095**
	(0.034)	(0.046)	(0.041)
Landscapes per capita	0.088***	0.061**	0.026
	(0.026)	(0.030)	(0.032)
Museums per capita	0.162***	0.193***	0.195***
	(0.051)	(0.055)	(0.066)
Gdp per capita		1.108***	0.641**
		(0.269)	(0.303)
Pop. density		-0.016	-0.109
		(0.075)	(0.076)
% Tertiary Education		-0.022***	-0.011
		(0.008)	(0.009)
Criminality Rate		-0.174**	-0.060
		(0.072)	(0.079)
Multimodal Accessibility		-0.002***	-0.002***
		(0.001)	(0.001)
Central EU			0.656***
			(0.238)
Western EU			0.653***
			(0.202)
Eastern EU			-0.153
			(0.231)
Southern EU			0.809***
			(0.198)
Constant	3.357***	-6.184**	-2.444
	(0.662)	(2.548)	(2.912)
Observations	263	232	231
R-squared	0.109	0.258	0.383

Table 1 - Regression results. Material cultural heritage and regional tourism attractiveness.

tourism industry does not require highly educated human resources. The coefficient related to the population density controlling for business tourism appears to be non-statistically significant.

In Model (3) we introduce a categorical variable indicating the European cluster in which each region is located. In this last model regional tourism attractiveness is still positively influenced by the endowment of monuments and museums and by the GDP per capita and negatively influenced by multimodal accessibility. We can argue that Central, Western, and Southern regions have a higher degree of tourism attractiveness than the Northern regions, which are our benchmark, meaning that they are better able to exploit their endowment of cultural heritage for tourism purposes guaranteeing a sufficient supply.

Conclusions

Starting from the hypothesis that cultural heritage plays a strategic role in the socio-economic development of a region, a first possible channel of this relationship has been explored: the tourism attractiveness. A positive link between the endowment of material cultural heritage and the ability to attract tourists providing enough touristic capacity has been empirically demonstrated. The findings represent just a starting point of a research aiming at analytically support the idea of cultural heritage as a catalyst for development.

The expansion of the tourism industry could be considered as a stimulus for regional socio-economic growth, but it does not come without risks and adverse aspects. The overexploitation of material cultural heritage could lead to its deterioration; tourists' overcrowding could cause congestion or discomfort for local people (Hampton, 2005) and *«economic commodification and Disneyfication of mass heritage tourism»* (Smith, 2006). The key point is the regions' awareness of the potential value of its cultural capital (Ost, 2014). As Mussinelli (2014) explains *«local heritage represents a resource, the valorisation of which must take place in a social context, considering cohesion and social inclusion policies based on sharing the knowledge, usability and accessibility of heritage […], in an economic context, promoting the attractiveness of territories both for the local communities and for the tourists»*. Cultural heritage is both a factor in economic development and a vehicle of cultural identity and we need to treat it in a sustainable way. As the 2030 Agenda for Sustainable Development suggests there is a need to devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.

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4.12 THE ENHANCEMENT OF THE VESTIGES OF THE GREAT WAR THROUGH SCENARIOS PERSPECTIVES

Joel Aldrighettoni[*]

Through the "signs" of history, the militarisation process of the territories related to the Great War has profoundly transformed the landscape into a good understood as "material witness having the value of civilization". In the aftermath of the Centenary celebrations, it is interesting to understand how this heritage can continue to be a concrete resource for the future, providing new opportunities for local economies. Thinking about "war landscapes" as sustainable drivers for social development and economic growth means understanding that some of the reuse chains linked to forms of musealisation have run out and that there is a need to find a new governance able of proposing multidisciplinary participated scenarios, in which conservation and transformation are complementary aspects of a common horizon of development, through the conscious involvement of the communities in the various phases of the enhancement process.

Introduction

In the last decades, the growing complexity of the processes of transformation and management of the built environment has encouraged the development of interesting reflections regarding cultural heritage, up the recognition as "testimonies having value of civilization"[1], also for all types of goods belonging to the sphere of material or productive culture, as tangible outcomes of the interaction of the different communities with their relative environments and territories. Assuming the "relational nature" of these assets as a prerequisite for their recognition, it is clear to understand how the heritage of material culture become an important element of identity and a potential driver for local development. In addition to the palimpsest of meanings and values that the communities recognise to these cultural assets, there are coexisting economic reasons

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[1] Art. 2, comma 2, *decreto legislativo* 22nd January 2004, n. 42 "*Codice dei beni culturali e del paesaggio*".

that, properly studied, could transform these assets into resources capable of generating benefits and externalities of different nature.

Protection and enhancement issues

Just over a hundred years ago, the construction of permanent and temporary field fortifications, underground shelters, and entrenchments connected to the Great War, radically transformed the landscape of the whole of Europe into what is currently recognised as an historical and cultural heritage on which European culture and identity have been built (Battaino, 2006). Therefore, considering the contemporary landscape as a multi-layered palimpsest, produced by the militarisation of the territories, by the destruction of the war period and by the subsequent transformations, means recognising the "places of memory" as a symbolic and strategic economic capital, on which should be invested, in perspective, to build a sustainable heritage for the future.

From this point of view, the law 78/2001 is certainly an important goal with respect to the protection of this particular heritage[2], representing the main normative reference for the numerous restoration/recovery/enhancement projects[3] realised in the last few years. In the aftermath of the Centenary celebrations, the need to put the past experiences in the system emerges with force, in order to produce new strategies of action able to recognise, and therefore to enhance, the testimonial gradients of these vestiges, in the perspective of new opportunities for economic growth (Bernini, 2015).

In this direction, a renewed "research of sense" becomes central to understand the specific meanings assumed by the concept of enhancement with respect to the future of this particular heritage. The enhancing of the vestiges of the Great War in view of new scenarios of sustainable use, in fact, cannot be declined only in a mere organisational reordering in response to the market logic of the economic sphere and tourism promotion, but it must constitute a general process of re-elaboration at a cultural, programmatic, and management level. This change should be based on a profound reflection on the scope of the concept of "cultural heritage of the Great War", in reference to the material culture of the vestiges, their identifiability, the stratification of the territory of which this heritage is at the same time "creator and product" (Quendolo, 2014).

Therefore, the safeguarding of these cultural assets declines itself in the ability to manage the changes taking places, reinterpreting the essential need to

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[2] Art. 1, comma 5, law 7th March 2001, n. 78 "*Tutela del patrimonio storico della Prima guerra mondiale*".

[3] To understand how the heritage of the Great War can continue to be a driver of development and growth for local economies, the deepening of the "state of the art" with respect to completed or ongoing projects is fundamental to delineate the points of strength/weakness and the issues to ponder to implement the improvement of future development strategies.

preserve the "possibilities of knowledge" not as an economic sacrifice and a creative limitation, but rather as an opportunity, where forces and resources can be invested to obtain general benefits at the economic, cultural, and social level. In this sense, creativity (understood as the ability to develop innovative and interdisciplinary strategies starting from the recognition of the values of a specific heritage) becomes the indispensable tool through which new relationships' networks could be built, involving both the various stakeholders (public and private) and the communities. In other words, a fertile combination of culture, knowledge, and creative economics will allow to broaden our gaze towards a long-term planning, capable of overcoming many current gaps of the legal and operational set-ups, based on the use of top-down models and useless tools for the interpretation of the interdependencies that are the basis of heritage and its management (Fanzini, 2017). Referring to the cultural heritage, for example, the current separate and uncoordinated management that seems to delegate to the *Soprintendenze* the unique authority of protection, and to the museums the responsibility for the related promotion, has repeatedly shown limits and inadequacies, highlighting the need to renew the "project's culture" towards a more integrated action, by investing in the active involvement of the communities.

The importance of the participatory aspect also becomes fundamental regarding the material and immaterial heritage of the Great War, whose potential of values and meanings, although universally acknowledged, did not often realised itself in conscious actions by the communities but emerged only in "passive" collaborations, supporting the restoration/recovery/enhancement projects "dropped" by institutions or professionals on the communities, but not designed with and for them. Therefore, the future perspective is to re-start from the bottom to increase the awareness of the communities with respect to the values embodied in this cultural heritage recognised as identitary, investing in a new "knowledge economy", promoting the cultural industry or elaborating new strategies of social involvement, to transform these vestiges from "public good" to "common good"[4].

In this horizon of sense, the enhancement of this heritage, which is understood in the etymological meaning of the English term enhancement (i.e. the growth and strengthening of precise values previously identified), does not appear to be a goal to be achieved, but a complex methodological process which is based on a deep knowledge of the existing which has to be disseminated and shared with people, so that the communities, recognising and sharing the potential value of the vestiges, will become active promoters in the future.

This means the activation of new kinds of collaboration and coordination between public and private authorities: by extending the active involvement of voluntary associations not only in the operational phases but at all stages of the enhancement process, by investing in the training of workers who are not pro-

[4] Unlike a "public good", that is not a private good, a "common good" represents the core in which there are identity values that are shared by a group of individuals, who feel directly involved and responsible for its existence and its maintenance (Nannipieri, 2014).

fessional but specialised in restoring the construction characters of such a specific heritage, and by focusing on study and research as indispensable tools for "sharing knowledge" at a social level, thus increasing a new conscious awareness of these goods.

The experience of the ecomuseums

In light of the proposed reflections, one of the possible already consolidated operational strategies seems to be the experience of the ecomuseum: a non-traditional museum institution that

> *«aims to preserve, transmit and enhance the culture of the territory [...] and represents what a territory is, and what its inhabitants are, starting from the living culture of people, from their environment, from what they have inherited from the past, from what they love and who wish to show their guests and pass on to their children»* (de Varine, 2005).

This kind of "museum of the territory" could become a strategy particularly suited also to the needs of enhancement of the traces of the Great War: in fact, when there is the need to transmit to the future the testimonial gradients of a given set of elements present in a territory, this network of relationships starts up from below, through the integrated involvement of public institutions, of already existing entrepreneurship, of research and development centres and, above all, of local communities. To achieve this aim, the ecomuseum implements a synergistic strategy that acts simultaneously in apparently different directions, which are actually deeply interrelated and converging towards the only common goal of enhancing cultural heritage. The creation of an ecomuseal system capable to activate new local development processes, requires in fact a considerable economic commitment, and for this reason it is necessary to work in parallel on the social asset as well as on the environmental and economic ones, using the active participation as a stimulus for cohesion and inclusion, the creation of creative projects to "educate" the new forms of cultural tourism and finally the research to combine projects able to provide new jobs and, at the same time, to reduce consumption and waste of resources (Riva, 2017).

An ecomuseal experience particularly significant compared to the analysed cultural heritage, is certainly the initiative "Ecomuseum of the Great War" of the Veneto Region, promoted in November 2011 as part of the national project for the "protection of the historical heritage of the First World War" (elaborated following the law 78/2001), with the aim of creating a cultural institution founded on a broad participatory base and able to put in place all the existing regional realities operating on the theme. The operational lines of the Ecomuseum have been declined both in actions to recover the traces of the Great War, involving voluntary associations coordinated by appropriately qualified technicians, and in specific programmes of promotion and dissemination, articulated through a system of information centres distributed uniformly throughout the

territory. The intent was to encourage the understanding and diffusion of the values as witnesses that the material culture of the vestiges was able to narrate, thus stimulating a renewed and aware "tourism of memory", capable to recognise in conservation an instrument of knowledge. The high fragmentation in a very large territory and the plurality of actors, have significantly increased the complexity of the project, but the organisational and structural ability of the Ecomuseum has managed to ensure the completion of restoration and recovery projects, returning to the community an enormous patrimony of works and itineraries, which now appears as a great "open book" that narrates the dramatic events of which those places were theatre, preserving their memory over time.

The experience of the "Great War Ecomuseum" of Veneto testifies how a renewed multidisciplinary approach, capable to combine the socio-economic interests of the different involved actors with the need to protect an highly complex and fragile heritage, can effectively trigger new virtuous circuits, that are able to contemporaneously produce culture and income, which can be reinvested in services useful to improve the quality of life of local communities.

Nevertheless, other ecomuseum experiences highlight some critical aspects that, in perspective, bear witness to the wide margin of improvement of this type of institution, also with respect to the authority and the bargaining power that can increase in future territorial development policies. In addition to the non-recognition of a legal status, in fact, the ecomuseal institution currently shows a divergence between the theoretical principles and the carried out projects, probably due to a limited strategic vision, in favour of regulatory and methodological rigidities that often lead to the revival of defects typical of the traditional musealisation supply chain, with a "too-old" and static approach that is not open to the prospects of cooperation for the construction of the future heritage[5]. In addition, the identification of guidelines and best practices is difficult, and this lack legitimises the implementation of spontaneous "poorly controlled" interventions, often carried out by associations of well-motivated volunteers, but without specialised coordinators.

The Faro Convention

In order to increase the awareness of the value of cultural heritage in Europe and its contribution to the wellbeing and quality of life, the central role of "cul-

[5] Regarding the reflections on the strengths and the critical issues of ecomuseums, the main reference are the experiences presented during the international conference "Forum Communication and Exploration" held in June 2005 in Guiyang, China, during which over 120 museologists coming from 15 different Countries, gave life to the largest review on the theme of ecomuseums ever presented. In particular, the arguments of M. Maggi (IRES) and the SWOT analyses on the Ecomuseums of Soga, Zhenshan and Olunsum, in Central China, published in VV.AA. (2006), *Diversity that dialogue. From the first experiences to the China 2005 laboratory*, Department of Culture of the Autonomous Province of Trento, Trento.

tural heritage" and the need for an active and synergistic participation of all the involved actors (public, institutional and private) represent the guiding principles of the Council of Europe Framework Convention on the "Value of cultural heritage for society", presented on 27th October 2005 in the Portuguese city of Faro and signed by Italy in 2013, but not yet ratified by the Parliament.

The Convention represents a sort of "Copernican revolution" of the traditional perspective of identifying cultural heritage, in fact, recognising to every "heritage community" both the right to benefit from the "cultural heritage" and the duty of being responsible for it, the decision-making authority is moved from the top (often the *Soprintendenze*) to the base, thus investing in physical, human, and social capital to find "new codes and tools" for enhancement, through virtuous relationships between the communities and their environments.

In addition to compensating for the lack of effective legal status (still unrecognised in current participatory devices, such as ecomuseums), the institutional nature of this approach should facilitate the concrete application of the theoretical principles through the direct involvement of stakeholders in the decision process at different levels, from consultation to active participation. In this perspective, the "passive collaborations" of voluntary type, which currently turn out to be the only means of involvement, would be only one of the outcomes of the new enhancement and management policies, elaborated and shared by the new stakeholders (the same communities) in concert with the government locals. The indispensable knowledge and skills of specifically trained technicians could be operationally shared and integrated with the proposals coming from the communities through the implementation of already tested participatory devices, such as the establishment of civic centres and cultural associations, and with the experimentation of new forms of involvement, also at the technological-digital level, such as telematic groups and computer databases, useful for involving the younger generations, so as to guarantee a continuous supply of ideas and always new stimuli.

The strength of the Convention lies essentially in its great flexibility: in fact, even if the Action Plan suggests some "good practices", emerged also from the experiments concretely implemented in the pilot projects of Marseille[6] and Venice[7], Faro is an agreement-framework and for this reason the convention

[6] The dynamic community of Marseille has promoted interesting cultural proposals and innovative management models that have been particularly successful, during the event "Marseille, European Capital of Culture 2013". The aim was the promotion of the active participation of citizens to achieve a careful analysis of aspects related to cultural diversity, the sense of belonging, the prevention of intolerance and discrimination. Through effective actions in disadvantaged urban and peri-urban areas, the application of the guiding principles of the Faro Convention has triggered the development of new participatory policies capable to create favourable conditions of urban rehabilitation, working against poverty and discrimination, in defence of the urban environment and improvement of the living conditions of all inhabitants.

[7] Since 2008 a cultural association has been active in Venice inspired by the Council of Europe

defines exclusively the general objectives and regulatory guidelines, but it leaves the freedom to define the implementation policies and the most suitable means and tools for their effective application to the signatory Countries.

The application of these new models of participation/management could increase a widespread awareness of the multiple potentials also regarding the material heritage of the Great War, recognising that perhaps some of the reuse chains linked to forms of musealisation have run out, and that to make sustainable the high costs of management and maintenance of such assets, a new broader design look is probably necessary. This approach should pay attention also to the dynamics of aggregated demand and supply, without focusing only on the material culture of the "vestiges", but investing throughout the network goods and services that can be implemented and offered to support the use of the heritage itself, thus generating new jobs and increasing the attractiveness of these places, without "betraying" their authentic character. At the same time, the new forms of participation in the "care" of this heritage could represent important opportunities to create a new "civic conscience" of local communities, called to invest time and energy for a common good, developing and sharing ideas and proposals. Finally, a better communities involvement trough new cooperation strategies could increase the "social cohesion" and also become a potential opportunity for the integration of some weak members of society, putting the individual skills and abilities into the system.

Conclusions

The awareness that the war landscapes of the Great War can become opportunities for the social development and a wide-ranging economic growth, underlines the contingent need to investigate possible strategies for the enhancement of this fragile heritage with high testimonial value, to find new governance of territorial development able to overcome the traditional dualism between conservation and innovation. In this sense, an intelligent opportunity for experimentation can be given by the elaboration of new participatory management models, by a greater awareness of the value of witness to cultural heritage and by the consequent formation of a new "responsible conscience" of the community towards such assets.

Convention called "Faro Venezia" which organises numerous activities to raise awareness on the issue, among which the most important is certainly the Venice International Conference of 2nd March 2013, in collaboration with the Council of Europe and the *MiBACT*, whose outcomes have in fact launched a more structured phase of the Faro Laboratory, bringing citizens and institutions closer to the common objective of experimenting with the participated models of governance.

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4.13 HOW TO USE DIGITAL DATA IN THE IDEA OF CULTURAL HERITAGE

Cinzia Tommasi[*]

Nowadays, the Cultural and Creative Productive System (CCPS) is the latest evolution of the old conceptualisation of culture, not only concentrated on conservation and valorisation activities, but also adding a series of industries that orbit around the creation and production of cultural content. Its core contains four sectors: the conservation of cultural and artistic heritage; the performing arts; the cultural industries; and the creative industries. The aim is to produce value to strengthen the cultural heritage and stimulate the community processes. In this new vision of cultural heritage, how are digital data employed in projects? They are tools that help to enrich the cultural heritage and to stimulate participatory mechanism. The chapter wants to present several case studies bounded by the use of digitalisation for different scopes and to see how they fit in CCPS sectors.

Introduction

Today the concept of Cultural Heritage (CH) has evolved from a vision where it was considered as an obstacle to economic growth (the model called CH management 1.0) to a precious resource and a need to bring a sustainable, environmental, social, and economic development (the model called CH management 3.0) (Gustafsson, 2015). The movement is from protection and conservation to pro-action and transmission: the idea of cultural heritage has become an interdisciplinary and integrated approach that affects the whole economy and sees the historical environments as an infrastructure for sustainable development. The aim of CH 3.0 is to involve and guide citizens through a collaborative governance form (Fanzini et al., 2014), from the early stages of the project (co-design). In this case, the role of the experts is to raise awareness and enable people to detect values and potential and realising the change.

In Italy, the engine that guides the evolution in the cultural heritage field is the Cultural and Creative Productive System (CCPS), a set of productive activi-

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ties and enterprises that aim to produce new values and occupation.

The core of this system contains four sectors (Unioncamere, 2018):

- the activities of conservation and valorisation of cultural and artistic heritage;
- the non-replicable operations of cultural services, represented by live shows, concerts, and more, called performing arts;
- the replicable activities, represented by cinema, radio, gaming, publishing, and more, called cultural industries;
- the creative industries, represented by communication, design, architecture.

The core aims to produce value to strengthen the cultural heritage and stimulate the community processes, following the strategic lines of culture, identity, training, and innovation (Della Torre, 2015). Culture because it is the wire that bonds together all the activities of the system; identity because giving access to culture means to produce citizenship, engagement, and sense of responsibility; training because people become the players for the next actions; and innovation because economy, social, culture, and environment are integrated together producing territorial capital.

On the other hand, the 21st century is the digital or information age, which is based on information technology (Castells, 1996) and increases the speed and breadth of knowledge turnover within the economy and society (Shepherd, 2004), touching all the daily human activities and branches of sciences. In this scenario, also cultural heritage is not immune to digital technologies, which have changed how people perceive, approach, and use it.

The employment of cognitive 3D models that describe the tangible parts of the heritage and contain the related information become mainstream (Laing, 2018), mostly for planning and monitoring the restoration activities. However, speaking about valorisation, it is necessary to consider the strategic actions mentioned above, also represented by the core of CCPS: a mix of culture, identity, training, and innovation. In this vision of cultural heritage, how can digital technologies help to achieve the purpose of re-activation of territories from a cultural perspective? How are they employed for stimulating participatory mechanism? The object of this chapter is to analyse some case studies and to see how they fit in the CCPS model, highlighting the needs and the future directions of the research on this topic.

Research field

The starting point of the research is the definition of cultural heritage. The latest and the more useful meaning for the work is the one stated by the European Year of Cultural Heritage website (https://europa.eu/cultural-heritage/):

> *«Cultural heritage has a universal value for us as individuals, communities and societies. It is important to preserve and pass on to future generations. You may think of heritage as being 'from the past' or static, but it evolves through our engagement with it.*

> *What is more, our heritage has a big role to play in building the future of Europe. It comes in many shapes and forms: tangible - for example buildings, monuments, artefacts, clothing, artwork, books, machines, historic towns, archaeological sites. Intangible - practices, representations, expressions, knowledge, skills - and the associated instruments, objects and cultural spaces - that people value. This includes language and oral traditions, performing arts, social practices and traditional craftsmanship. Natural - landscapes, flora and fauna. And digital».*

This definition includes all the topics mentioned in the introduction of the chapter:

- transmission, as stated by CH 3.0 model;
- community engagement;
- recognition of values;
- tangible aspects, represented by the physical models and data;
- intangible elements, which regard the experience, stories, traditions that have to be divulgated along with the tangible components;
- digital part, which should be the mean that bonds together tangible and intangible and use the information at disposal to create a valorisation experience.

The term valorisation has a broad meaning, according to *MiBACT* (*Ministero per i Beni e le Attività Culturali e per il Turismo* - http://www.beniculturali.it/) it consists of the activities aimed to promote the knowledge of the national heritage, and to ensure the best conditions of use and fruition of the heritage of every public, to stimulate the culture development. The components of the valorisation highlighted by the *MiBACT* are:

- education purposes;
- fruition;
- promotion of conservation activities;
- communication nets;
- creation of competencies networks also involving private subjects, cultural industries;
- participation of local citizens
- the link between the heritage and the other administrations and bodies that operate on the territory;
- intangible heritage;
- economic relevance and impact.

The languages used in the valorisation projects belong to the new technologies (virtual, digital, multi-media) and their products are emotional experiences, created to surprise the public in a vision of "edutainment" (education plus entertainment) (Spallazzo et al., 2009).

> *«Digital experiences are transforming how audiences engage with culture and are driving new forms of cultural participation and practice. As technology advances, so do the behaviours of audiences, especially younger audiences. We are no longer passive receivers of culture; increasingly we expect instant access to all forms of digital content, to interact and give rapid feedback»* (UK Department for Digital, Culture, Media & Sport, 2018).

Usually, these are the uses of digital (Osservatorio Innovazione Digitale nei Beni e Attività Culturali, 2018):

- services - online ticketing and management;
- communication - websites, social networks, apps, and more;
- monitoring - individual experience, personalised content, feedbacks;
- 3D models - planned conservation (BIM, online platforms, cataloguing, and more), live experiences (multi-media installations, VR Virtual Reality, AR Augmented Reality), gamification (edutainment), communication (multi-media products), prototyping and printing.

The CCPS model and digital

According to the report of Cultural Heritage Counts for Europe (2015):

> «*the Cultural Heritage management should not be limited to those intended for spending and activities in heritage field, e.g. public founding and restoration grants. This traditional scheme could be extended to resources from other sectors (e.g. social cohesion, labour market, regional development, creative industries, and more)*».

This resource framework for cultural heritage is called "trading zone", which is a term that describes specific interdisciplinary collaborations. The cross-sectorial operations have significant potential in creating a lively scientific and political marketplace where various traditions, methods and languages have to be understood and combined. This scheme is recalled by the structure of the CCPS (Cultural and Creative Productive System), where the resources for culture come from sectors that stimulate social cohesion, labour market, regional development, creative industries, and more. In this case, the perspective of cultural heritage impact is "upstream" (Fig. 1), meaning that the starting point of the process of valorisation is the mix of sectors that influence each other in a trans-sectorial collaboration and multi-layered framework. The result is a unique flow that goes towards the territorial re-activation. The conservation activities, performing arts, creative and cultural products, and social engagement, are not the consequences of the process but they are the assumptions.

In this vision of cultural heritage impact for the territorial re-activation, where is "digital" located? It is necessary to make a consideration about the main uses of digital in the cultural heritage field, to find the place for it. According to the report of *Osservatorio Innovazione Digitale nei Beni e Attività Culturali* (2018), these are the main digital employments:

- communication and customer care;
- cataloguing and digitalisation of the collection;
- planned conservation;
- bookings, ticketing and management;
- accesses and security control;
- fruition *in loco*;
- monitoring the individual experience, feedbacks, personalised contents.

The focus of this chapter is on 3D models, so looking to the category "digi-

talisation of the collection", the most common uses of virtual models are:
- planned conservation (BIM, Building Information Modelling, online systems and platforms, and other tools);
- communication (multi-media products);
- live experiences (multimedia installations, VR Virtual Reality, and AR Augmented Reality);
- gamification (VR Virtual Reality and Augmented Reality).

The employment of 3D models can be included in the four categories of CCPS, testifying that they correctly participate in the innovative vision of the cultural heritage impact (Fig. 2). For this reason, the chapter uses these sections as parameters to evaluate the effectiveness of the case studies analysed.

Case studies and application

The "ideal" valorisation project should comprehend conservation activities, performing arts (live experiences and event), and creative and cultural industries, which can profit by the use of digital. The next step is to analyse case studies focused on digital and cultural heritage, highlighting where they apply these criteria and what they need to improve.

The first examples regard the fruition aimed to restoration activities and management, implemented in sharing platforms to connect different expertise or expert users with non-expert users. The keywords in these cases are web-sharing, restoration, multi-data platforms. This is the case of SICaRweb, *Sistema Informativo per i Cantieri di Restauro* (online system for the restoration yard - http://sicar.beniculturali.it:/), and BIM3DSG (Fassi & Parri, 2012; Rechichi et al., 2016), by the *Politecnico di Milano* 3D Survey Group.

SICaRweb is an online system promoted by *MiBACT*, made for:
- collecting several types of data in a unique online environment;
- documenting the restoration yards, from the design to the scientific production;
- updating in real-time the work's progress;
- monitoring the conservation state of cultural heritage;
- planning the intervention of restoration and conservation;
- publishing the results and help to create a unique archive for restoration;
- sharing the data among different expertise.

The database of SICaRweb contains 2D drawings and analyses that show the layer of information for the case studies considered. The category of the four-leaf clover scheme presented above is the "conservation activities", and the digital is employed for cataloguing. The next level of this kind of platform is to make the data catchy also for non-expert users, "levelling" the competencies and creating a sort of cultural awareness (Fig. 3).

On the other hand, BIM3DSG is an *ad hoc* online system developed for using the 3D models as references for information, data, and analyses. In particular, its main features are:

- loading, visualisation and use of 3D models inside an ordinary web browser, selecting the level of detail desired;
- updating in real-time the work's progress;
- monitoring the conservation state of cultural heritage;
- planning the intervention of restoration and conservation;
- managing the information system;
- mobility and portable devices;
- sharing data among experts and non-expert users.

The database is completely customizable according to the need of the project. For this reason, potentially, the target of this platform can be both the fruition aimed at maintenance and conservation activities, both the fruition intended more to the public, thanks also to the visualisation of the objects from real to virtual (edutainment, education plus entertainment), and both the fruition aimed to a marketing strategy. For now, most of the projects that have employed this system aimed at restoration and maintenance activities (Fig. 4).

The benefit is that this kind of products gives to the multi-disciplinary works and projects a shared environment for storing and viewing a different type of data. The risk is that, if not supported by a strategy with clear purposes, it remains only a tool without specificity.

One of the main works made with BIM3DSG is the system for managing the yard in *Duomo di Milano*. The starting point of the work is always a 3D model shared online between other experts or non-experts. In this case, the model aims to manage the restoration activities of the yard of the Cathedral, but it can also serve other scopes. E.g., the artist Tobias Wüstefeld produced a trailer to celebrate the Digital Design Days of Milano, from the 16th to 18th March 2018 (https://www.ddd.it/). Among the most important places and monuments of the city, stand out the *Madonnina* Statue and the Main Spire of *Duomo di Milano*, which derived by the same model used by BIM3DSG system (https://www.tobiaswuestefeld.de/) (Fig. 5).

An example that fully uses the upstream framework is *Distretti Culturali* (Cultural District - http://www.distretticulturali.it/) (Fanzini, 2017). This project comprehended a wide Italian area and started from 2009 co-financed by *Fondazione Cariplo*, an Italian matching grant program. The aim is to produce a new attitude toward culture as a factor of local development and a cross-disciplinary cutting role. Culture, research, education, social, and economy are the strategic lines. It is possible to say that in this project, according to the needs of each of the six areas involved, all the four parameters of the four-leaf clover scheme where touched (Fig. 6). In this case, the use of digital was limited and not fully developed. The future direction could be to strengthen the co-design process, including digital tools that can improve the social relationships and people engagement, building a bridge between the expert users and non-expert users from the early stages of the project.

Conclusion

The upstream framework of cultural heritage impact gave the measure of a good re-activation project in a cultural direction. The categories involved that comes from the core of the Cultural and Creative Productive System contaminate each other until they become one single flow mixed through the same cultural purpose. The projects of today have to look ahead towards the tomorrow and encourage more and more multi-disciplinary works and the massive involvement of local people. This vision of massive co-design (Meroni et al., 2018) should find a real tool where expert and non-expert users can share their ideas, levelling the competencies through a process of awareness of the local culture, needs, and heritage. In this case, one of the answers can be the introduction of the digital, in particular of a common data environment that can contain a different type of information, coming from both the experts and non-experts. In this way, the digital platforms enrich a social, economic, creative, and cultural strategy, becoming a standard to achieve proposing a valorisation project, regardless of where the project is located.

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Fig. 1 - The upstream perspective on cultural heritage impact (ri-elaboration by the author from the document Cultural Heritage Counts for Europe - CHCfE, 2015).

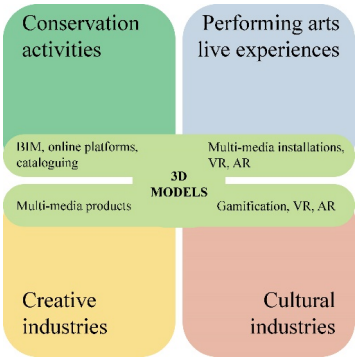

Fig. 2 - How the common uses of 3D models can be applied to the categories of CCPS, through a four-leaf clover scheme (elaboration by the author).

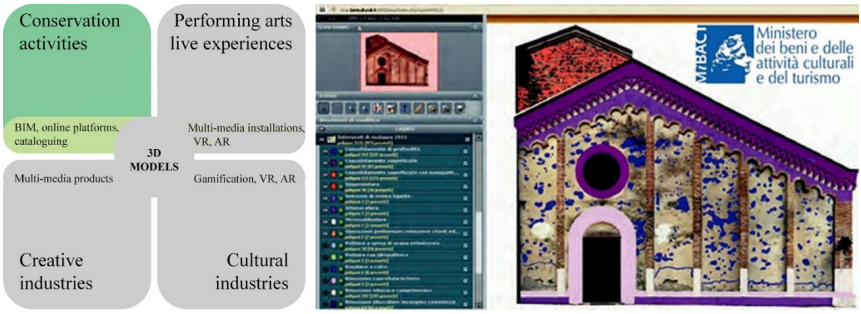

Fig. 3 - SICaRweb, the interface of the system that shows a decay mapping on the elevation of the building (on the right), and its relation with the CCPS system (on the left).

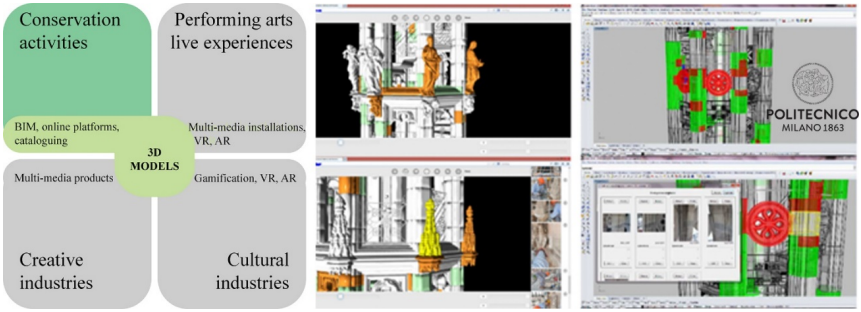

Fig. 4 - BIM3DSG system, the interface where it is possible to view and interact with a 3D model and its information (on the right), and its relation with the CCPS (on the left).

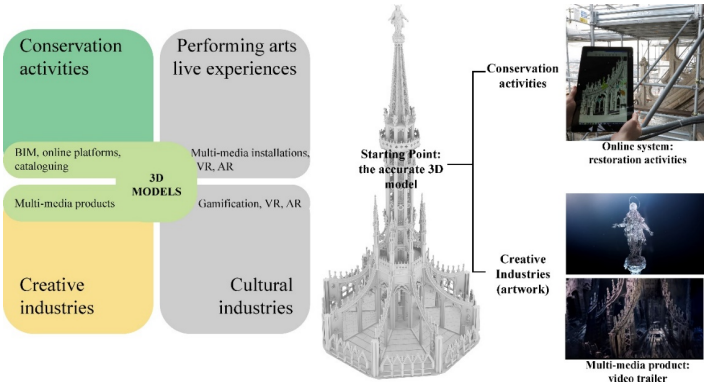

Fig. 5 - An example of the same model applied in two different sectors: conservation activities through the BIM3DSG online system, and creative industries through a multimedia product made by an artist.

Fig. 6 - The Cultural District process touches all the categories of the four-leaf clover scheme, but the use of digital is limited.

4.14 SERVICES OF CULTURAL HERITAGE STRUCTURES ENHANCE THE RESILIENCE

Zehra Irem Turksezer[*]

Cultural Heritage structures (CHs) around the world are exposed to the impacts of natural and man-made hazards. Despite the severe damages they experience, heritage structures cannot only be thought of as the victims of extreme events. They are also very valuable assets which contribute to the community resilience after disruptions. Additionally, CHs provide economic, cultural, social and environmental services which are generating a system with the structure itself. When a natural hazard occurs, one or more of these services are interrupted. The loss of services can lead to resilience failure. This paper aims to define resilience and the concept of resilient heritage structure, services that are procured by CHs and the role of these services in resilience management, as well in conservation and preservation activities. Furthermore, this paper proposes a holistic framework which involves the services that CHs contribute to and their importance for resilience.

Introduction

Structures and communities have always been exposed to natural and anthropogenic hazard impacts. In the last decades, CHs around the world have been destroyed by various of such severe hazards. The increasing threats of both natural and anthropogenic disasters create a paramount need to ensure the resilience of CHs, so that they are capable of resisting and withstanding to and recovering from such adverse events. Moreover, CHs provide social cohesion and unique identification for community as well as their contribution to the sustainable development.

This paper aims to present a general view on building a resilient CH system. It is an interdisciplinary study which involves engineers, architects as well users, owners and managers of CHs. Herein, the resilience and CH have been defined. The services provided by CHs and their benefits for the community and

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sustainable development have been discussed in a holistic framework. Then, CHs and their services have been presented from a resilient point of view and the actions which should be taken to build a resilient CHs have been listed.

Cultural heritage

For decades, Cultural Heritage (CH) has been a significant topic for Member States. Studies demonstrate that CH came on stage in the 6th century. Protection, conservation and restoration of CHs became important issues in Europe by the 20th century. Cultural Heritage has been defined by the Council of Europe under the "Convention for the Protection of the Architectural Heritage of Europe" in 1985. According to the Council of Europe, CH was defined under three different categories as following:

> «- *Monuments: all buildings and structures of conspicuous historical, archaeological, artistic, scientific, social or technical interest, including their fixtures and fittings;*
> - *Groups of buildings: homogeneous groups of urban or rural buildings conspicuous for their historical, archaeological, artistic, scientific, social or technical interest which are sufficiently coherent to form topographically definable units;*
> - *Sites: the combined works of humans and nature, being areas which are partially built upon and sufficiently distinctive and homogeneous to be topographically definable and are of conspicuous historical, archaeological, artistic, scientific, social or technical interest*» (Council of Europe, 1993).

Then UNESCO made a very inclusive and detailed definition of CH as

> «*the CH may be defined as the entire corpus of material signs - either artistic or symbolic - handed on by the past to each culture and, therefore, to the whole of humankind. As a constituent part of the affirmation and enrichment of cultural identities, as a legacy belonging to all humankind, the CH gives each particular place its recognizable features and is the storehouse of human experience. The preservation and the presentation of the CH are therefore a corner-stone of any cultural policy*» (UNESCO, 1989).

Resilience

The definition of resilience can vary depending on the field of study, such as engineering, psychology or ecology. In a general way, the term resilience is defined by Bruneau and others (2003) as the capability of a system to decrease the possibility of a shock, to endure a shock and recover after a shock rapidly. The United Nations outlines resilience in the report of living with risk: a global review of disaster reduction initiatives as

> «*the capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organizing itself to increase this capacity for learning from past disasters for better future protection and to improve risk reduction measures*» (Larson, 2004).

In the report of *Managing Extreme Events and Disasters to Advance Climate Change Adaptation*, resilience is defined as

> *«the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions»* (Field et al., 2012).

Bruneau and others (2003) defined the system as fully functional in prior event, a sudden functional loss during event and increasing functionality with time after the event which is going back to system's first state.

There are four resilience properties that are robustness, redundancy, resourcefulness and rapidity. Robustness is the ability to endure an unexpected disruption without loss of function. Redundancy is the ability to fulfil functional requirements in the disruptive event. Resourcefulness is the capacity to determine priorities as well mobilize material and human resources. Rapidity is the capacity to meet priorities in a timely manner (Bruneau et al., 2003; Giuliani et al., 2016). These properties can be designated for event phases namely robustness is before and during the event, rapidity is after the event, while resourcefulness and redundancy are both before and after, as illustrated in figure 1.

In all definitions the term "system" term defines any physical or organizational any network which provide specific functions by itself or linked with other systems. When CHs are thought in this concept, the system can be a single monument, group of buildings or a site. Each CH system supplies cultural, social, economic and environmental services/functionalities to the community and the built environment. The difference between a heritage structure and other structures (or infrastructures) is the capability to contribute cultural and social services.

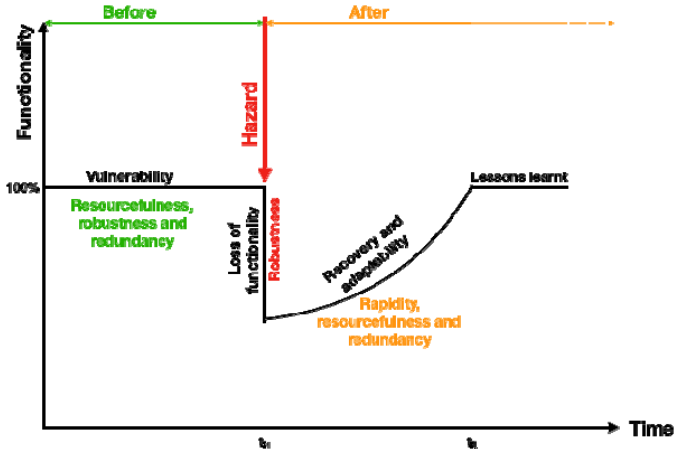

Fig. 1 - Functionality of an infrastructure changing before, during and after a hazardous event and the resiliency properties changing in each phase as well (elaboration by the author).

Services provided by cultural heritage structures

The services that are provided by CHs (cultural, social, economic and environmental) may be interrupted by an extreme event. As a result, either a single (or multiple) service losses can be observed due to the impacts of hazard. These losses can differ for each structure even if they have the same structural properties; such as the time and community they are built in (e.g. churches, monuments). The reason of the physical damage can be related to material properties, design, use, environmental conditions and built environment. On the other hand, these damages can be seen due to lack of maintenance, preservation or conservation activities.

In a CH system, the services are provided by structure itself and then, the structure regains these services after a disruptive event owing to social and economic functions.

Cultural service

CHs define the meaning of culture in a society. The new generations can learn their traditions, history, art, and science by looking at CH, especially architectural heritage. In accordance with the report of *Cultural Heritage Counts for Europe*, services contributed by CH are considered to be image and symbol creation, architectural language, visual attractiveness, creativity and innovation, sense of place and creation of identity. Some services provided by heritage structures are also common in the other aspects, especially social ones. Moreover, cultural services can contribute to the value historically, aesthetically, symbolically, educationally, and in terms of place, identity and social participation (Nostra, 2005).

Traditional knowledge systems have an important place for preventing and mitigating disasters, hence providing sustainable development (Jigyasu et al., 2013). During the service life of CHs, they produce knowledge on the traditional construction ways, preventative methods, use and maintenance history. After a disruptive event, this knowledge turns into rehabilitation activities. On the other hand, these activities help training new people (and craftsmanship), creating new work fields and networking, as well making discoveries and updates about structural states.

Social service

CH brings communities together, provides social cohesion and engagement as well as lifelong learning and personal development. During contingencies, these structures may supply shelter areas and refuge zones afterwards. In the report of *Cultural Heritage Counts for Europe*, it is stated that CH influences both individuals and large societies socially (Nostra, 2005). Social services support improving citizenship, broadening access to art and history, recognizing multiculturalism and improving community involvement. Moreover, the

essential motivation for the conservation of heritage is the sense of helping citizens to attach their roots (Yung & Chan, 2012), thus, enhancing social services.

Furthermore, when the CH is utilized as being innovative, it involves more people and, thus, changes their sensation for heritage structures and built environment. By engaging citizens, it is also possible to increase the efficiency of heritage management and preservation. CHs do not only provide social services for people but also regain from them. For example, while involving elder citizens in heritage activities is contributing to their health and life by keeping them active, it also collects their memories and conduces to preservation heritage. Additionally, involving young and unemployed citizens in activities related to heritage structures contributes to both reintegration of those people and gaining skills in specific working areas (European Commission, 2015). This aspect of social service is also connected with economic service of CH.

Economic service

The economic services which are provided by heritage structures are listed by Yung and Chan (2012) as job creation, revitalization of the current area and tourism. Moreover, the European Commission's report points out a similar comment that economic benefits are in the light of tourism, employment in traditional and new industries as well innovative stimulant for growth (European Commission, 2015).

The economic aspect has been discussed by CH experts and economists in many researches. While heritage experts' view on the economists is as shortsighted since they argue about their cost-centred view (European Commission, 2015), economists blame the CH experts for not acknowledging the economic realities. Nevertheless, there is an inquiry on how to substantiate the costs, or how to measure the benefits and expenses of CH (Nostra, 2005).

Throsby expresses that the total value of the CH should cover both cultural and economic values. Since we live in a market-oriented world, it is important to assess the value of CH in terms of money from the political view. This is required to legitimate investments on CH conservation. Considering that the governmental resources are limited, the economic analysis must be performed by questioning the priorities. He adds that building assets have an economic value due to their physical (structural) value, but heritage buildings have also the cultural value in addition to the physical one (Throsby, 2001).

The economic values are not only essential for the heritage itself but also for planning, management and decision-making processes (Mason, 2005). Zarnic and colleagues explain that the economic value can be defined by financial methods, by the use value. This value is that the market value of heritage asset which is formed by services and benefits that are sold on the market and mirrored in the financial value of the asset (Zarnic et al., 2017).

Della Torre's study can be referred to the disruptive events that CHs have been experiencing for several decades. He compares planned conservation and

preventive maintenance in terms of cost and time. It is emphasized that while soft cost (inspection, monitoring, recording) is required by planned conservation, preventive maintenance demands an early stage investment and the effects of it can be seen in a longer period of time (Della Torre, 2010).

Environmental service

CH plays an important role in sustainable development. Heritage structures form the cultural landscape and provide regional attractiveness. Moreover, conservation and efficient use of these structures decrease the unnecessary new settlements, reduce unplanned settlements and support a better management for housing stocks. Reuse of old structures is an important benefit for both environment, society and the economy. It is stated that the new structures which were built after 1890s, especially more modern buildings, are not showing the same energy efficiency as previous ones (Nostra, 2005).

Resilient cultural heritage

CHs suffer from natural hazard impacts alongside with poor management, inadequate communication and preparedness plans as well mismanaged post-disaster recovery. To build a resilient CH system, it is needed to address structural resistance, in addition to the managers (or operators) of the structure; organizations and other stakeholders who are responsible during a contingency. Between all these stakeholders, there is information flow which is can be gathered by engineering technology, cultural services of CHs or past archived data.

Before a disruptive event occurs and leads to service losses, structure has to be perceived well, data collection on structural state and behaviour should be done, non-disruptive measures should be taken, and preventative maintenance must be performed. These will help improve preparedness of structure since they assist in reducing the physical vulnerability prior to a hazardous event. In this way, the loss of functionality during an event can be decreased since robustness is improved. For the data collection on the structure, there are: 1) engineering techniques such as monitoring, visual inspection etc.; 2) cultural services, namely traditional knowledge, provides knowledge on history of structure; and 3) archived data accumulated until today. On the other hand, by engaging citizens and involving community in CH protection and disaster risk reduction activities, it is possible to reduce vulnerability of people. By such means, economical service benefits from job creation which is supported by the activities in both structure and its surroundings.

In the face of a contingency, CHs experience loss of functionality and services contributed by structure itself. During the event (first 72 hours according to Field et al., 2012) CHs provide refuge areas for citizens and after several past disasters they were used as shelters (Stanton-Geddes & Soz, 2017). In the re-

covery phase, CHs support rehabilitation activities with social and economic services. They support long term rehabilitation of community (psycho-social support), creating working areas for people who were trained for conservation of CHs, and providing shelters to citizens who lost their houses during the disaster. In this phase the organization is expected to be resourceful and quick to respond in timely manner, while the community is expected to adapt and get involved in recovery activities. In long term recovery, lessons learnt both from the disaster and structural issues will support resilience of CH system by enhancing all services for any disruption that may occur in future. Improvement of economic services can be a result of social activities as well as allocation of resources in the organizational level (Fig. 2).

The crucial point is that CHs do not only contribute services for the community resilience but also become resilient inside its own system. The actions which should be taken to build a resilient system can be listed as following:

1. improving communication between stakeholders;
2. gathering data on CHs, population and organization, and transfer it between stakeholders;
3. understanding structural state and demands, and taking some measures (i.e. maintenance, monitoring etc.) as needed;
4. providing communication and emergency plans in local and national level;
5. developing disaster risk mitigation plans for various typologies of CHs against natural and man-made hazards in local and national level;
6. involving citizens in both preparedness and recovery activities to both motivate them and utilize their knowledge as well as memories.

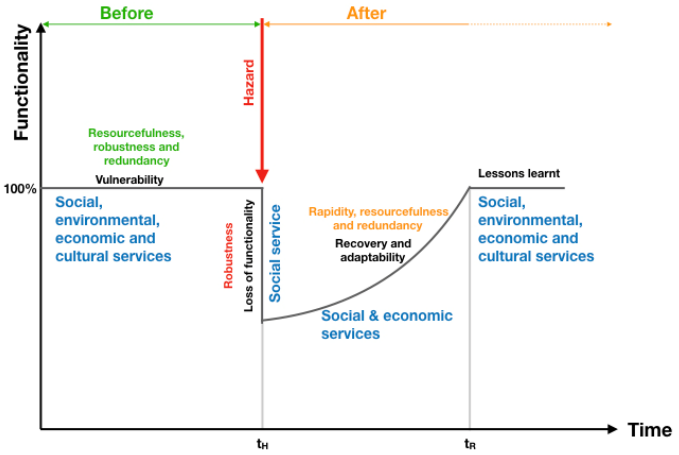

Fig. 2 - CH services working for resilience during a hazardous event (elaboration by the author).

Conclusion

CHs should be preserved and conserved not only because of their historical and aesthetic values but also due to their services contributing to the sustainable development and community resilience. There are four essential services that are provided by heritage structures. Each service works both for the community and the structure itself. The cultural service provides knowledge on traditions, art and science as well as construction techniques. Social services are understanding and storing the memories of people, engaging people in preservation activities, providing social cohesion and supporting lifelong learning. Last but not least, economic services are tourism and job creation, while environment services bring regional attractiveness, energy efficiency and prevention of unplanned settlements. Given these facts, in order to build a resilient system, services should be considered with structure itself. Necessary actions should be taken on both organization and the structure. Communication and emergency plans should be developed and include various types of CHs in local and national levels.

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4.15 THE SEISMIC PROTECTION OF ITALIAN BUILT CULTURAL HERITAGE: THE CASE-STUDY OF SALÒ

Enrica Brusa[*]

Recent earthquakes in Italy have shown us the importance of a deep knowledge of both the historic/structural characteristics of our built heritage and the available typologies of emergency supports. These will permit us to react to an earthquake with efficient risk-preparation, giving us the capacity to immediately stop the collapsing of the structures with appropriate support and to guarantee the cooperation among different technicians that are involved in the emergency phase.

The city of Salò (in the Brescia Province), that reacted in an efficient way to the earthquake in 2004, is a good example of a sustainable risk-preparation approach. The paper presents the reaction and the anti-seismic strategies that it has developed over the past years, suggesting how they could be enhanced in a more sustainable way, improving the level of participation of the population (i.e. through the direct formation of local experts in heritage restoration/maintenance) and increasing the resilience of the community.

Introduction

Italy is a nation that is often subjected to earthquakes. In many cases, they provoke huge damage to buildings, with an irreversible loss of architectural heritage that can no longer be restored in its authenticity. in order to avoid the loss of all those values that are related to the permanence of historical buildings, it is really important to understand how the damages caused by earthquakes could be limited (Blasi, 2013; Dolce & Manfredi, 2012).

An important part of the problem is related to the efficiency in which the emergency phase is managed and coordinated with the different institutions that are involved in the protection of our cultural heritage. Indeed, the recent earthquakes that have occurred in Central Italy during 2016-2017 have shown how an inaccurate and improvised reaction can increase the level of damage. These

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events have highlighted not only the importance of having control of the structural knowledge of historical buildings, but also the importance of correct emergency management. Therefore, a correct preventive approach to protect Italian cultural heritage from earthquake damage, should be to adopt a multidisciplinary approach.

With both the sharing of knowledge and the guarantee of its accessibility, it could be easier to develop specific procedures that permit rapid intervention. In this sense, defining a more efficient way to manage the emergency will reduce the seismic risk to cultural heritage, ensuring an immediate and proficient reaction to the damages provoked by an earthquake (De Paoli, 2010).

Moreover, this knowledge should be shared among not only the specialists, but also the inhabitants. The diffusion of information about good practices of reaction could increase the surety among citizens and could improve their level of knowledge about cultural heritage, aiming to develop their awareness towards the historical heritage.

1. Knowledge and efficiency for planned seismic preservation

During the past years, it has become clearer that there is a necessity to change the approach towards preservation. Experts and restorers seem to have understood that a posterior intervention - when damage has already occurred - is no more desirable, while better solutions could be achieved adopting a preventive approach (Della Torre, 2010 and 2014; Van Balen & Vandesande, 2013). This methodology, also known as "planned conservation" (Della Torre, 2003; Moioli, 2014) could avoid the occurrence of huge damage due to the passing of time and to human neglect, removing the necessity of more invasive interventions in the future. This strategy could be adopted only if a building is well known in its complexity: having the knowledge of all its different elements guarantees the awareness of which parts need to be controlled and when.

The same approach could also be adopted to prevent the damage provoked by an earthquake: indeed, also if it's not possible to predict the occurrence of a seismic event, it is possible to know how the horizontal forces damage a building, as well as the more earthquake-prone areas.

In order to achieve this type of knowledge, a deep familiarity with the historical buildings that are situated in the Italian seismic areas is necessary (Della Torre, 2016). This awareness should comprise not only the knowledge of the building's history, the type of structure or the type of the interventions that are necessary to improve the resistance to the earthquakes, but also the economic and the administrative process part (Donatelli, 2010; Limongelli & Scala, 2013). Thus, taking into account all the different aspects of the problem, the analysis has to focus on a multi-level approach. The achievement of these issues should guarantee a better level of prevention, assured by the improvement

in the management of the pre- and the post-earthquake operations (Binda et al., 2005; Coïsson & Ottoni, 2012; Coïsson et al., 2014; Modena et al., 2012).

Methods and instruments

As things stand, a satisfying "seismic planned preservation" implies a multidisciplinary approach which considers different main topics. They are: the characteristics of the historical buildings, the concertation of all the actors involved in the emergency phase, the existing solutions to repair the damages and also the involvement of the population in the preservation actions.

First of all, the phase to acquire a deep knowledge of the historical building's characteristics must include some important data such as its history, its geometry, and all the materials' features of its different components. Once this type of knowledge on cultural heritage is acquired, the data and information collected should be digitalised on a public data-base. Storage on a digital support permits the immediate availability of the information in case of emergency and prevents its loss in case of collapses/damages of public archives.

Concerning the administrative side, it is very important to establish which are the main entities that will have the emergency management's responsibilities. A good organisation of the hierarchy of both the competences and the assignments could help manage the emergency without losing time. In order to do this, it is necessary to define beforehand who are the managers and those responsible for the emergency, as well as how the competences of the different entities - firefighters, civil protection, police, and all the volunteers - will be distributed.

Moreover, this type of preparation should be confronted also from a technical point of view, through the preparation of a list of specialised workers and the knowledge of the different typologies of provisional systems that are available to protect the damaged buildings. The knowledge of this particular information will allow administrations to make a public call for the procurement of shoring systems, in order to know in advance who are the most qualified operators are. This knowledge could permit a more immediate reaction to the first post-earthquake collapses, resulting in the limitation of damages to the built cultural heritage.

Finally, the role played by the population must be seen as important as has been previously highlighted. Paying attention to the fact that *«an object that becomes part of Heritage must preserve the values that makes of it a historical evidence, a symbol of cultural identification for a community»* (Canziani & Della Torre, 2009), who deals with the conservation - and the valorisation - of cultural heritage should always remember that those values do not consist simply in the tangible object, but also in its - intangible - social function. In particular, this function should be *«seen as an intellectual development factor in a community, and as a historical element which defines the identity of local communities»* (Settis, 2005). This aspect has been emphasised by several recent

studies and by some European official documents[1].

As things stand, it becomes very important to involve the population in the conservation process. The care of built cultural heritage could be better guaranteed for years if the local communities participate in the valorisation process. In this sense, a bottom-up approach should be adopted, through which the importance of heritage is transmitted throughout the community. This relationship between the conservation institutions and the local communities could establish a good exchange, assuring that both understand what built heritage means for the citizens and to encourage their disposition to the heritage maintenance. So, one operational method must consider at least two different tools to achieve the sharing of the heritage knowledge and awareness: the first tool is represented by the adoption of specific school programs - at different levels, from primary schools to universities -, while the second one is given by the elaboration of long-term ventures with community participation - such as the grant of some spaces for local associations or the promotion of cultural events.

These strategies would allow for the knowledge of heritage to spread throughout the population through their involvement in the care. During past years, different positive examples have been developed also in Italy. It is worth considering the "Cultural District" programmes in Lombardy funded by the Cariplo Foundation (Barbetta et al., 2013; Della Torre, 2006) or, concerning the anti-seismic issue, the repopulation project launched by the administration of Fontecchio in the Centre of Italy[2].

2. The case study of Salò

The methodology that we have mentioned before could be reprised and adapted to different cities.

Therefore, we have chosen a small city in the North of Italy as a useful case to be presented. The city, called Salò, stands on the west side of Garda Lake, within the Lombardy Region.

The city's main cultural heritage is comprised of some buildings dating back to the 15th century up to the 20th century[3]. They are public or religious buildings and their presence deeply characterises the image of the city, not only

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1 Council of Europe, (2005), *Value of Cultural Heritage for Society*, Council of Europe, Faro, CETS n. 199; CHCfE consortium (2015), *Cultural Heritage counts for Europe*, European Commission, Brussels; European Association of Historic Town and Region (2007), *Investing in Heritage - a Guide to Successful Urban Regeneration*, EAHTR and European Union, Norwich, UK.

2 Further information available at: http://borghiattivi.it/files/Borghi_Attivi_Fontecchio_WEB.pdf (accessed on 18th August 2018); https://www.heritagecouncil.ie/projects/community-led-village-design-statements (accessed on 18^{h} August 2018).

3 See: http://www.lombardiabeniculturali.it/architetture/luoghi/1.70/ (accessed March 2018).

for the tourists but also for the inhabitants. The most important building is the Cathedral (*Santa Maria Annunziata*) that, being the oldest building in the city, represents a heritage with a primary importance for the local identity and culture (Ibsen, 1999).

As Salò was already affected by earthquakes in the past, it had the opportunity to develop various anti-seismic strategies, each one of them corresponding to the contemporary technology of different periods. In particular, the two most recent earthquakes occurred in 1901 and in 2004. They caused some damages that forced the population to start anti-seismic interventions (Belotti et al., 2001).

The earthquake in 1901 represented the first big earthquake since a scientific kind of measurement was adopted in 1892. That earthquake - which occurred on 30th October 1901 - caused much damage to the city. The second big earthquake happened on 24th November 2004. It caused damage to the buildings without seriously injuring any person.

Both of these big earthquakes have highlighted a good level of efficiency in the public reaction. In 1901 a prompt reaction, defining the teams that should analyse the damages to determine the necessary interventions was carried out. Moreover, the population was involved in the decisional phase of the urbanistic renovation, and the image of the city was changed in a unitary way, adopting modern rules about the hygienic, structural and architectural principles. Also, even if it was the beginning of the 20th century, the works were finished less than 6 years after the earthquake.

The second earthquake however, revealed some problems related to some advanced weaknesses of the buildings, and/or to the inappropriateness of some of the technical solutions adopted after 1901. The analysis of the damages and the further strengthening interventions commenced immediately after the earthquake. All these interventions followed the modern anti-seismic techniques, and were executed respecting the original materials of the historical buildings. Thus, the seismic resistance of these types of buildings has been so ameliorated and the historical constructions should be able to resist a future earthquake, whenever it may happen. Once again, the city of Salò reacted in an efficient way to the earthquake, and has shown resilient behaviour (Giacomelli & Riva, 2009).

Further steps

In order to reduce earthquake damage to our built heritage, it is necessary to improve the efficiency of emergency procedures. In this sense, an abacus that matches modern shoring systems with the weak points of historical buildings should be prepared, guaranteeing the knowledge of the more appropriate solutions and arranging a well-researched documentation of the available supports.

The sharing of the achieved knowledge will constitute a further advantage. Specific educational programmes for all the instruction levels could be prepared, aim-

ing to transmit both the acquired information and the suitable practices to carry out an appropriate "seismic planned prevention". In addition, also the collaboration with universities and training institutions should be taken into consideration, in order to develop dedicated courses for the formation of specialised workers.

Conclusions

The "seismic planned prevention" strategy for built cultural heritage combines competences that normally belong to different disciplines. Indeed the problems that it faces concern various issues, such as: the preservation of architectural heritage; the structural analysis on listed buildings, seismic risk tests and the technical solutions aimed to reduce the risk of collapses; the administrative procedures concerning the contract codes for building and restoration interventions, as well as the relationship with public Institutions; the direct involvement of the population, encouraging local communities to live in and to care about cultural heritage.

The final result of the research will be the definition of some procedures that - developing and storing a deep level of knowledge about built heritage in seismic areas - will allow for rapid reaction during the emergency phase, performing efficacious interventions in order to limit seismic damages. An efficient preparation to seismic risk could be achieved also by adopting the long-term vision of a participated strategy. The involvement of the local community in the care of built cultural heritage will indeed help not only with the everyday maintenance, but also to increase the people's awareness of the importance of reacting earlier to reduce seismic damages.

In this way, a key "resilience" level of seismic cities could be achieved.

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4.16 POST-EARTHQUAKE DAMAGED CHURCHES: A TEMPORARY VALORISATION

Gessica Sferrazza Papa[*]

Earthquakes periodically strike the Italian territory, which is scattered with churches. In the last decades, the L'Aquila 2009, the Emilia-Lombardy 2012, and the Central Italy 2016 earthquakes have confirmed the high seismic vulnerability of churches, due to intrinsic structural characteristics. Churches remain "crystallized" in a damage state at the specific moment the earthquake strikes them. This status could represent an opportunity for a temporary valorisation in the time lapse between the realization of provisional safety interventions and the moment when organization procedures are set, and funds are available for final retrofitting and restoration works. This article aims at proposing a possible temporary valorisation of damaged churches. Such an approach, including participative actions, is proposed as a driver for: increasing the sense of identity in a community, with churches as part of its cultural heritage asset, and encouraging a sustainable renewal of normal life in such territories.

Introduction

The Italian territory is highly prone to earthquake damage, as the recent seismic events have once more confirmed. Italy is rich of church buildings, known for the high seismic vulnerability due to their structural characteristics. First studies on church seismic vulnerability started from the observation of earthquake damage, following the 1976 Friuli earthquake (Doglioni et al., 1994). When an earthquake occurs, the Italian Civil Protection Agency immediately intervenes with structured emergency plans, activating experts from the Ministry of Cultural Heritage (*MiBACT, Ministero per i Beni e le Attività Culturali*) and structural engineers who are in general academics associated to *ReLUIS*, a University network of earthquake engineering research. They are in charge of surveying the churches to perform damage recognition by filling specific survey forms (PCM-DPC, MiBAC, 2006). It is a fast procedure to obtain a comprehensive

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vision of the affected churches and to set the next phases.

After the 2016 Central Italy earthquake, some damaged churches, previously subjected to repair and improvement, were surveyed (Parisi et al., 2018). The contact with these affected churches allows observing constructive details and assessing the efficiency of previous interventions. After the safety intervention procedure, churches remain in this condition until that administrative and funds issues are solved. This research work, which evolves from a previous one (Sferrazza Papa & Parisi, 2017), written immediately after the survey, intends to provide a proposal for this temporal gap.

In such context, churches, that are a point of reference and of aggregation for the community in everyday life, could become a driver for a sustainable renewal. Indeed, rapid changes as those caused by earthquakes, which determine a deprivation of certain cultural heritage goods or places, can cause disorientation similar to the results of clinical amnesia (CHCFE Consortium, 2015, p. 129). This paper proposes a temporary valorisation of damaged churches. The adjective "temporary" refers to its limited time action. Such an approach helps to avoid the deterioration of the cultural capital, defined by Throsby as *«the stock of cultural value embodied in an asset»*, existing in tangible and intangible forms (Throsby, 1999, p. 9). The temporary valorisation can make these values accessible. Romano (2017), Ronchetti, (2017), and Santagati (2017) confirm the acceptance of such proposal.

In the following, the change of approach in the valorisation of Cultural Heritage (CH) and its potential is explained before presenting different examples of projects and initiatives. They show how the cultural heritage could be an engine for the sustainable development, and how temporary projects have the capacity to get out from crisis through the involvement of the community. Finally, the work ends presenting sets of actions that could stimulate a different approach in post-earthquake scenarios to valorise damaged churches.

The approach to cultural heritage

Churches are part of the immovable heritage. They contribute to create the identity of places and are physical proofs of the events that occurred in a territory. The approach towards the CH has changed along the years. In the conservation and valorisation field, a significant step was taken between the 1960s and the 1970s with the Franceschini Commission: there was a shift from an object-oriented to a value-oriented interest. Later on, with the 1990s the term "sustainability" entered the heritage field together with "development". It is in this perspective that the 21st century looks at the CH as an engine for a sustainable development. This is achieved when the four domains (economics, social, culture, environment) are considered together through a holistic approach (CHCFE Consortium, 2015, p. 99), generating impacts on the four domains

(CHCFE Consortium 2015, pp. 62-80).

In 2013, the Hangzhou declaration recognized this approach, considering culture as the fourth domain. In one of its sections, the document points out how culture can *«strengthen resilience to disasters»*, explicating that *«the feeling of normalcy, self-esteem, sense of place and confidence in the future among people and communities affected by disasters should be restored and strengthened through cultural programmes and the rehabilitation of their cultural heritage and institutions»* (UNESCO, 2013).

With such an approach, the CH becomes a driver for the production of multidimensional values and is no more perceived as a consumption of resources (Della Torre, 2013, p. 82). The people's role in the approach to the CH is also worth nothing. In 2000, the European Convention of the Landscape (Council of Europe, 2000) defined the landscape as the result of people's perceptions and the interrelation between natural and human factors, and not as a self-defined object. Few years later, in 2005, the Faro Convention (Council of Europe, 2005) confirmed the approach centred on people and human values.

Examples of approaches

At Italian territory scale, two different examples on the approach to cultural heritage are the *Distretti Culturali* and the Abbey of San Fruttuoso in Camogli (Genova) projects. The *Distretti Culturali* project started in 2007 in Lombardy Region. This project puts in practice an integrated approach between cultural and economic activities. It engaged the community through participative activities aiming at the preservation of the cultural heritage. This project included actions of valorisation and restoration to foster a sustainable territorial development.

This national example shifted from a downstream to an upstream perspective and went beyond the physical conservation and promotion goals. It has generated externalities, enabling the change of attitudes and the creation of *«new relationships, and enhancement of skills for all the involved stakeholders»* (Boniotti & Della Torre, 2016, p. 111). The project of temporary valorisation of the Abbey of San Fruttoso at Camogli consisted in opening the restoration site to visitors in restricted safety conditions.

The *Fondo Ambiente Italiano* (*FAI*) organized this temporary event, called *Cantieri aperti*, on January 21st, 2017. In this occasion, in restricted safety conditions, the visitors entered the site of the restoration works for the façade, accompanied by the project manager and by the restorer. The building contractor, in charge of executing the restoration works, secured the site. In this condition, the *FAI* divided the visitors in small groups and informed them on the precautions to follow through written guidelines. This event provided an opportunity to transmit specific knowledge on the abbey during a specific moment in the

life of the building. In the last years, *FAI* has ascertained the acceptance by the community for this sort of initiatives.

At the international scale, two examples of reactions to crisis are the Halland Model (Sweden) and Christchurch Transitional City (New Zealand). The Halland Model, widely presented in Gustafsson (2011), is the example of Sweden's answer to the European recession period of the 1990s. In 1993, this project interested the building conservation field, introducing labour market measures: unemployed construction workers were involved in learning activities on traditional techniques and working in building restoration sites of selected historical buildings (Gustaffson, 2011, p. 9). This model aimed at contributing to the regional growth and the sustainable development, because of the positive impact on the four domains.

Another example of answer to a crisis, this time related to a post-earthquake scenario, is the Christchurch Transitional City. This was the label given to the city phenomenon, generated after the 2011 Christchurch earthquake. The effects on the Central Business District (CBD) were devastating: 70% of the buildings were lost. The New Zealand government presented a new urban plan for the city, but delays, related to administrative and fund issues, boosted people to join in self-born organisations and to cooperate in rethinking the scenario for their new city through the realization of temporary projects. The Christchurch City Council (CCC) preferred to call them transitional projects to include the idea that they could contribute to the future development of the rebuilding process (Moore & Bennett, 2015). The most successful organisation born after the earthquake is Gap Filler. They ran temporary installations and experimented ideas amidst the 19th and 20th century damaged buildings. The Gap Filler organization role shifted from organizers to that of means providers to materialize community ideas. They called their approach a "propositional mode of development" (Reynolds, 2014). People from several disciplines got involved and new projects were born; mostly, they were low budget and low-risk, a simple answer to needs. They were all on the CBD, initiated from the intention of testing ideas or stimulating debates on some space-related topics. The CCC answered supporting transitional projects, facilitating regulations and laws, unlocking sites, and providing funding and guidance with the Transitional City Projects Fund. Some of these projects are still there; others are different from the origins or no more exist.

The proposal

For communities, churches are gathering places and a point of reference for cultural and social values. They are part of the tangible and of the intangible cultural heritage asset, which were distinguished for the first time in the Nara document (ICOMOS, 1994).

This proposal intends to start from the meaning of churches for the community, to reduce the risk of negligence and abandonment of those heritage buildings, in consequence of the temporal gap. Temporary projects of valorisation for churches can contribute to provide the affected communities with signals of return to normality. The approach of a temporary valorisation stimulates a process and not a concluded action. Participation projects of temporary valorisation seek the community involvement. This action increase the awareness in the community of the potentiality of the CH and, as demonstrated by the case of Christchurch, it contributes to prevent the loss of identity of the places and depopulation of the affected areas.

The proposal includes several phases. The starting step is the identification of the active organizations or groups socially involved. Supervised by experts, they can analyse and extract data from the damage survey forms for churches. In particular, useful information is the damage to structural elements (Section A16, A17 of the form), the physical accessibility to the buildings (Section A18), and the damage to the decorations and movable works of arts (Section A21).

This information is crucial as it allows setting up a feasibility study and it helps to select, to give priorities, and to identify what is possible for each specific building. Then, a phase of negotiation and co-operation starts among several partners (academia, conservation experts of *MiBACT*, engineering and architectural firms, local and regional authorities, the diocesan administration, local stakeholders and organisations). Every partner contributes from its traditions, working culture, mindsets, policies, networks, regulations and legal framework, as well as specific vocabularies (Gustafsson, 2011, p. 97).

This negotiation phase is thorny, it is the so-called trading zone. This moment implies that each one renounce to absolute interests and accept speculating innovative common interests (Della Torre, 2015, p. 64). Partners mutually identify values in order to avoid failures of projects. In this way, an integrated approach for the temporary valorisation of churches is possible. This mediation phase ends with the elaboration of a strategy. It contains the role of the involved partners and their contribution, the designated supervisor, who will constantly monitor the project, bearing in mind the wider project, plans of analysis for the level of accessibility and the potentiality for each church, and the possible users, and, plans of proposal for a temporary valorisation including digitalization and smart systems. Some of the identified churches and relative spaces can become laboratories for learning or experimentation, as occurred in Christchurch.

The experimentation will allow the community to benefit from intangible results that make the activated development processes sustainable and durable (Barbetta et al., 2013, p. 18). It can happen that existing conditions easily foster valorisation projects. This is the case of a church visited in Central Italy on spring 2017. Some restoration works of the frescos were in progress when the first shock struck the area; so, scaffoldings were present at the impost of the

arches. This condition facilitated the prompt insertion of new tie rods to replace the old ones that broke, thereby preventing further damage when a new shock arrived.

The scaffolding can speed up the realization of activities, in a temporary valorisation perspective. As tested by the *FAI*, small groups of visitors could be accompanied by experts to provide a differentiated offer of cultural tourism. At the same time, the empty space of the nave could become a learning laboratory for students from universities and specialization courses, or for people interested in historical masonry structures, in the observation of the damage, or in the technique for the renovation of the frescos. Such an integrated approach could have positive impacts on the four domains. In this way, the temporary valorisation:

- uses the post-earthquake emergency as an opportunity to investigate solutions to remove this heritage stock from the state of crystallization;
- can enable people to increase their know-how capacity that generates externalities;
- increments the cultural capital (Throsby, 1999) and the territorial capital (Camagni, 2009);
- avoids the depopulation of those territories, and stimulates the interest of investors, whose contributions could be integrated in the network, generating other stream benefits;
- impacts positively the environmental historical building context;
- increases the knowledge level and strengthens the local identity and could create new jobs in the region;
- helps to create networks to share strategies and resources;
- creates a culture of the temporary valorisation of post-disaster events;
- increases the acceptance that resilience capacity should be part of the character of areas prone to earthquakes.

Conclusions

The 2016 Central Italy earthquake is the most recent of the several strong earthquakes which have affected the Italian territory in the 21st century. These natural disasters threaten the irreplaceable cultural heritage, which creates the identity of the territories. An approach of temporary valorisation for the heritage building stock is essential.

The time of interruption determined by economic, administrative and logistic reasons, is a temporal gap between the moment when the earthquake strikes and the moment when the interventions of restoration start. This work has shown that temporary actions, taken on churches, could provide possible answers to post-disaster situation.

Bearing in mind the updated approach for cultural heritage, a temporary valorisation of the affected churches could provide positive impacts on the four

domains (economic, social, cultural, and environmental), accomplishing a sustainable restart of these affected territories.

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