THE CONSERVATION OF HISTORIC FABRIC IN THE THIRD MILLENIUM

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ABSTRACT

The historic buildings and urban fabric are a capital of irreplaceable cultural, social, environmental and economic value. This is true for Europe, as it is for the rest of the world but we need facts and figures to prove and illustrate this conviction. "Articulating the value of our heritage by providing quantitative and qualitative evidence of its benefits and impacts, will indeed give more strength to the voice of cultural heritage in Europe. Where does come this engagement with the protection of Cultural Heritage in Europe? Since the enlargement of concept of Cultural Heritage 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", the conservation of historic features is mandatory to reach a sustainable development of our settlements. Despite of many attempts to promote a policy and legal framework for the conservation in Italy and in Europe, the protection of Historic Buildings is often reduced to a financial estimation of costs and income, underestimating the importance of the cultural and social components of a real sustainability. Within this scenario, the institution for the education of the designers of the present and future city have a prominent role to propose the proper approach to the project for new uses of historic buildings. The education to "listening" the building comes together with the assumption of the criteria of compatibility, reversibility, least intervention, recognition. Moreover, there is an increasing consciousness of the challenges deriving from the need of accessibility, energy efficiency and safety. This means that the current approach of invasively adapting the historic buildings to the standards for contemporary buildings has been changing towards the improvement of the residual performances. The schools of architecture and building engineering are the natural cradles to learn how to study of the best solution for any specific structure instead of applying a "ready-made" project that matches current fashion and tastes. Conservation and restoration of third millennium are based on the skills of the architects; also they require tools and specific knowledge in many fields and disciplines that the architects have to learn to lead in a multidisciplinary team.

Keywords: conservation, urban memory, cultural heritage, economic value, cultural capital

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1. INTRODUCTION: THE EU PERSPECTIVE ON CULTURAL HERITAGE

1.1 Historic overview of conservation in EU, historic centers

The concept of the values of Cultural Heritage (CH) dates to the last centuries, and with the present definition, it became commonly accepted in Italy and Europe after the reconstruction at the end of the WWII.

The transformation that rapidly changed the European cities after the WWII constituted a challenge for conservation of historic centers, as well as for many listed monuments located in the sprawl areas of the urban centers. Despite the compelling need of housing the increasing number of people moving to the urban areas, the traumatic destruction of the historic fabric in the cities arose a dramatic sense of loss and a consequent desire of reconstruct the familiar landscape and landmarks.

Figure 1. The city of Dresden, Germany, after the bombing of February 1945. WWII caused the loss of lot of cultural European heritage (photo: Bundesarchiv, Bild 146-1994-041-07)

Starting since the beginning of the ’50s, with the fore coming looting of the traditional buildings downtown and the uncontrolled increasing of the property speculation, the debate on architecture has been highly focusing on the relationship between new and ancient buildings especially in the historic center.

After almost 20 years of reconstruction and repair, mostly experimental towards direction also controversial, the Venice Charter stated the unmistakable values of the conservation of the cultural heritage in its environment. In fact, as one of the signers of the document, Pietro Gazzola asserted at the international Congress of Architects and Technician of Historic Monuments, held in Venice on May 1964 [II International Congress of Architects and Technicians of Historic Monuments, 1964]:

“The cultural value of ancient monuments is not an acquisition of today: it’s part of the conspicuous heritage that we received from our enlightened precursors. The appreciation of this value stopped up until nowadays to a purely theoretical role (professionals). The effort to

preserve the monumental heritage is a recent care, which characterizes our age from the previous ones."
The reflections on the first phase of the frenzied reconstruction based the common work during the conference and that gave birth to both the Venice charter and the ICOMOS organization. The Venice charter constituted the basis for the development of the legal framework on the protection of CH in many countries, in Europe and USA.

1.2 Is the conservation of CH an advantage in the third millennium?
At the turn of the third millennium, some questions arise: what remains of the conservation legacy as expressed in the Venice charter and further documents, considering the challenges and opportunity that globalization and always faster changes brought in the construction sector?
Which lesson learned come from the reconstruction of European cities, facing the necessity to fill the breaks of the urban memory caused by the war and the speculation intervention in historic centers?
The urban memory connects the past and the present by knowing the history of the city and of its societies. The city encompasses the experiences and information formed in social memory: exposing and sharing the images of one's personal experiences related to a place is possible to keep the memories, as the traces of previous events, which establish relationships between past and today. The constant change of the built environment so often causes breaks in urban memory: rebuilding the buildings, monuments, and parks, demolitions in historic districts, reshaping the squares and streets provoke lapses [Crinson, 2005; Gurler et al., 2013; Talas et al., 2002]. The perception of space remains unconscious if the permanence of the perceived space is not enough prolonged to become familiar, to enter among the references of orientation in a familiar place. The continuous change erases the necessary time to set the chronicle into and experienced perception that is the beginning of the process of memorizing. The lack of memory, as for human beings as for cities, brings to weak the perception of the identity of people, a community as well a nation.
At present, European bases its identity on a common heritage, made of traditions and cultural expression coming from the past, not only on the economic convenience to rule the growth towards the challenge of the future.
The European community has been supporting the program to protect CH since the beginning because considered the historic buildings and urban fabric as a capital of irreplaceable cultural, social, environmental and economic value.
The protection of the roots of the cultural identity of any nation is a strategic target to ensure the durable respect also of the economic transition within the European countries and abroad. "The interest for the protection of CH in Europe comes also from the increasing awareness of the value and multiple benefits of cultural heritage for the economy, society, culture, and environment. The above-mentioned conceptual and policy developments affirm the importance of cultural heritage as a strategic resource for a sustainable and peaceful Europe. They also demonstrate the determination of the EU institutions to develop and implement an integrated policy approach to cultural heritage" [http://blogs.encatc.org/culturalheritagecountsforeurope/outcomes]. "As a perspective for the next future, the EU Council's Conclusions on a Work Plan for Culture 2015-2018 identified cultural heritage as one of its four priorities and "Indicated the need for the EU to invest in cultural statistics as a prerequisite for evidenced-based policy" [http://data.consilium.europa.eu/doc/document/ST-16094-2014-INIT/en/pdf].

1.3 The economic value of CH is not only financial

With the aim establishing on evidence the protection of CH, the project "Cultural Heritage Counts for Europe" started on 2013 "with the support of the European Commission and in response to the position paper 'Towards an EU Strategy for Cultural Heritage — the Case for Research' presented in 2012 by the European Heritage Alliance 3.3. This project comprised collecting, analyzing and consolidating evidence-based research and case studies from different EU Member States on the impact of cultural heritage on the economy, society, culture and environment with three aims: to demonstrate the value and potential of cultural heritage as a strategic resource for a sustainable Europe; to raise public awareness of this resource; and to present strategic recommendations to European decision-makers" [http://data.consilium.europa.eu/doc/document/ST-16094-2014-INIT/en/pdf]. Many results came from the study, for examples the definition of indicators for assessing the values of specific advantages (also economic) coming from the protection of CH, for the recognition of the multiple and valuable benefits that cultural heritage brings to society. In fact, the protection of Historic Buildings is often reduced to a financial estimation of costs and income, underestimating the importance of the cultural and social components of a real sustainability despite many attempts to promote a policy and legal framework for the conservation in Italy [Decreto Legislativo 42/2004] and in Europe.
A confirm comes from the "report produced the Horizon 2020 Expert Group on Cultural Heritage in April 2015. "The report entitled Getting Cultural Heritage to Work for Europe (European Commission, 2015) sets out recommendations for an innovative policy framework and agenda for cultural heritage-related research and innovation up to 2020 executive summary & strategic recommendations table of contents" [http://bookshop.europa.eu/en/getting-cultural-heritage-to-work-for-europe-pbKI0115128].

2. THE ITALIAN DEBATE ON CONSERVATION OF HISTORIC BUILDINGS

The present debate in Italy on conservation and restoration came across many attempts to integrate the protection of cultural patrimony and the economic issue to estimate the construction capital.
Despite the enlargement of concept of Cultural Heritage 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"[2] [Jokiletho, 2007], a critical issue is that the definitions of cultural patrimony are still funded on selective bases of a historical background nature and above all the aesthetic value. In the present code, the definition of the classes of Cultural Heritage under protection are wide and general, nevertheless still, the classes do not include the totality of the Cultural Heritage per the initial definition quoted above.
However, an important result is the achievement to consider the cultural patrimony as an economic patrimony, to be evaluated for its conceptual nature and not susceptible to exchange. A part of the patrimony has a value as collective patrimony because it belongs to the community memory; it is part of the common memory. On the other hand, the historic

[2] As the deep reflection on the legacy of Ruskin, Riegl, Dvorak, the studies of archaeology methods, the development of the concept of material culture brought to overcome the reduction of history to the great happenings, to emergencies, to the uniqueness of figurative production [12]. The definition of the Cultural Heritage as the witness of past civilization comes back to the sixties, in Italy: the government committee (Commissione Franceschini, 1967) for the protection of Cultural Heritage stated this definition showing a wide perspective that was too in advance with respect to the legal framework at that time. Nevertheless, the definition is presently considered the widest and more complete, totally accepted by the updated scientific literature.

patrimony is also a resource; its very existence achieves an economic goal: the buildings can meet new uses, compatible with the existing features. The ways of intervention on cultural heritage offers an interesting analogy, because it highlights peculiarities, differences, refusing official recognition to aesthetic or historical models. Many economic motivations recommend a "reuse" policy.
In the economic analysis, the cost of the intervention on the buildings should come from the income due to the use of the buildings after the rehabilitation. Therefore, it is necessary to rehabilitate a building that is to be useful and that requires to improve the values of use and attraction. Mainly, the economic evaluation focus on the restored building and not on the process of restoration [Montella, 2009; Della Torre, 2010], as well as most of the present discussions of scholars and professionals deals with the main questions that are at the basis of the present debate: which are the traces/stratification of modification in addition to its original features that the monument keeps? Which are the traces that the monument should display after the restoration? Has the restorer the duty to transmit the traces of the past to the future, or to "recreate" "a" past? Which is the limit in between? [Leon, 2008]
Instead, dealing with the issue to change the process of intervention on the buildings, the focus of protection changes totally.
Keeping one-step before, the novelty of planned conservation process is to procrastinate as longer as possible any restoration, acting on the environment and ruling the use of the building in a way to mitigate the effects due to consumption, weathering, aging, etc.
As expected by Della Torre [Della Torre, 2010] great improvement could be generated by this innovation of the process: the perspective of the conservation changes from the repair of the damage after its occurring to the prevention of the damage, by the mitigation on the causes of damages. This is the main set of the strategy of planned conservation that since 1998 is on the way to change the perspective of the intervention on historic buildings.

3. THE PLANNED CONSERVATION STRATEGY: TO RULE TRANSFORMATION

3.1 Conservation is a process

In the Italian code for the protection of CH, the definition of Conservation includes many activities that in the past were considered only as a step before or after the restoration.
In a "*wholistic*" attempt to consider Conservation as a process, art. 29 defines the activities that run parallelly in a "coordinated and planned study, prevention, maintenance. Restoration is considered the last possibility to intervene, as it is an invasive intervention on the historic materials and features.
In fact, in the recent years, the restoration is conceived as a project of architecture to transform the existing buildings. Restoration has been more focusing on the conservation of the materials and features that requires specific technical knowledge than on the transformation of the building, removing some traces of the past and enhancing some other, to renovate a formal unity of the aesthetic features [Bellini, 1996]. The base of the aesthetic restoration of monuments showed the limits in the past (up to the WWII) because of the ineffectiveness to prevent the damages and to guarantee the authenticity of the object: nevertheless, the aesthetic requirement remains the most common target of the intervention on historic buildings. Besides this requirement, others came in the last decades, due to the increasing concern for the environment and landscape, the building surroundings, both as the natural background to preserve and a possible cause of damage to mitigate. The pilot project of the first plan of conservation of Umbria city centers, dating back to 1975 led to a new consciousness of the risk for the conservation of Cultural Heritage, and to the development of a policy to assess and

catalogue the risks on the entire nation. At that time, the motto "prevention is better than cure, cure is better than restoration, restoration is better that demolishing" was not yet the present main set of the updated intervention on the historic built fabric, and monuments. Nevertheless, the pilot plan for Umbria became the leading experience to guide the protection as prevention of the effects of catastrophes on the built heritage.
After 20 years of application of the strategy of the planned conservation, in Italy and abroad, some reflections come clear.

3.2 Lesson learned after 20 years

The success in Belgium of *monumentumwacht*[3], the trouble in Italy and UK, show that the change of mentality is possible only if there is a change on all the levels of protection, from the legal framework to the productive companies and artisans working in the field of Cultural Heritage [MiBACT, 2008].
Economist analysts [MiBACT, 2017] demonstrated that the activities strictly connected to the conservation of Built heritage (the maintenance and refurbishment) have a positive effects and benefits at region level of the economy, because of the small and diffused jobs in the area beckon the local enterprises, that preserved traditional techniques of buildings and the knowledge of treating traditional materials.
This effect is higher with long-term planning because the involvement of local experts for a long time ensures a competitive advantage on the bigger enterprises and the continuity of the relationship with the local stakeholders: owners, associations, public administration, etc. Keeping the knowledge of traditions in the places where buildings were done has a high economic value for the small local enterprise because it guarantees the continuous and stable employment at long. Therefore, shifting the object of the investment from the restoration to the planned conservation process brings an improvement of the direct and indirect impact on the regional economy. The intangible advantage is even higher that the direct economic one: the enrichment of the potentialities of the human factor and enterprises, the capacity of generating further values and the improvement of the intellectual capital in terms of refining the artisan techniques, sharing the knowledge, diffusing the results.

4. THE PROJECT OF CONSERVATION IS A PROJECT OF ARCHITECTURE; WHICH CRITERIA BASE THE DESIGN?

As anticipated in the previous paragraph, the turn of perspective requires education and training at all the levels. From the "cultivation" (protection, exploitation, improvement) at the local level of the artisan techniques, to the involvement of Universities and Research Institutes with the role to develop specific teaching programs and research on the territory. The aim is to produce a program of education to prepare the future professionals and researchers to face the challenge of managing the transformation of the existing built heritage without losing its integrity and authenticity. In fact, without culture there is no demand for culture, therefore also the appreciation of the historic built heritage comes from a spread dissemination of information, using all the updated tools for communications.

[3] The policy developed in the Netherlands implemented the strategies of prevention together with a careful diffusion, dissemination of results and involvement of the public/private owners. In these countries, these policies gained the best results and were successful to develop a new sensitivity for the conservation and a further participation and engagement of the citizens too [17].

Within this scenario, the institution for the education of the designers of the present and future cities have a prominent role to propose the proper approach of the project for new uses of historic buildings. The historic education to restoration and conservation, substantially the education "to listen" the building, comes together with the assumption of the criteria of compatibility, reversibility, least intervention and recognition.

Moreover, there is an increasing consciousness of the challenges deriving from the need of accessibility, energy efficiency and safety. Therefore, also the current approach of invasively adapting the historic buildings to the standards for contemporary buildings has been changing towards the improvement of the residual performances. Examples come from the present Ministry guidelines to improve the stability of the historic buildings (2008) [http://www.cibse.org/getmedia/bad5b290-969c-4961-8d0c-cb71f2dcd875/Draft-BS-EN-16883-Conservation-of-Cultural-Heritage-Guidelines-for-improving-energy-performance-of-historic-buildings.pdf.aspx] and the energy efficiency [Verpoest et al., 2006], very recently adopted by the EU [Musso, 2013].

The schools of architecture and building engineering are the natural cradles to learn how to study the best solution for improving any specific structure instead of applying a "ready-made" project that matches current fashion and tastes. Conservation and restoration of the third millennium are based on the skills of the multidisciplinary teams of professionals requiring tools and specific knowledge in many fields and disciplines.

The step of the intervention, dealing with the enhancement of the existing buildings, consists in reaching the best balance between the proposal of new addition and transformation for meeting the needs of the new use and the strictest conservation both of materials and building techniques.

It is possible to reach this balance along with a methodology of progressive subtraction of the unnecessary items and images that usually fill our imaginary thinking to a functional use of the building. As worshippers of images, the icons of contemporary architectures pop up in the mind as a reference, also before that a complete exam of requirements, needs, and opportunity is done. As a difference from the project of a new building, the proposal of new use of a historic building is not a pencil sign on a blank paper. It requires writing among lines, to conceive shapes, colors, materials that dialogue with the existing one, without prevail on them or, even worst, use them as an excuse to display, enhance astonishing new construction. The project of conservation, as technical repair of the damage, and modification to host new functions follows some criteria that can address the choices since the preliminary steps.

Mainly, the new uses require meeting the standard for safeness, fire protection, accessibility, energy efficiency, especially if the new function is a public use. Concerning the reinforcement, since 2008 the Italian standard for historic buildings require improving the stability and the prevention of seismic damage instead of applying the general reinforcement of the contemporary structures [http://www.cibse.org/getmedia/bad5b290-969c-4961-8d0c-cb71f2dcd875/Draft-BS-EN-16883-Conservation-of-Cultural-Heritage-Guidelines-for-improving-energy-performance-of-historic-buildings.pdf.aspx]. The recent EU standard for the energy efficiency [Musso, 2013] follows the same line: once again, the suggestion of the "improvement" does not quantify and specify the intervention, although the most recent regulation designs the process of decision making for choosing if and how to intervene.

The requirement of improvement, together with the following criteria, are suitable for leading both the technical intervention for repairing and the project of enhancing the building [Musso, 2012].

The first criterion is *compatibility*: as technical intervention, the new materials should not damage the existing ones, both physically and esthetically, therefore the new materials should

have the same chemical-physical-mechanical properties of the existing ones. As enhancing intervention, the new use should not require damaging the existing building with a massive intervention that sacrifices materials and structure, considering also the reinforcement or demolition required in the phase of the restoration itself. The intervention or the addition should match with the existing without risk to damage it, as it happened using cement mortar to seal frescoes. At present, compatibility is necessary; the new materials should behave as the old ones or show lower performances because, in the case of damage, the new materials will be damaged firstly.
The second criterion is *reversibility*: in a technical interpretation of the word, it means that all the intervention should be removable without damaging the existing building, because of possible, future, better intervention or because of the durability of the employed materials.

Figure 2. The new stairs inside Bernabò Visconti Tower (Castle of Trezzo sull'Adda, Italy, project: Lorenzo Jurina and collaborators) is a good example of reversibility and integration between old and new structures (photo: Andrea L'Erario, 2014)

The third criterion that basis the intervention can be summarized as "*the best intervention is the least one*". This criterion serves to prevent any "oversize" addition, transformation, mutation. It has application both on the technical and functional side: for example, the strengthening intervention should be "collaborative" with the existing structure, exploiting its residual performances instead superimposing materials and construction techniques that behave in a very different way from the original one). An example of the concept of least intervention, on the functional side, is to use the existing vertical connection for inserting plants and pipes instead of locating services rooms, bathrooms, kitchen despite of the sacrifice of original materials). The criterion of the least intervention is very important to limit the loss of the integrity of the building and guarantee the respect of all the information regarding the history of the buildings. The traces of the past bring the values, information, a witness of past knowledge and artistic artisanship that express the uniqueness of our Cultural Heritage. Therefore, the best attitude to project the adaptation to the new use is to study the most and to intervene the least, based on the most accurate analysis and evaluation.

Figure 3. A detail of the wood beam reinforcement of the roof of one tower of Pavia Castle, Italy. The new addition is completely reversible. Project: Lorenzo Jurina (photo: Andrea L'Erario, 2014)

Figure 4. The insertion of new horizontal structures on old timber beams, Ex caserca Calchi, Pavia, Italy. The historical beams are reinforced by the addition of new beams (photo: Andrea L'Erario, 2014)

A fourth criterion relies on the *recognition of the new addition*. This criterion has been under discussion since the birth of an early awareness regarding the implication of restoration. At present, the common perspective regarding the recognition focus on the necessity to distinguish the new addition from the existing parts, without disturbing the total view and perception of the whole work of art, building, object. The interpretation of this criterion relies on the sensitivity and culture of the designer, perhaps more than the application of the previous keywords, and many examples could match with it although the final aesthetic result could be different.

Figure 5. Saliceto Castle, Italy. Restoration project by Armellino&Poggio Architetti Associati, 2011. The new tower, made with a steel and timber cladding self-supporting structure, is well noticeable from the historic castle.

Figure 6. The conservation of the rose window of Aula Magna of University of Pavia, project: Lorenzo Jurina (photo: Andrea L'Erario, 2014)

5. CONCLUSIONS

As a conclusion, the last question remains on the table, with a large span of possible answers. If the planned conservation is a strategy to transmit the existing Cultural Heritage to the future generations, is possible that it interacts with other policy, tools, methods, strategies that at present result effective in Europe and abroad, including the emerging country?

In few word, is possible that conservation can contribute to the regeneration of the sites, urban sites as well as the diffused built heritage?
With Stefano Musso "Re-generation indicates the ability that the organisms have, in various ways, to come back to a new life or to generate new independent life, mainly through the covert laws of procreation and of the perpetuation of the species. In all of this, conservation interferes, or it emerges, in many ways and for different reasons. Procreation in its various forms, and the same sense, regeneration, or the creation of new generations, serve primarily the 'conservation' of the species. On the other hand, only that which already exists can be regenerated, which in turn has been generated or created in the past. Conservation is thus implicit in the re-generating or, at least, a quantum of unavoidable conservation is necessarily included." [21]
Therefore, if the role of the Urban Regeneration Programs is to identify the strategies and create the conditions for pursuing them, the role of conservation is to identify the features, the relationships, the heritage significance, at present as it was in the past that will be a trigger factor to bring back the life in the historic districts. As explained in advance, planned conservation as bottom-up approach is a powerful integration of the policy of the urban renovation, thanks to the capillary knowledge of the site, its present potentiality, the hidden treasures that the local culture keeps, that could be attiring of new life.

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