INHERITING OUR CULTURAL HERITAGE. CHANGES OF PARADIGM OF CONSERVATION

STEFANO FRANCESCO MUSSO[1]

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 its 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 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 artefacts can always emerge to our attention

---

[1] 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)

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 disillusions 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 tracks 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 concern exclusively 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 seems 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 artefacts of our civilized countries[1].

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 Riegl[2] treated this conflicting and contradictory aspect at the beginning of the Nineteen 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 asset and atmosphere, along the times passing on. We could even now

---

[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*, Braunmuller, 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)

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 by Francoise Choay[1] 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 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 outstanding social and economic values[2]. 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 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" of course 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 it is a crucial crossroad for research, teaching and professional practice, as it is in other fields. Right for this reason, 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 but 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

---

[1] Cf. Choay, Françoise, *L'allegorie du patrimoine, (*It. tr. D'Alfonso, Ernesto & Valente, Ilaria (ed.*), L'allegoria del patrimonio,* Officina, Roma 1985)
[2] 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.

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, in any case, it is 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 polarities and reflected images. In the today's world, architecture and conservation/restoration often look like "poor neighbours", not 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, 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 "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[1]. 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 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[2]. On the other hand, it appears evident that the project, considered as a mere technical action, tied to the artefact and its destiny, could not be the only focal point of our activity, because a

---

[1] Cf. Kealy, Loughlin, *Teaching/thinking/learning/doing. Conservation and creativity in architectural education,* in Musso, Stefano F., De Marco Luisa (ed.), *Teaching Conservation/Restoration of the Architectural Heritage. Goals, Contents and Methods.* EAAE-ENHSA Transactions n. 38 – Leuven (Belgium – Tessaloniki – Greece) 2008 - ISBN/ISSN: 2-930301-35-X (now in press).
[2] Cf. Musso, Stefano F., *Teaching Conservation/Restoration: tendencies and emerging problems*, in Musso, Stefano F., De Marco Luisa (ed.), *Teaching Conservation/Restoration…*, quoted.

wide amount of questions, themes and objects 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 instrument adopted to realise the previsions of the first one, but it is going to begin more and more the goal of (and in) itself[1]. We must at least consider with a new attention the problems connected to the management phases or, even, to normative rules, which closely concern conservation and restoration. Unless, we 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 heart, others have selected before our intervention[2]. The fact is that, perhaps, we cannot just restrict ourselves to the mere discussion or confrontation, sometimes hostile, exclusively about "how" to technically intervene, completely ignoring "who" decides "where" and, most of all, "why", something must or can be conserved or restored[3]. 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) which 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 immerged 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 cultural).

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 always asks 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 Alberti[4] inaugurated the Renaissance and the re-discovery of the Roman classical culture not to imitate but to overpass it, with this powerful "paradigm" as Francoise Choay defined it[5]. One of the consequences of this theoretical concept is the paragon we often propose between the activity of a

---

[1] As regards the relationships and the respective roles of Science and Technique/Technology in the contemporary world see, as a simple example: Garimberti, 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 Francoise Lyotard to Jürgen Habermas.
[2] Cf. Stovel, Herb, *Challenges in moving from architectural conservation education to heritage conservation education,* ibidem
[3] Cf. Della Torre, Stefano, *Cultural Heritage Process Charted: defining competences to decide educational programs,* in: Musso, Stefano F., De Marco Luisa (ed.), *Teaching Conservation/Restoration…*, quoted.
[4] Cf. Alberti, Leon Battista *De re aedificatoria…,* quoted
[5] Cf. Choay, Françoise, *La regola e il modello: sulla teoria dell'architettura e dell'urbanistica*, Officina. Roma 1986 D'Alfonso, Ernesto (ed.).

physician and that of an architect when he intervenes on an existing monument that was built following forgotten rules and plans and is now 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) proposing the best form to be adopted for its new flesh. Leonardo[1] proposed, starting from Alberti's idea of the necessary "conformitas" (accomplishment) 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 of the dome and thus respecting the structural logic 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 "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, the birth and development of a "New History" ("Nouvelle Histoire")[2] 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

---

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

[2] 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'historie economique 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 duré" o "histoire evenementielle"; 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.

the historian's trade 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". Only this kind of historical research could allow reaching these new epistemological borders, thus contributing also to an innovative development of the conservation/restoration matter. 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 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 consistency material, hoping to understand at the end, despite it 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 casual[1])

- serious historical inquiries, grounded on strong critic and analytical apparatus, as well as on rigorous studies of the indirect archive sources, always compared with

---

[1] 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.).

the results of correspondent archaeological inquires of the artifacts considered as the first and direct sources to be used in order to reconstruct their past history;

- meticulous analytical and diagnostic studies, collecting and organizing 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 "thematic maps" of sure communicative and perceptive impact;

- analysis and interpretation of the constructive techniques, throughout the instruments of the "history of material culture" and of the archaeological methods applied to architectural structures (see also the experiences of the "medieval archaeology" and Harris's stratigraphy);

- basic or sophisticated and instrumental structural analysis using specific interpretative numeric models and non destructive tests;

- refined and reliable "virtual simulations" of the designed interventions, regarding the built materials and elements, but also the spaces and the layout of the ancient buildings we are working on;

- 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 to design their future.

These aspects, at the end, can be essentially used exactly in order to understand not only the building as it is today but, above all, to discover why it is in the present conditions and this is 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, polarities and reflected images.

The emphasis should furthermore be placed on the need for an affective "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 (impossible, fake and always obtained by destroying their status present and their values). These concepts have 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, are really needed not only 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, by rationalizing the employable resources, improving the possible technical solutions, exploiting the unexpected but fundamental synergies between different attitudes and capabilities, accepting and capitalizing the several confrontations and corrections that can only result from a clear, recorded and widely shared accumulation of experiences. The work to be made in this direction is every day more urgent, facing the new challenges our Heritage will be invested by, like 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, earthquake 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 used as a necessary reference by the operators (in the analytic, diagnostic and intervention areas, but only if they are not self-directed and interpreted as simple collections of meaningfulness data);
- in the emerging expressions of interest for their practical experimentation towards a real and efficacy management and improvement of the goods themselves (in the planning, administrative, didactic and divulgation fields.

If really we 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), 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 disciplines that, for their statutory duties, deal with the knowledge and the care of the material and immaterial depot of our cultural and, more specifically, architectural Heritage[1].

It is important, in this regard, to immediately point out the need for a 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 that specific context. We should explain, in essence, to what kind of "information" we refer and for which 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 complex 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 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 all we can agree at least on one basic fact. All 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" do not eat (that is to say do not metabolize), till their disappearance, the data (taking into account, of course, of the naïf distinction between these two categories and concepts only apparently well separated). After at least two millennia of reflection on what is "reality" (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",

---

[1] As for the impact of ICT on heritage conservation see also: Stefano Francesco Musso (2011), *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, ISBN: 9788866550587; and Stefano Francesco Musso (2011), *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, ISBN: 9788866550587

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 and this can change radically our sense of time and space. It is argued that 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) a selection of information available on 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.

They are new and fascinating frontiers of research, no doubt full of developments potentially useful to humans. They can certainly help even our efforts toward the preservation of the Heritage on condition, however, that the construction of new "virtual realities" or of "augmented realities" does not take place at the expense of a perhaps uncertain "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 several times.

New Needs

For these reasons some new needs emerge:

- need of clearer and deeper links between the ICT applied to Cultural and Architectural Heritage (considered in its material consistency) 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 of which we are equally interested , according to the most updated theoretical and ethic international elaborations on this topic (see 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 conservation and maintenance interventions;

- need for a stronger integration, in terms of funding policies, of the several researches developed by various Research 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 study, monitoring, management, evaluation and enhancement (or "mise en valeur").

For all the recalled reasons, it is important furthermore to stress the following recommendations towards those who are concerned by the duty to decide "where", and "for which goals", 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 archival, 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 a repository should also ensure the archival and transmission to future generations of which we take care;
- 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 real policies for conservation. This is essential to prevent the risk that the efforts and resources human, the technical and economic conditions that are used in this crucial area may go on in themselves, while the actual artefacts o f 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 of Cultural and Architectural, 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) that history stratified upon (and within) the several artefacts belonging to our built environments, so that these

last 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 to the management of information and data of various nature but have also evident limits, which are often inherent to the development of some models that struggle to acknowledge and to represent complex 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 equipment for the professionals involved in the project, into the actual restoration work, and into the management of the buildings. Suffice to think of equipments universally accessible and interoperable and that permit the effective and fast linking of information from diverse sources and of diverse nature, acquired during the preliminary analytical and diagnostic stage, during the planning 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 3D modeling BIM (Building Information Modeling), with the same purpose, on the contrary, still registers sporadic applications because the technology has been originally conceived for the design of the "new" and for the management of its 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, by using innovative models 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 tools are not yet widely employed, except in the Anglo-Saxon countries or in northern Europe and in the United States, where they are also 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 can be hopefully achieved by using the BIM. If these tools are well-designed and properly used, in fact, they could also improve the quality of the work carried out, eliminating the risky margins for discretional or invasive procedures and could therefore have positive impacts on the protection of Heritage.

The so named "Green BIM", furthermore, introduces into the management of the construction process, 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

European Directive on energy-saving measures, which has relieved this heritage from the obligation to comply with the directive's provisions, not only due to problems regarding compatibility, respect, and historical and cultural aspects; but also to the lack of interest which the scientific community involved in its enhancement commonly expresses towards technological innovation.

With the integrated work of experts 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 emerge from this concise picture. The result would be a BIM specifically conceived for the bodies responsible for the Architectural and Landscape Heritage, rich of data, information, and assessments relating to the history of the building, as well as to its 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 it, 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 national and international context in which, with increasing speed of changes, also the dynamics and techniques of disseminating information continuously change, and it is therefore crucial 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 and will appreciate it, thus increasing the cultural awareness of its crucial importance for the future.

This goal is common to any actor involved in the protection, safeguard, conservation, management and enhancement of our Heritage, each one of them while he works within the limits of its 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 crucial importance know and correctly use the tools and mediums of communication contemporary that, in the recent years, thanks to an unstoppable technological innovation, are revealing new and really effective potential applications also in the field which we are dealing with. Also for this reason, in addition to traditional communication practices, it is necessary and useful looking to the new media (ICT), in order to reach large 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 owner of those cultural goods. Of course, many questions are 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) in the field. 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 communicate or transferred to a great public

using these new tools, whilst it could seem a compulsory goal their simplification. It is a real matter of research and of experimentation that involves nowadays many protagonists, like scholars, experts in communication, administrators, and politicians. If we lose the custom to tend towards our main goal (i.e. the preservation or protection of our Heritage for 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 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, so that he 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 goods and sites cultural. 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.