



'Inheriting' our Cultural Heritage: Changes of paradigm of conservation

Stefano Francesco Musso

Abstract

The world is quickly and deeply changing, facing new challenges in the built environment. Conservation can play a crucial role for preserving the future of the planet, not wasting but rather continuing to use (or reuse) the depot of physical traces that the previous ages left us, as provisional responsible for them, in cultural ways and respectful. A crucial question rises apropos: are we really ready and able to inherit this impressive mine of knowledge, "identity" and cultural richness? We cannot in fact go on along the paths that have been traced, within the western world and culture, since more than two centuries about conservation/restoration (with all their contradictions and suggestions). We cannot behave as if nothing has changed and ignoring the problems of the contemporary societies, or like they were external to our commitments, interests and responsibilities. The key-lecture will

Keywords:

Cultural Heritage, Conservation, Restoration, ICT

Stefano Francesco Musso

Full professor of Architectural Restoration - Director of the Specialization School in Architectural and Landscape Heritage /Department DSA of Sciences for Architecture - Polytechnic School - University of Genoa (Italy)

E-mail: etienne@arch.unige.it



deal with some of the main challenges that the culture of conservation (or “movement”, as someone could call it) will have to face in the near future in order to survive and not to reduce itself to an ancillary role and to an un-influencing condition within the contemporary world. A particular focus will be put for this reason on the crucial role that ICT play also in this field.

THE REASONS OF CONSERVATION/RESTORATION NOWADAYS

We come after two centuries of debate that has been deeply and completely aroused in the Western World or -even better- that would be considered as merely European. This long process saw the appearing and progressive consolidation of the opposite polarities of conservation and restoration, up until the slow, but now ever consolidated expansions process (“for kind, age of formation, for extension and quality”) of the various “goods” subjected to tutorship and safeguard. For this reason, we often think to a completely known and consolidated universe of objects, though it appears to be progressively and quickly expanding far beyond the traditional notion of “monument” as an isolated masterpiece of art or as a historical memory or witness. New problems or artifacts can always emerge to our attention and they could also make our world, rich of fragile certainties, explode or implode. Many journalists or scholars, politicians or architects could also remind us the fatigue and disillusion while working in some troubled lands and parts of the present world, where conserving can mean to have to deal, not just and not as much, with the technical or theoretical alternatives within we often limit our work. It would imply to face wider horizons of sense and, in particular, the problem of coexistence between peoples which are fighting, each living and interpreting the environment and its depots of signs and historic traces in very hostile ways. Not to speak about the dramatic situation of many human groups and communities with no State, no land, no food or citizenship and for whom conservation, even before restoration, could assume a very understandable and crucial meaning. We conserve, in fact, for a future world of civilization, cohabitation and sharing of memories, values and potentialities of life. Otherwise: why should we do it? For this and other reasons, we cannot just ignore similar questions, pretending they exclusively concern some political assets not regarding us, or our possibility of acting. It seems that, instinctively, we think to ourselves as to responsible of some “jewels” which value we debate on, but that certainly belong to a world of consolidated peace, for which these problems seem to have no meaning at all, or that have been already solved by other fights in previous times. Things are not exactly like this, neither for us, European,

and it is plain to see we have to acknowledge the fact. Being able to see through the curtains of unawareness and approximation, we can discover that they could concern also monuments or artifacts of our "civilized" countries¹.

CONSERVATION/RESTORATION FOR WHOM? VALUES, IMPACTS, CONSEQUENCES

Nevertheless, when we think to (or we deal with) the problems, the ideas and the aims of any conservation or restoration theory, or with the correlated practical actions, we inevitably face the crucial theme of the values involved in the field.

It is not a novelty. Alois Riegl² treated this conflicting and contradictory aspect at the beginning of the Twentieth century, asking to himself the reasons why his times were so deeply crossed by a new and powerful "modern cult for ancient monuments", almost a religious attitude that never existed before. While examining the phenomenon, he clearly outlined and analysed a wide and articulated range of values belonging to the dimensions of contemporary (present) and of memory (past) of every time, of course. They were and still are values belonging to men and are assigned by themselves to the ancient monuments, thus reflecting the changing in their cultural attitudes and atmospheres, along the times passing on. We could even now refer ourselves to those values, together with their complex games, in order to explain which the real contents of our discussions and actions are, within the field of the protection, conservation, restoration and valorisation of built Heritage. This last notion, in itself, is quite recent and it represents the result of the long and rich history of the modern theories of restoration, starting from its right beginnings, between the XVIII and the XIX centuries, as many protagonists affirm (Eugène Emmanuel Viollet-le-Duc, John Ruskin, William Morris, Max Dvorak, Camillo Boito or Gustavo Giovannoni, among the others). It is sufficient to recall, apropos, the important analysis proposed by Françoise Choay³ about the evolution of the same "idea of monument". This was initially considered only as a "masterpiece of art", an isolated and unique object mainly characterized by outstanding aesthetical or historical values. Afterwards, a new and more complex concept was slowly developed considering a monument as a cultural good, not exclusively of material nature, that can also have relevant social and economic values⁴. Any doubt should therefore exist about the crucial role that our ideas, concepts, theories, as well as our analytical, diagnostic and intervention techniques (in their whole) play in the contemporary world and

¹ On these arguments see also: Stefano Francesco Musso (2009). *Conservation/restoration of built Heritage. "Dimensions of contemporary culture"*, in: Piet Lombaerde, Laura Lee (editors), *Bringing the World into Culture. Comparative Methodologies in Architecture, Art, Design and Science*, UPA Editions (University Press Antwerp), Antwerpen (Belgium), p. 86-107, ISBN: 9789054876304

² Cf. Alois Riegl, *Der Moderne Denkmalkultus, sein Wesen, seine Entstehung*, Braumüller, Vienna-Lipsia 1903 (It. tr.: A. Riegl, *Il culto moderno dei monumenti. Il suo carattere e i suoi inizi*, in Scarrocchia, Sandro, *A. Riegl: teoria e prassi della conservazione dei monumenti. Antologia di scritti, discorsi, rapporti 1898-1905*, Accademia Clementina-CLUEB, Bologna 1995)

³ Cf. Choay, Françoise, *L'allegorie du patrimoine*, (It. tr. D'Alfonso, Ernesto & Valente, Ilaria (ed.), *L'allegoria del patrimonio*, Officina, Roma 1985)

⁴ See, a propos., all the international documents and the numerous International charters devoted to the problem of the destiny of ancient architectures, towns and cultural landscapes but also to the huge legacy of immaterial goods of humankind in the contemporary world in the perspective of the future generations.



society, even if with sometimes contradictory and conflicting results.

The question “why do we conserve/restore?” thus emerges as the really crucial one, as regards our attempts to understand and correctly use our ideas and instruments. Within this perspective, in fact, any our desire or compelling attitude towards the conservation/restoration of a material good that derives from an almost unknown past, so that it can reach the future, should be explained, communicated and hopefully accepted from the social communities we belong to, more than by the only cultural or scientific ones. Only in this way we could hope that this effort will be really sustainable for our descendants and will be felt as a chance and not only as a load or as a problem, for our present situation.

THE CONSERVATION/RESTORATION PROJECT: TIMES, CONTENTS AND GOALS

The word and the topic “project” emerges every time we speak about conservation/restoration of built Heritage, but it is always characterised by profoundly different meanings and accents. We all know that it is a crucial crossroad for research, teaching and professional practice, as it is also in other fields. Right for this reasons, someone underlines the fundamental differences between a “project concerning a new object” and a “project concerning an existing one”. This is particularly evident because this last one cannot just be the mere sum of some functional modifications, because it aims to take a real care of the existing artefact, with its memories, depots of knowledge and potentialities, in order to make it useable for our future in the most undamaged and preserved state (if ever also enriched by new resources and not certainly impoverished of the already existing ones). The project is in any case and with no doubt a crucial point in the process of conservation/restoration of our Heritage. However, the project is just one moment, even if fundamental, in the process of conservation/restoration and it is always a moment that “only apparently” seems to ratify its conclusion. Here an enormous risk lies. Centuries of discussions, in fact, have not decided, neither the coming ones will do, which possible alternatives concerning goals, objects, instruments and methods of the conservation/restoration project could be. Meanwhile, if our research or practice only concentrates itself on its riving contradictions, the hazard is losing other key elements of the problem. Many scholars suggest apropos not to limit our look to the conservation’s culture, meant as a withdrawn world, all-sufficient or, worst of all, self related. A route exists, in fact, between teaching, learning and acting in this field and it is marked by profound divisions and connections, by opposite

polarities and reflected images. In the today's world, architecture and conservation/restoration, further, often look like "poor neighbours", not reciprocally communicating, subjected to the perennial contraposition between the "exaltation of creativity" and the "research for analytical rigor", but also between the "tension for pure knowledge" and the "profession's pragmatism and needs", in time of deep transformations which would instead demand their profound and meditated integration. According to many experts, not for a case, the relationship between conservation/restoration and architecture is not only inside their common affiliation to the same world of objects, methods or instruments. Conservation and restoration are tied to architecture firstly by the common aim of inhabiting the world on an even keel, between memories of a past which can still be significant and productive and a future which must be free but not oblivious, for us not to waste what the earth has given and still gives us. Therefore, we need to ask first of all "what" and "how much" architecture can offer to conservation, but also - and with the same strength - what and how much conservation can offer to architecture (Kealy, 2008). The reference to the contemporary philosophic and epistemological thought, at this point, is the necessary background to correctly underline the need of a higher integration with the various involved architectural disciplines, even by facing the risk (by many dreaded) that this would end up in a loss of centrality (or of power!!!) of the conservation/restoration seen as autonomous worlds. However, we must ask ourselves if our scientific, cultural and technical actions can keep on being proposed as a sort of "pillbox defence" (or a "Ivory tower"), granted that it exists or should exist, or if rather opening up for a confrontation in which our reasons would stand just because their own strength, instead of invoking weak protectionist or binding policies when those are actually ignored or half tolerated by the society, for the welfare of which we are saying that they should be adopted (Musso, quoted). On the other hand, it appears evident that the project, considered as a mere technical action, tied to the artefacts and their destiny, could not be the only focal point of our activity, because a wide amount of questions, themes and objects that are progressively emerging. Moreover, this is true if we think to the difficult relationship that presently exists between Science and Technique, where the second one is no more the mere instrument adopted to realise the previsions of the first one, but it is going to begin more and more the goal of (and in) itself⁵. We thus must at least consider, with a new attention the problems connected to the management phases or, even, to the normative rules, which closely concern conservation

⁵ As regards the relationships and the respective roles of Science and Technique/Technology in the contemporary world see, as a simple example: Galimberti, Umberto, *Psyche e Techne. L'uomo nell'età della tecnica*, Feltrinelli, Milano 1999 – ISBN: 88-07-10257-9 and, in general, the most recent epistemological elaboration from Karl Popper to Hans Georg Gadamer, from Françoise Lyotard to Jürgen Habermas.

and restoration. Unless, we will reduce our activities to a mere search for more or less sharable technical solutions (accepted by many or few, by a “school” or another), the only attempts for answering questions which, at the heart, others have already selected before our intervention⁶. The fact is that, perhaps, we cannot just restrict ourselves to the mere discussion or confrontation (sometimes hostile), exclusively about “how” to technically intervene, whilst completely ignoring “who” decides, “where” and, most of all, “why” something must (or can) be conserved or restored (Della Torre, quoted). By and large, we cannot simply ignore, forget or avoid the many facets and implications which the problem implies at larger scales (urban, territorial, of the built landscape) that exceed each single artefact we take care of. Above all, at these levels, it seems clear that the themes related to conservation/restoration are profoundly entwined with the more general processes that condition or mark our communities and landscapes, now ever more immersed in a global and planetary dimension, but always seeking for more or less certain identities (or, better, specificities). These last, just as regards Heritage, should be deeply rooted and clearly expressed, thus demanding an active safeguard, for a really sustainable future (not only economically, socially and environmentally but also culturally speaking).

METHODS, INSTRUMENTS, TOOLS AND PROCEDURES

Though the problems could have very different answers, every conservation/restoration process usually respects some fundamental methodological steps, a sort of logic scheme, or a sort of flow-chart that nevertheless always asks for frequent feed-back procedures, in order to check its correctness and efficacy.

We could recall in this regard the ancient metaphor of the Architecture or, better, of a building as a “body”. Leon Battista Alberti⁷ inaugurated the Renaissance and the re-discovery of the Roman classical culture not to imitate but to overpass it, thanks also to this powerful “paradigm”, as Françoise Choay defined it⁸. One of the consequences of this theoretical concept is the paragon we often propose between the activity of a physician and that of an architect when he intervenes on an existing monument that was built following forgotten rules and plans and is affected by unknown decay phenomena or structural instabilities. This metaphor was proposed and utilized by Leonardo-da-Vinci when he was asked by the Milanese people to suggest a solution for the completion of their unfinished “Duomo” (Cathedral), by proposing the best form to be adopted for its new flesh. Leonardo⁹ then proposed, starting from Alberti’s idea of the necessary “conformitas” (accomplishment)

⁶ Cf. Stovel, Herb, *Challenges in moving from architectural conservation education to heritage conservation education*, ibidem.

⁷ Cf. Alberti, Leon Battista, *De re aedificatoria...*, quoted/

⁸ Cf. Choay, Françoise, *La regola e il modello: sulla teoria dell'architettura e dell'urbanistica*, Officina. Roma 1986
D'Alfonso, Ernesto (ed.).

⁹ Cf. Leonardo Da Vinci, *Lettera ai fabbricieri*, Published in Bruschi A. Maltese C., Tafuri M., Bonelli R., (editors), *Scritti rinascimentali*, Il Polifilo, Milano 1978.

between the existing and the new parts, to adopt a light structure based on a square or octagonal plan in order to match the existing pillars and thus respecting the structural logic and behaviour of the gothic church.

If we accept for a moment to use again that metaphor (conscious of its limits), we could individuate in our job at least the following schematic but fundamental phases, even if they do not always exist and follow each other in this specific unidirectional order: analysis, diagnosis, anamnesis, prognosis, therapy, prophylaxis. To the basic phases of inquiry, as we see, other parts of the job follow, on the level of intervention, passing towards the crucial and not automatic moments of the interpretation of the analytical and diagnostic results. These new phases are represented by the project hypothesis assumption (prognosis), their control, the definition of the project (the therapy: aims, tools, intervention techniques, technological, environmental and economic requirements, etc.) and its realization in the construction site, to end with the programmed maintenance of the restored building.

The "Anamnesis", in particular, is very interesting, because it implies the attempt to re-construct the history of the monument, in order to understand "why" and "how" it was conceived, realized and afterwards modified by men or by natural events, but also "how" and "why" it was used and consumed in the past. We are speaking, of course, about an "idea of history" that is quite distant from the traditional one and that shows all the influences that the evolution of the historical sciences and methods knew during the past century and, particularly, with the birth and development of a "New History" ("Nouvelle Histoire")¹⁰ aside the traditional one. A new history defined as a "history as a problem", facing the ancient "history as a tale", attentive to the "long duration" of some phenomena and not only to the single outstanding "events" that marked the existences of the past generations and societies. It was a new concept of the historian's research carefully intent in studying all the possible traces of the past (material and immaterial), descriptive and qualitative, but also quantitative and apparently meaningless in themselves, because their sense could exclusively emerge from the great series of single data considered in a different perspective. It was a method to reconstruct the unknown history of the past, ancient or recent, avoiding any preventive selections of data, any a-priori choice of a particular position within the rich offer elaborated on the level of the "Philosophy of History" along the centuries. Only this kind of historical research could allow reaching and overpassing these new epistemological borders, thus contributing also to an

¹⁰ As regards the so named "New History" or more properly "Nouvelle Histoire" that developed during the Twenties of the past century aside the French revue "Annales d'histoire économique et sociale" see, as a simple reference among a very wide literature about the argument, the following texts: Braudel, Fernand, *Un leçon d'histoire*, Les Editions Arthaud, Paris 1986 (It. Tr. *Una lezione di storia*, Einaudi, Torino, 1988); Braudel, Fernand, *L'Europe. L'espace, le temps, les hommes, Art set métiers graphiques*, Paris 1987 - for the notions of "histoire de la long durée" and of "histoire événementielle"; Bloch Marc, *Apologie pour l'histoire ou métier d'historien*, "Cahiers des Annales", Librerie Armand Colin, Paris 1949 (It. tr.: *Apologia della storia o mestiere di storico*, Einaudi, Torino 1969); Le Goff, Jacques, *Storia e memoria*, Einaudi, Torino, 1982; Le Goff, Jacques (ed.), *La nuova storia*, Mondadori, Milano, 1990; Le Goff, Jacques - Nora, Pierre (ed.), *Fare storia. Temi e metodi della nuova storiografia*, Einaudi, Torino, 1981; Le Goff, Jacques, *Histoire et Mémoire*, Gallimard, "Folio", Paris 1997; Lucien Fevre, *Civilisation. Évolution d'un mot et d'un groupe d'idées*, Paris, Renaissance du livre, 1930.

innovative development of the conservation/restoration matters. This attempt to highlight the moment of its construction and all the subsequent phases of the existence of the artefact can and must use, in fact, different data and various information sources: indirect, that is to say independent from the physical consistency of the monument (written documents, iconography sources or oral testimonies and traditions), or direct, that is the monuments considered as the first and fundamental documents of themselves, as Jacques Le Goff has clearly explained. Right within this second perspective, our job inevitably interacts with all the analysis and diagnostic tests that could be developed in order “to inquiring” the building, in its present state and material consistency, hoping to understand it, at the end, despite it continuously changes during our studies.

INNOVATION IN CONSERVATION

The themes related to the knowledge, or better to the many forms of non destructive studies and inquires of existing buildings, have thus acquired, along the recent years, an outstanding role. A sort of satisfaction also exists in this regard, because a common language has certainly been acquired on this field, with evident and appreciable fallouts. Nevertheless, some worries emerge for the risk of a kind of consolidated “orthodoxy”, which may hide a simply formalistic respect for some apparently inescapable rules, accompanied by a certain passiveness of our way to handle conservation/restoration interventions.

In any case, we are always intent in achieving the sure capability to develop:

- ✓ rigorous architectural surveys, supported by adequate technological devices and, first of all, clearly based on methodological geometrical basis recurring to traditional methodologies of longimetric nature, to topographic devices, to analytic or digital photogrammetric instruments and tools till the most updated 3D laser scanning possibilities. They are intended to know and dominate, also thanks to the evolving elaboration and restitution techniques, the “geometries” of the monuments (original and acquired, for construction mistakes or for structural assessments or changes, regular and irregular, intentional and casual¹¹)
- ✓ serious historical inquiries, grounded on strong critic and analytical apparatus, as well as on rigorous studies of the indirect archive sources, always compared with the results of the correspondent archaeological inquires of the artifacts considered as the first and direct sources to be used in order to reconstruct their past history;

¹¹ As regards these different “geometries” which always characterise the ancient buildings and that constitute the real “scientific object” of any serious architectural survey, see: Torsello, Paolo B., *La materia del restauro*, Marsilio, Venezia 1988 – Musso, Stefano F., *Recupero e restauro degli edifici storici. Guida pratica al rilievo e alla diagnostica*, EPC Libri, Roma 2006 (II ed.).

- ✓ meticulous analytical and diagnostic studies, collecting and organizing several data concerning the physical state of the artifacts, as regards the building materials, their state of deterioration/conservation, conducted with rigorous empiric methodologies supported by sometimes very sophisticated laboratory tests (mineralogical and petrography characterization, physical and chemical analysis, biological, botanic and zoological inquires...), faithfully visualized and synthesized in various "thematic maps" of sure communicative and perceptive impact;
- ✓ analysis and interpretation of the constructive techniques, throughout the instruments of the "history of the material culture" and of the archaeological methods applied to architectural structures (see the experiences of the so defined "medieval archaeology" and Harris's stratigraphy);
- ✓ basic or sophisticated and instrumental structural analysis. Developed by using specific interpretative numeric models and specific "non destructive tests";
- ✓ refined and reliable "virtual simulations" of the designed interventions, regarding the building materials and elements, but also the spaces and the layout of the ancient buildings on which we are working;
- ✓ more and more accurate and dynamic systems for monitoring (in situ or in remote) the microclimatic conditions of our monuments, in strict relation with the environment in which they are inserted, which must be studied and understood as a fundamental condition to explain their present status and also to design their future.

All these aspects, at the end, can be essentially used exactly in order to understand the building as it is today but, above all, to discover why it is in the present conditions. This is, in fact, one of the main goals of any historical enquiry (that is the "anamnesis", by the way) considered as a preventive and accompanying phase for any conservative intervention.

Every day, on the other hand, we discover that is almost impossible (dangerous or even useless) limiting our look to the conservation's culture considering it as a withdrawn, self-sufficient or self-related world. It tracks a route between searching and understanding marked by profound connections, opposite polarities and reflected images that can be sometimes very confusing.

The emphasis should furthermore be placed on the need for an effective "programmed conservation" and on the "conservation of the whole". That is to say of the systems of cultural goods, more than on the need of intervention on single artifacts interpreted as "masterpieces of art", especially if the



intervention intends to bring them back towards ancient and lost splendors (a purpose that inevitably reveals itself as impossible, fake and always obtained by destroying their present status and their values). These concepts have further remarkable implications, because they pay attention to the “system” of goods that constitute our built heritage (from the single artifact to the city, till the rich and irreplaceable landscapes we are living in), going beyond its single and separate elements. This situation nevertheless requires new competences and professionalisms, which we have to create in the University and in the world of professional training. In front of the challenges proposed by the destiny of our monuments, cities and cultural landscapes, on the other hand, we do only need some new “technical professionalisms” (analytical, diagnostic and design oriented) but a different cultural attitude. We rather have to avoid that this crucial field for the future of the world be reduced to a simple and indistinct sum of separate responses to the various emergencies every day occurring. These last, in fact, could be at the end acceptable but they are always arguable (on the cultural, economic, technological, technical, functional or political field). It is therefore necessary that the “training” sector create new professional competences, by promoting a strong sensitivity for the strategic aspects of the tutorship, in terms of structural and long term governance of the “system” of goods of our interest. This will not reduce the spaces devoted to the cultural and scientific debate in this field, or to our experimental and professional work, as architects, even out the technical side of the question that remains crucial in the search for a more open and shared quality of future interventions. This goal, nevertheless, will be easily achievable only thanks to the existence of new professionals capable of facing the pre-existing problems together with the new ones emerging during and after the single interventions. It is therefore necessary to rationalize the employable resources, improving the possible technical solutions, exploiting the unexpected but fundamental synergies between different attitudes and capabilities, also accepting and capitalizing the several confrontations and corrections that can only result from a clear, recorded and widely shared accumulation of the experiences. The work to be made, in this direction, is every day more urgent, facing the new challenges our Heritage will be invested by. Let us think to those proposed by the needs for a true environmental and energetic sustainability of its recovery and uses, for a real universal accessibility of our monuments and sites, for their effective defense against the risks of fire, earthquakes or other natural and human disasters.

A clear help, in this perspective, can be found:

- ✓ in the several computerized systems applied to surveying and cataloguing the existing cultural goods (if they are not self-centered or exclusively directed to a passive administration of tutorship bonds);
- ✓ in the progressively developing technical databases or GIS used as a necessary reference by the operators (in the analytic, diagnostic and intervention fields, but only if they are not self-directed and interpreted as mere collections of meaningfulness data);
- ✓ in the emerging expressions of interest for the practical experimentation of these tools towards a real and efficacy management and improvement of the goods themselves (in the planning, administrative, didactic and divulgation fields).

If we really will work within such a perspective, the full recognition of the global (systemic) and not occasional nature of any intervention (yet in the respect of the local specificities) will perhaps emerge. Above all, a new awareness will develop regarding the quality of the interventions themselves that are carried out on the existing artifacts (small or big, famous or unknown, intact or ruined), sometimes considered as insignificant by our traditional and insufficient means of evaluation, while they are certainly important for the communities they belong to.

Unfortunately, one of the main problems is represented in this perspective by the circumstance for which the problems that have been here highlighted should require, to be really faced, a new attention and a real commitment, that the world of the University, of the Institutions and of the professionals involved within the field of Conservation/Restoration of our Built Heritage still find hard to express loud and clear. This simply means that we still have to work a lot in the suggested directions.

ICT AND CONSERVATION

In this field we are experimenting, on the other hand, a challenging relationship between the so called "Information Communication Technologies" and the many disciplines that, for their statutory duties, normally deal with the knowledge and the care of the material and immaterial depot of our cultural and, more specifically, architectural Heritage¹².

It is important, in this regard, to immediately point out the need for a fundamental clarification. We are so accustomed to using the acronym "ICT" that we often forget that each of the terms to which its letters refer should be clarified every time it is used in any specific context. We should explain, in essence, to what kind of "information" we are referring and for which

¹² As for the impact of ICT on heritage conservation see also: Stefano Francesco Musso (2011a), *Information Communication Technologies and conservation of Cultural and Architectural Heritage*, in: "Safeguard Of Cultural Heritage: a Challenge from the Past for the Europe of Tomorrow", Florence, Italy, on July 11th-13th, 2011, p. 217-220, Firenze University Press; and Stefano Francesco Musso (2011b), *Innovation in Conservation of Architectural Heritage*, in: "Safeguard Of Cultural Heritage: a Challenge from the Past for the Europe of Tomorrow", Florence, Italy, on July 11th-13th, 2011, p. 223-225, Firenze University Press,



purposes of “communication” we intend to use those “technologies”. None of these terms is in fact neutral and each of them leads towards complex conceptual frameworks, to rich and deep theoretical reflections and towards a field equally vast and constantly evolving of operational processes. We cannot ignore this fact and we have to fulfill a basic requirement for clarity also to check if the goals, ways and means of each application of these technologies are appropriate to the primary objectives that the protection of Cultural Heritage should pursue. The means should never take the prevalence over the goals, in fact, as the contemporary philosophical/epistemological thinking denounces. And, in this regard, I believe that we all can agree at least on one basic fact. All the efforts and all the resources we use to exploit the capabilities offered by the modern ICT, to broaden the knowledge, understanding, appreciation and enhancement of Cultural Heritage would be unnecessary costs if, in the meantime, the goods that we want to preserve disappear. This means that everything will be useful only if the “meta-data” will not eat (that is to say do not metabolize), till their disappearance, the existing physical data of their interest (taking into account, of course, the naïf distinction between these two categories and concepts only apparently well separated). After at least two millennia of reflection about what “reality” is (if there is indeed “a reality outside of us”), with the revolution of the so called “digital era” (of which we still do not fully understand the real meanings and impacts, the implications and the possible developments), this fundamental question opens towards unexpected answers. We do not longer talk only of “virtual reality”, but now also of “augmented reality”. Someone imagines for example (and in part has already realized thanks to the basic research and applied), some “virtual field trips”, conceived to visit museums, monuments or archaeological sites, without having to move from where we are. This opportunity can radically change our sense of time and space. It is in fact argued that “to move, touch, see and experiment”, in direct relationship with places and objects that are far and different from us, is no longer necessary. In other cases someone imagines exhibition spaces in which various kinds of sensors stare and immediately identify the directions in which the visitors’ eyes move and then offer, in different forms and media (increasingly engaging and friendly, such as 3D holograms) a selection of the available information about what has attracted their attention. Comfort and efficiency may so well hide the abdication to any critical thinking, the pre-ordained control of the possible ways for the fruition of the Heritage of which we are discussing, with potentially very sad implications for human beings and behavior.

These proposals represent new and fascinating frontiers for the research, no doubt full of developments potentially useful to humanity. They can certainly help even our efforts toward the preservation of the Heritage, but only on condition that the construction of new “virtual realities” or of “augmented realities” does not take place at the expenses of a perhaps uncertain but unavoidable “factual reality” that surrounds us and to which belongs even the Heritage, in its perishable materiality. Although, in ontological and epistemological terms, this statement can be, and has been, repeatedly challenged .

NEW NEEDS

For these reasons some new needs clearly emerge:

- ✓ need of clearer, more stable and deeper links between the ICT applied to Cultural and Architectural Heritage (considered in its wholeness) and the physical conservation of the various artefacts belonging to it. This would be, in fact, a fundamental condition to really save, together with their material bodies, also their immaterial values and meanings to which we are equally interested, according to the most updated theoretical and ethic international elaborations on this topic (see, to this regard, the several charters, documents and declarations proposed by UNESCO, ICOMOS and ICCROM);
- ✓ need for a stronger and more evident link between the competences and the professional skills, within the ICT applied to Cultural and Architectural Heritage and those involved by the design and realization processes of the various possible conservation and maintenance interventions;
- ✓ need for a stronger integration, in terms of funding policies, of the several researches developed by various Bodies, on one side, and the real actions that can be developed, starting from their results, for the effective protection of the artefacts entrusted to our care. This means, in other words, that we need a clearer way to link and to support the two sides of the common field. That is to say of the concrete safeguard and of the tutorship of our Heritage and that of the ICTs applied to it, in terms of studies, monitoring, management, evaluation and enhancement (or “mise en valeur”).

For all the recalled reasons, it is furthermore important to stress the following recommendations towards those who are concerned by the duty to decide “where”, and “for which goals”, to allocate the future funds in this field, so that some new efforts should be made in order to:



- ✓ develop comprehensive vocabularies, procedures and methodologies for documentation of Cultural and Architectural Heritage in Europe, which consider the aspects of data gathering, processing, dissemination and recording, always ensuring a strict link and coherence with a rigorous knowledge of the artefacts involved (and of their current status);
- ✓ assessing and define the boundaries of multimedia applications and documentation for safeguarding Cultural Heritage, avoiding the risk that their use could be resolved in itself, as auto-referential or, even worst, as a self-sufficient goal that may provoke a detriment for the safeguard and protection of the Heritage itself;
- ✓ develop low-cost approaches to Cultural Heritage documentation, to allow a real diffusion of the tools we can imagine and realize at the service of the Heritage and for the benefit of a true improvement of the public consciousness of the values that the Heritage has and, even more, can have for our future;
- ✓ create digital repositories of Cultural Heritage resources (possibly based on open-source software, at least in ideal terms), to prevent the fragmentation and duplication of information. This could in fact provoke a painful loss of the invested resources and, further, a dangerous lack of effective results for a sort of diminishing of the comprehension of our general goals on the part of the public opinion. Such repositories should also ensure the recording and transmission to future generations of what we take care of;
- ✓ promote a stronger support for actions that can put in relation the ICTs applied for Architectural Heritage with the researches carried out in the field of the real policies and interventions for conservation. This is essential to prevent the risk that the efforts and human resources, the technical and economic conditions that are used in this crucial area may go on in themselves, while the actual artefacts of which we're talking about and of which we want to take care, disappear, for lack of care and maintenance, or as a consequence of wrong actions;
- ✓ allocate sufficient resources, for the mentioned reasons, to training activities, in cooperation with Universities, local authorities, professional bodies and with industry, to create “new competences” in the fields of analytical and diagnostic studies, of planned conservation and maintenance and of designing some rigorous conservative interventions on historic buildings and, last but not least, of the monitoring and management phases of Cultural and Architectural goods, after any intervention.

The complex of actions here briefly highlighted could in fact help us in ensuring the permanence of this Heritage and its transmission to the future generations. It is even more crucial that that Heritage may arrive to our descendants with all the material signs and the immaterial features, the values and the meanings (already known or still hidden within their bodies and stones) that History stratified upon (and within) the several artefacts belonging to our built environments. In this way, they can be really conceived as Cultural Landscapes in which our societies can find a consistent reason for surviving and consciously developing in the future.

NEW RESEARCH PERSPECTIVES

The new and still evolving technologies offer us undisputed advantages for the management of information and data of various nature. But they have also evident limits, often inherent to the development of some models that struggle to acknowledge and to represent the complexity of the ancient architectural structures.

Technological innovation was introduced in the management of the information collected on the architectural heritage and its protection at the end of the 1990s for the purpose of developing a culture of the programmed conservation and maintenance. This innovation has also improved the organization, effectiveness, and efficiency of the technical and administrative aspects of the projects.

Therefore, there is a growing need to have access to complex and efficient equipments for the professionals involved in the project, into the actual restoration work, and into the following management of the buildings. Suffice to think of equipments universally accessible and interoperable that permit the effective and fast linking of information deriving from diverse sources and of diverse nature, acquired during the preliminary analytical and diagnostic stage, during the planning and design phase, and throughout the entire process of restoration.

The creation of 3D models in the field of conservation and protection of Architectural Heritage is now almost defined and used. The transition from a simple 3D modeling to the so called BIM (Building Information Modeling), on the contrary, still registers sporadic applications, because the technology has been originally conceived for the design of "new" buildings and for the management of their construction process.

For these reasons, some new researches are now aimed at exploring the possibility of transferring tools such as the BIM to the Heritage's context, adapting them to the complexity of the



historical, monumental, and non-monumental buildings. For this purpose some innovative models are used to manage diverse categories of information, data and processes connected to the “three-dimensional spatiality” of the architectural structures and not only to their surfaces.

These new tools are nevertheless not yet widely employed, except in the Anglo-Saxon countries or in northern Europe and in the United States, where they are also partly used for managing the protected historical Heritage. An effective coordination of the professionals involved in the construction process, with regard to its phases, times and costs, could be hopefully achieved right by using the BIM. If these tools are well-designed and properly used, in fact, they could also improve the quality of the works carried out, eliminating the risky margins for discretionary or invasive procedures and could therefore have positive impacts on the protection of Heritage itself.

The so named “Green BIM”, furthermore, introduces into the management of the construction process (also on the existing building stock), some parameters linked with the sustainability of the entire life cycle of the buildings, with clear impacts for the environmental assessment. These themes are nevertheless not yet perceived as crucial in the traditional architectural restoration field. Until now, the built heritage has in fact been excluded from any specific reflection on these aspects. This situation is made evident even by the same European Directive on the “energy-saving measures” that, in fact, relieved the Heritage from the obligation to comply with the directive's provisions, not only due to problems regarding compatibility, historical and cultural respect, but also to the lack of interest that the scientific community involved in its enhancement commonly expresses towards any technological innovation.

With the integrated work of experts acting in different fields, guided by common interests and objectives (first and foremost, the protection and appropriate management of the historical and monumental heritage), an innovative research pathway may nevertheless emerge from this concise picture. The result could be a BIM specifically conceived first of all for the needs of the bodies responsible for the Architectural and Landscape Heritage. It would be a BIM rich of data, information, and assessments relating to the history of the buildings, as well as to their constructive elements and materials (analyzed with the methods and tools employed for the archeology of architecture) and to the sustainability of each work carried out on them. This in terms of resource-saving measures and of impact on the environment, during the entire life cycle of the building, including the disposal of materials and components on the construction site.

COMMUNICATION AND PROMOTION

At the end, we must also acknowledge that, in a context in which, with increasing speed of changes, also the dynamics and techniques of disseminating information continuously change, it is crucial to conceive and apply new strategies for the promotion and the communication of the various and complex contents related to the Heritage. It is in fact of crucial importance to ensure that more and more people will know and make frequent use of it, (avoiding the risk of "consuming and wasting" it) and will appreciate it, thus increasing the cultural awareness of its importance for the future.

This goal is common to any actor involved in the protection, safeguard, conservation, management and enhancement of our Heritage working within the limits of their competences, duties and powers, starting from the State (at the central or at the peripheral level), to the Regional and Local Authorities, involving also the private operators.

In order to reach, in a more effective way, these general goals it is of great importance to know and correctly use the tools and mediums of contemporary communication. In the recent years, thanks to an unstoppable technological innovation, they are revealing new and really effective potential applications also in the field which we are dealing with. Also for this reason, in addition to the traditional communication practices, it is necessary and useful looking to the new media (ICT), in order to reach larger audiences, with no limits of space and time, bettering our capability to inform, educate, move the interests and the responsibilities of all the Citizens that, at the end, are the unique and real owners of those cultural goods. Of course, many questions are still open and regularly they are re-proposed for scientific reasons and not only for communication ones. The main one is strictly linked to the possible risks that this kind of evolution and these forms of communication can hide in themselves the more they are frequently used (or abused). Let's think, on the one hand, to the need to preserve the rigour and scientific seriousness of any content and information that can be communicated or transferred to a great public, by using these new tools, whilst their simplification could seem a compulsory goal. It is a real matter of research and of experimentation that involves many protagonists, scholars, experts in communication, administrators, and politicians. If we lose the capacity to tend towards our main goal (i.e. the preservation or protection of our Heritage, for the benefit of the future generations), we could risk to assign more attention, and to invest more economic resources, in the communication process than in the real safeguarding of



that same Heritage. It is thus necessary, at this regards, to avoid the risk that what we do for the willing to enhance the immaterial side of the Heritage we want to preserve does not take the final prevalence on the real conservation of its “material” permanence.

Facing the growing demand for cultural information, furthermore, there is an equal growth of the maturation of the recipient of that information. He progressively becomes more and more expert of new languages, that is to say, more and more able to assess the quality and the quantity of the information that he receives. The diversification of the media channels and tools, therefore, serves to offer the maximum possible information to the public, in order to promote and diffuse the knowledge and the promotion of cultural goods and sites. This is a crucial issues for all those who are involved in the “safeguard” and in the “promotion” processes, that is to say, all the devoted Institutions (or bodies), at a National and regional or local level.

The adoption of several new combined media thus aims to optimize the level of information dedicated to each and every good or event, trying to increase the public awareness of the dimensions and of the importance of our Cultural Heritage for a future and sustainable life on the Planet Earth.

These are some of the main challenges waiting us and asking for deep changes of paradigms in our thinking and acting in Conservation.

REFERENCES

- Musso, S.F. (2009). *Conservation/restoration of built Heritage: Dimensions of contemporary culture*, pp. 86-107, in: *Bringing the World into Culture. Comparative Methodologies in Architecture, Art, Design and Science*, edited by P. Lombaerde and L. Lee, UPA Editions, University Press Antwerp, Belgium.
- Kealy, L. (2008). *Teaching/thinking/learning/doing: Conservation and creativity in architectural education*, in: *Teaching Conservation/Restoration of the Architectural Heritage. Goals, Contents and Methods*, edited by, S.F. Musso and L. De Marco, EAAE-ENHSA Transactions n. 38 – Leuven.
- Musso, S.F. (2007). *Teaching Conservation/Restoration: tendencies and emerging problems*, in: *Teaching Conservation/Restoration...*, edited by S. F. Musso and L. De Marco, quoted.
- Galimberti, U. (1999). *Psyche e Techne. L'uomo nell'età della tecnica*, Feltrinelli, Milano.

Della Torre .S. (2007). *Cultural Heritage Process Charted: defining competences to decide educational programs*, in: *Teaching Conservation/Restoration...*, edited by S. F. Musso and L. De Marco, quoted.

Torsello, P.B. (1988). *La materia del restauro*, Marsilio, Venezia.

Musso, S.F. (2010). *Recupero e restauro degli edifici storici: Guida pratica al rilievo e alla diagnostica*, EPC Libri, Roma.

Musso, S.F. (2011). *Information communication technologies and conservation of cultural and architectural heritage*, in Aa. Vv. *Safeguard Of Cultural Heritage: a Challenge from the Past for the Europe of Tomorrow*, July 11th-13th, 2011, pp. 217-220, Firenze University Press, Florence.

Musso, S.F. (2011b). *Innovation in conservation of architectural heritage*, in Aa. Vv. *Safeguard Of Cultural Heritage: a Challenge from the Past for the Europe of Tomorrow*, July 11th-13th, 2011, pp. 223-225, Firenze University Press, Florence.

RESUME

Stefano Francesco Musso, architect and full Professor of Restoration, has been Dean of the Faculty of Architecture of the University of Genoa and he is Director of its School of Specialization for Architectural Heritage and Landscape. He is coordinator of the Commission for Building and Heritage of the Athenaeum and teaches "Studio Class" and "Fundamentals of Architectural Restoration". He is member of the Board of the PhD Program in Conservation of Architectural Heritage-Polytechnic of Milan. He is member of the Scientific Committee for Architectural and Landscape Heritage of the Ministry for Cultural Goods. He is past President of EAA (European Association for Architectural Education) and coordinates its Thematic Network on Conservation. He is member of the Scientific Committees of ANCSA (National Association for Historic and Artistic Centers), Assorestauro, the Congresses "Scienza e Beni Culturali", Brixen and other Congresses. He has been Visiting Professor at NUS (National University of Singapore), Arthesis College-Antwerp, Escuela Técnica Superior de Arquitectura de Granada. He thought in courses organized by UNESCO. He has been external examiner at the UCD-University College Dublin and at the Jon Mincu University in Bucharest, expert for the Research Assessment of Romanian and Greek Universities. He is referee for the "Research Foundation - Flanders, MIUR, Universities and scientific magazines. He has been member of the juries for international prizes and competitions. His research regards: principles of preservation for architectural, urban, landscape and archaeological heritage, development of the discipline, survey, non destructive diagnosis, traditional building technology, rehabilitation of rural architecture. He coordinated researches of local, national and European level (INTERREG, Culture 2000,



ALFA, Erasmus Mundus, Erasmus Plus) or granted by state and local authorities.

He is author of 230 scientific and didactic publications, in Italy and abroad.

His researches and teaching activities are mainly connected to the theories and history of restoration and to the outstanding lines of the cultural and technical debate in this field (*Questioni di storia e restauro*, Alinea, Firenze 1988, *Itinerari bibliografici sulla tutela*, in B. Pedretti (a cura di), *Il progetto del passato*, Bruno Mondadori, Milano 1997, *Le carte del restauro*, in Aa.Vv. *Cos'è il restauro?*, Marsilio, Venezia 2006). In the wealth of his scientific production, the technological aspects of analysing and preserving interventions on ancient and pre-industrial buildings refer to the complex themes of restoration as well to the methods for a non-destructive analysis and diagnosis of ancient buildings as elements of our cultural and architectural Heritage (*Architettura, segni e misura, repertorio di tecniche analitiche*, Esculapio, Bologna 1995 – *Recupero e restauro degli edifici storici*, EPC Libri, II ed., Roma 2006). Other research themes are linked to the intervention techniques (*Tecniche di restauro*, UTET, Torino 2003 – with B.P. Torsello - and *Tecniche di Restauro Aggiornamento*, UTET, 2013) and to the preservation and rehabilitation of rural architecture (*Guida alla manutenzione e al recupero dell'edilizia rurale*, Marsilio, Venezia 2001 – *Guida agli interventi di recupero dell'edilizia diffusa nel Parco Nazionale delle Cinque Terre*, Marsilio, Venezia 2006, (with G. Franco) and *Architettura rurale nel Parco del Beigua. Guida alla manutenzione e al recupero*, Marsilio, Venezia 2008 (with G. Franco e M. Gnone)

He has been designer and responsible for the restoration interventions, among the others, on the ancient Hospital of S. Maria della Misericordia in Albenga, the medieval Castle at Saliceto (CN), the parish Church of Cengio Chiesa (SV), the Second Hospice of the Santuario di Savona