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Traditional built environment conservation: social and technological aspects

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Abstract

In the era of globalization, recognizing themselves as part of the built environment in which they live is an increasingly important social need for people around the world. The identity of places derives not only from the geomorphological features, flora and climate of a place, but also from the characteristics of its traditional buildings. Local materials such as stone, wood, earth, straw, etc., and traditional construction technologies, become essential elements for identifying a place. Today it is important to enhance the identity of places not only by the conservation of traditional buildings but also by applying the rules of sustainable construction to the specific area, in case of new buildings. However, the construction industry often fails to consider these aspects, with destructive effects on the landscape and local identity.

The paper illustrates some of the research carried out in Italy on this subject, focusing on the restoration and refurbishment of existing traditional buildings from the viewpoint of sustainability and local identity. In particular, the paper will explain the guidelines that support the design of maintenance and works of restoration.

These Guidelines have been written starting from direct survey and are addressed to building professional, to owners and to technical employed.

Keywords: building refurbishment, guideline, traditional architecture, building material and sustainability, landscape.

1. Introduction

In the era of globalization, recognizing themselves as part of the built environment in which they live is an increasingly important social need for people around the world.

As defined by the European Landscape Convention of Council of Europe (2000), “Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”. The landscape is a complex system and, like all systems, it is dynamic: it is in a state of continuous transformation by both nature and man.

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In the past, the relationship between the built environment and the "natural" environment was balanced, based on our empirical but profound knowledge of nature and its workings, natural resources and their characteristics.

Now, all too often, this balance is no longer clear in built landscapes, at times because they have been transformed according to rules that do not respect the natural dynamics, or because they have been abandoned.

The identity of places (called “local identity” or “genius loci”) derives not only from the geomorphological features, flora and climate of a place, but also from the characteristics of its traditional buildings. Especially in small towns and rural regions, local materials such as stone, wood, earth, straw, etc., and traditional construction technologies, become essential elements for identifying a place.

Today it is important to enhance the identity of places not only by the conservation of traditional buildings but also by applying rules of sustainable construction to the specific area, in the case of new buildings. However, the construction industry often fails to consider these aspects, with destructive effects on the landscape and local identity.

2. Traditional building heritage and local identity

Traditional buildings, the ways in which they are grouped in settlements and cities, their links to the place, the construction techniques and materials used to build them are, to all effects, a “cultural heritage” worth protecting.

The physical characteristics that form the identity of human settlements are linked not only to the use of local resources (materials, technologies, altitude, exposure to the sun and wind, etc.), but also to the type of economy prevalent in the area, as well as many other factors.

To re-establish a balanced relationship between architecture and nature it may be worthwhile to study the "rules" (both consolidated and experimental) that made it possible, in the past, to create the landscapes of quality that we now work to preserve and valorize, so that we can apply those principles, updated where necessary, to contemporary landscapes. It may even be necessary to take a different tack than in the past decades, and not simply throw away everything that belongs to the past, but learn from it to build the future.

The UNESCO (2012) Florence Declaration on Landscape expresses fear for threatened and deteriorating landscapes all over the world, due to urban sprawl, industrialization and the intensification of agricultural processes, and stresses how it may no longer be possible to protect the landscapes without being aware of the local knowledge and traditions that generated them, the loss of which destroys a legacy of know-how that could be used to find more adequate responses and innovative solutions. It talks about the importance of safeguarding the landscape for the quality of daily life and maintenance of cultural identity, as well as improving the environment, and stresses the value of knowledge and traditional practices as a background for harmonious programs of technological and innovative development.

UNESCO and IPOGEA recently created a “Traditional Knowledge World Bank” (TKWB, 2012): “these are ancient techniques and practices of specific territories, passed on through the generations and governing soil management, the use and protection of natural areas, rural architecture and the organization of urban centers. They comprise the historical knowledge of humanity, which has led to the construction of architecture and landscapes with universal value, protected by UNESCO as a cultural legacy”.

More and more, we feel the need to understand the principles of sustainability (originated more by need than by our own desires) behind the construction of traditional buildings, so we can evaluate the possibility of applying them once again.

3. Strategies for the valorization of the built landscape

3.1 Actions at the territorial level

Tourism is a resource for areas that have been involved, in recent decades, in processes of abandonment that have profoundly scarred them.

In Northern Italy, particularly in the Piedmont Region, new sustainable forms of tourism, in the last few years, are providing new opportunities to valorize the rural landscape, particularly the hills and mountain landscapes (Fig. 1).

The strategies applied for sustainable development of these mountain and hill areas aim to valorize the landscape as a “product area”: with such a systemic vision, the rural economy, tourism, agriculture, environment conservation, ecology, architecture, nature, culture, food&wine, etc., all become multiple aspects of a single problem. In each of these fields, public and private administrators have launched strategic actions aimed at building a complete “product area” to spend as a tourist product, to improve the quality of life of people and to attract new population.

Environmental concern is the main research field: both built landscape and natural landscape are involved in the lines of action to manage environmental changes.

The process of valorization of the landscape is implemented on various levels, from the regional scale to that of the building, focusing on the environmental aspects that can be considered to run through all the different scales.

On the regional scale, efforts are made, above all, to render the landscape “attractive” as a resource for tourism, offering services and support for sustainable tourism involving both the agricultural and the architectural sector. On this scale, other environmental aspects linked to resources, pollution, waste management, sustainable mobility, etc., are also perceived more and more to be important.

Figure 1: Langhe's Landscape (North Italy)

At this level, natural and human activities are should definitely be managed in a coordinated

way.

To achieve a sustainable model of development it is therefore important to apply an environmental design model shared by those who inhabit, visit and manage the territory. In particular, the environmental quality of a place with a strong vocation for tourism is an added value and a discriminating factor in determining the choice of an ever more demanding type of tourist. For this reason the L.A.G. (Local Actions Group) of Mongioie has undertaken a project of environmental certification. The most extensive combined ISO 14001 environmental certification and EMAS (Eco-Management and Audit Scheme) validation project in Europe was launched with the combined implementation of an Environmental Management System according to the ISO 14001 standard and EMAS validation of over 40 towns which make up the G.A.L. Mongioie territory. It involves many small municipalities scattered over a mountain territory, with fewer than 100 inhabitants.

The territory of L.A.G. Mongioie now benefits from the EMAS certificate, i.e. Eco-Management and Audit Scheme, making its territory the largest European EMAS certificate district. All this was possible through a specific environmental design strategy supported by the citizens, traders, and local authorities living and working in this area, in addition to the tourists themselves, aiming at implementing sustainable development.

The signed "Covenant of Mayors" EU initiative by 40 cities of the "L.A.G. Mongioie environmental district" shows the particular attention to sustainability issues in the territory. As the official web site explains "the Covenant of Mayors is the mainstream European movement involving local and regional authorities, voluntarily committed to increasing energy efficiency and the use of renewable energy sources in their territories. With their commitment, the Covenant signatories aim to meet and exceed the European Union 20% CO2 reduction objective by 2020" (see http://www.eumayors.eu).

3.2 Courses of action for the valorization of the landscape

Certain lines of action focus on the conservation and valorization of traditional rural landscape in its natural and manmade components: a number of studies have been launched to explore aspects of change in the field of traditional architecture and natural aspects of rural landscape. In the research project “Civilization of the Alps area in the Piedmont Region" (research by Politecnico di Torino, funded by the Cassa di Risparmio di Torino Foundation), for example, the dynamics of actual mountain landscape transformations were reconstructed, starting with a study of alpine landscape transformations and with an analysis of several historical buildings. The research also deals in depth with the topic of the alps, important not only for the productive aspect, but also for landscape conservation and the historical, cultural and tourist aspects. Research has also tackled the study of the Alpine landscape and its changes, due in part to the abandonment of mountain settlements and territories and to the changing management of Alpine farming.

3.3 Actions at the level of the building

In the past, the problems of maintenance and renovation of rural architecture were addressed and solved with attention and care by the owners or users of the buildings. In recent years, in the wake of economic process that has, to a varying extent, impacted the entire rural territory, many rural workshops and residential buildings, especially in mountain areas, have been abandoned and have lost their original function.

In the meantime, the material and construction culture that had generated and maintained the constructed rural landscape as transmitted to us has gradually been lost. Today, with newer economic and production prospects, forged by renewed vocations, including rural tourism , there is a tendency to restore rural areas and buildings to new functions without, however, the proper attention due to such delicate cultural landscapes.

All too often, recovery and rehabilitation fails to consider the origins, thereby undermining centuries of rural construction culture, the culture of the “peasant-builder” who, exploiting the limited means available, did everything possible to cater to living and production requirements using local resources (materials, climate, orography of the land, vegetation, etc.).

The “Guides” (Bosia, Franco, Marchiano, Musso 2004; Bosia 2012), produced all over Northern Italy, are a first practical and applicable response to combating this tendency. We refer in particular to the G.A.L (Local Actions Groups) of Mongioie and the Langhe & Roero sites in North Italy.

Each “Guide” has been developed as a methodological and operating tool to support maintenance, conservation and rehabilitation works on rural architecture. They start with a detailed overview of the situation in the L.A.G. region, built through passages of successive depth, from the general (territorial level) to the particular (building and detail level). Both “Guides” can be considered recommended standard instruments and were drawn up on the basis of studies of the construction traditions and characteristics of the landscape in the

reference area, which is largely mountainous and hilly (Fig. 2). These tools support restoration works on the typical architectural and landscape aspects of a rural area to improve the quality of the environment, identifying the eco-compatible, traditional or innovative materials and techniques to be adopted (Fig. 3-4-5). They are “Guides” and not “handbooks”, to avoid the risk represented by traditional tools, already experimented, but with disappointing results, like those of the “conformed solutions” chosen from a sort of catalogue. The Guides are addressed to public operators and to the production and professional sector.

Figure 2: Guideline to rehabilitation works of Langhe and Roero traditional rural architecture: roof technical file

In both cases, the projects were carried out within the Plans for Local Development financed by the EU program “Leader plus”. The Guidelines for restoration of the characterizing elements of the rural architecture of the Mongioie L.A.G. and the Guidelines for restoration of

the rural architecture of the Langhe & Roero L.A.G. are already operational, have been adopted by the municipalities involved in the project, with pilot operations of applied experimentation already concluded. However, in addition to those outlined above, a further, particularly pressing requirement has now emerged: that of approaching building restoration according to the general principles of respect for the environment for the sustainable development of rural areas.

This need can be interpreted from various viewpoints with regard, for example, to selection of technological materials and solutions, the use of renewable energy sources, etc. Catering to these aspects when recovering traditional buildings – which may be "strong" in some respects and extremely "fragile" in others – inserted in delicate, often unique landscapes, may become extremely complex.

Figure 3-4: Typical rural building of Alta Langa Region (North Italy)

Figure 5: Rehabilitation Design consistent with Guideline and use of traditional materials and building technologies

4. The response of the construction industry

For a number of reasons – such as the unchecked spread of land use in the past decades – the idea of restoring and recovering existing buildings has become more desirable with respect to new construction. The construction industry has not always succeeded in meeting the increasing demand for building restoration with adequate responses. In many cases regarding the valorization of historic buildings and settlements, restored with traditional construction techniques, effective responses have been lacking if not actually harmful.

In the sector of restoration, indeed, while we have seen many efforts in recent years to succeed in “labeling” construction products – constructions materials and elements – as “eco-friendly” or “sustainable”, little or nothing has been done to reintroduce the use of local materials and traditional construction techniques, whose use has been abandoned in the last decades, in favor of standardized techniques applied without variation throughout the world, in line with the principles of globalization.

Perhaps it would be helpful to coin a better definition of the concept of “sustainability” as it applies to construction – it is a concept that is often used improperly and has now been more or less forced to evolve and align itself with the concept of the “smart community”,” smart city” or “smart building” depending on the scale of reference.

Sustainable development is a form of development (which also includes economic development of the city, the community, etc.), which does not endanger the potential of future generations to continue that development, preserving the quality and quantity of its legacy of natural reserves (which are finite, while resources can be considered as inexhaustible and thus infinite). The goal is to maintain an economic development compatible with social equity and ecosystems, so as to operate in a system of environmental equilibrium. This is the first definition; UNESCO, with the Universal Declaration on Cultural Diversity (Stenou 2002) expanded the concept of sustainable development indicating that "cultural diversity is as necessary to humanity as biodiversity is to nature (...) cultural diversity is one of the roots of development seen not only as economic growth but also as a means of conducting a more satisfying existence on the intellectual, emotional, moral and spiritual plane".

Sustainability, therefore, does not have an environmental dimension alone, but also an economic, social and cultural dimension.

With reference to historical and traditional architecture, the use of local resources, materials and construction techniques acquires a central role in the assessment of the sustainability (in the light of the above definition) of any alterations made for its restoration but also, more and more, for any new construction.

The Guidelines for rehabilitation of which we have spoken go precisely in the direction of obliging the construction industry – which in Italy consists largely of Small and Medium Enterprises (SME) – to use local resources and materials, applying them according to traditional construction techniques.

The inertia of the sector is holding back this trend that, however, is slowly gaining ground, with positive fallout that we can summarize as follows:

- economic fallout consisting above all of the reactivation of local micro-economies: in some cases, for example, quarries closed for decades have been reopened;

- environmental fallout, due mainly to the reduction of goods transportation, with obvious economic as well as environmental benefits;

- fallout on the landscape, in particular as regards the preservation of the local identity, reversing the trend toward an idea of “globalized architecture”.

5. From tradition to innovation

If there are some weakly positive signed from the construction industry with regard to the restoration of existing architecture, when it comes to new construction we can report very few signs of the use of traditional materials, even in innovative ways. More and more, selection of construction materials is linked to their eco-friendly aspects, often more presumed than real, or at least not ascertained. Careful study of the LCA (Life Cycle Assessment) should be made, but never is. Using wood for construction in mountain zones rich in this material can be an excellent idea if the lumber is cut and milled at the site. The same is true of stone which, even more, can connotate buildings, affecting the color, structure and strength of the masonry.

One of the critical aspects concerns the relationship between construction tradition and technological innovation. Innovation in the construction sector has always been slow, and even more so if referred to traditional construction technologies. Research is now focusing on this sector insofar as traditional techniques often possess all the elements to be considered sustainable.

When we speak of innovation referring to the field of architectural technology, we’re dealing with “research for mediation between technical and scientific knowledge and the specific values of architecture. That is to say the social, psychological, anthropological, aesthetic and built environment aspects” (Maldonado 1992). According to J. Shumpeter (1912), while invention consists of perfecting a scientific type of knowledge, innovation also includes the circulation and use of innovation, be it a product, a process, service, organization or market.

As well as looking for new markets, with low technological impact innovations, or for new commercial organizations, innovation can also re-use existing and known materials. The idea is not new in itself, as can be seen in a 1931 issue of “La Casa Bella”. Compressed straw panels were accompanied by such words as: “among the materials that help create a new and modern home, some are but a modern and intelligent re-use of old and very common systems, simple, practical ideas that have been taken up by contemporary technology and industry and launched on the market”.

In those days the autarchic economic system was taking root in Italy, and greatly encouraged research in the construction field. These words seem particularly modern if we think of the research scenarios that environmental issues have prospected as solutions. On the one hand they have a high technology content, exploring specific sectors such as nanotechnologies; on the other hand they propose appropriately adapted traditional technologies and materials, such as straw, earth, wood, with an almost direct passage from tradition to innovation.

6. Conclusions

Projects for the restoration of traditional rural buildings carried out without due attention or according to the principles of new constructions may prove to be extremely destructive or negative.

The guidelines that have been drawn up cannot solve all the problems but can certainly steer the projects toward solutions that are suitable for heritage buildings of historic interest and the context in which these are inserted, contributing to configuring an approach that is attentive to landscape and to conservation of the cultural assets involved.

For new construction, however, we have to try to move toward what we can define as “innovative tradition”.

Some studies are effectively examining ways to repropose, in an innovative way, construction technologies pertaining to the local construction tradition and strongly reflecting the local identity such as thatched roofing, once widespread throughout northern Italy. The idea is not so much or not only to rediscover the technique as an artisanal practice, but to study a new technology that, in respect of the characteristics of traditional construction, can be reproduced using “industrial” methods and mass production (also in small series), according to an industrial type of organizational design.

The rediscovery of technologies that use local materials, especially in the mountain and rural areas, can open the way to new types of enterprise and contribute tangibly to preservation of the landscape.

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