

Teaching architectural conservation/restoration: tendencies and emerging problems in Genoa

The conservation and restoration disciplines, altogether with the topics and requests of contemporary culture that tend to provide an answer, constitute a distinctive element of the architectural education in Italy. Genoa, in this sense, is committed to offer an adequate answer to the contemporary challenges, linking itself to the characters of its territory, to Europe and to the world. From books, conference proceedings and magazines/journals devoted to restoration and from the interventions on the built heritage (architectural, urban, environmental), if aimed at the future transmission of artefacts loaded with signs and meanings that history has stratified upon them, emerge a variegated universe of questions, "viewpoints", proposals and design solutions that represent the current situation of the debate and of the professional practice in this field. Naturally everything is contestable, just like in any other planning sector. On every intervention is legitimate to exercise the power/duty of criticism and nobody is entitled to end the debate with ultimate words. It could be noticed, the prevalence of a "stylistic reintegration" tendency, that looks for completeness or excessive intervention, especially in structural consolidations. But if a secular debate hasn't been able to definitely affect these nodes, it is not possible though to solve the open questions here.

The recovery-restoration and, more generally, the problem of the destiny of the existing buildings are by now an issue of widespread sensitivity and professional needs/opportunities, in a greater proportion than what occurred in the recent past. In a way, a circle has been closed, even though some critical aspects and, sometime, excessive simplifications or risky individualistic drifts are still present in this field.

Conservation and Restoration goals

We can highlight at least three main goals that conservation and restoration pursue: 1) the research of a longer duration of the artifact in time; 2) the remaining of signs and material traces that characterize its current state as a result of long and often unknown processes of conception, construction, modification and transformation; 3) the actualization of the formal and functional potentialities of the artefact, for the current life and its requirements.

The first goal puts at stake the techniques by imposing a strong alliance with the "natural sciences" and their explicative, predictive (even prescriptive for someone) capacities. The second confronts with the "requests and questions of the memory", i.e., with the need and the possibility to recall and provoke culture that, are offered to our societies right by the monuments of the past (even the recent one). Lastly, the third goal deals with the will and capacity to "prefigure" the future of the architectural and environmental patrimony entrusted to our cures, namely the decision and responsibility of the project, even of innovative nature, aimed at its conservation and functional to it. These goals, however, are often incompatible among themselves and most of the registered failures in restoration derive from the attempts to solve these problems with banal compromises, with "recipes", rules, general norms or, even worse, with exasperated personalisms. The theoretical and methodological aporia inherent in those conflicts should instead be faced with clearness, following analytical and planning criterion that accepts the conflict to discover its generative potential. In this perspective, for the first criterion suggested by Paolo Torsello, each intervention of restoration should try to prolong the life of the work by its physical consistency with all the available technical means, so the work will be fine, solid, protected and healthy, as long as such action is not in contradiction with a second criterion. This requests that restoration assures the permanence of all the signs that connote the artifact, in its current configuration and consistency and independently from every opinion or preference of historical and aesthetic nature, as long as such action is not in contradiction with the first and third criterion. For this last one in fact, restoration must assure the usability of the manufacture, giving it forms and functions that are connected to the current way of living, as long as this is not in contradiction with the first and second criterion. The three criteria evidently risk activating a vicious circle that in reality, is mostly apparent and suggests instead, some interesting methodological options. These criteria, in fact, are an invitation not to consider the analysis of the building (in its possible declinations), the intervention techniques and even the "design invention" as separated activities reduced to mere instrumental functions. On the contrary, each criterion must be placed "under process", analyzed, adapted, improved and even re-formulated in the search for a re-composition of the requests it expresses. The logic of compromise, in fact, implies the risk of reaching "low profile" solutions, because it produces a sort of renunciation (or mutilation) of the fullness of the possible study and design choices. On the other hand, the research of "high profile" solutions implies a creative research and an innovation work that, apart from assuring the maximum respect for the artefacts, can produce a real scientific and design progress. This should be, then, the task of an architect that is sensitive to the themes of conservation and restoration and his education must be addresses in such way, that can be always the protagonist of such a crucial confrontation.

Reasons of conservation, today

It is important to recognize that, nowadays, the crucial and essential question is perhaps be: "why do we research, teach or practice within the field of conservation/restoration"? (keeping together these two really conflicting terms, at least for the moment). Their contextual use, in fact, simply tries to avoid any preventive selection connected to the meanings that the two words can assume in different cultural contexts, while everywhere a great interest as regards tutorship, safeguard and management of architectural, urban and environmental Heritage seems to grow up. But the question "why" regards, in a broader sense, the real and deep reasons of our present attitude and of our efforts toward the conservation/restoration of several artefacts that were conceived and built by other men, that is our ancestors, during the past ages. On the other hand, European culture created the problem and continuously tries to explain and to solve it. A copious literature, followed by a wide catalogue of real interventions, attests this scientific, technical, aesthetical, historical and ideological itinerary that will never be declared concluded: it will continue as our lives will go on, always enquiring which kind of relationships we would like to institute with the remains and the traces of our past or, better, of our numerous and almost unknown pasts. Of course, this question will be meaningful only if "a past" will continue to exist producing precious remains because, as Marc Augé suggests: "future History will never produce again "ruins" but only rubble. It will not have enough time to do so"¹. This problem is crucial for our times and for the theoretical and pragmatic field we are moving in. It is considered, not for a case, as one where contemporary culture expresses a very alive debate, a productive and open development of ideas, methods and instruments, even if they do not always match some results of corresponding value ².

Further on, at least in Italian language, the term "why" can have at least two different meanings: it could bring us towards the reasons (or the causes) "because" we think or we do something, or it could highlight the aims (the goals) "why" we do so.

So, as it happened till now, we will continue saying that we want to preserve, maintain, conserve or restore various fragments of previous ages and ancient societies, for several and sometimes mixed, contradictory and conflicting reasons and aims, such as:

- to know, discover, understand and reveal (or to unveil!) what is already clear and evident or what is hidden inside the stones and the forms of ancient buildings and artefacts;
- to save, take care or erase the signs of the injuries the monument suffered in its life;
- to consequently repair the damages caused by unpredictable forces of nature or, more often, by men's' lack of care, distraction, ignorance, excessive desires, and so on;
- to remember and, therefore, to give evidence and highlight everything we think could be important for our present times and, even more, for our sons and the future generations;
- to celebrate, to remind and to educate, thus improving our historical consciousness, our aesthetical and creative capabilities and sensibility;
- to use again the monument we are in front of, or to continue using it, within a sort of historical continuity and thanks to the actions we imagine, so that it can be still part of our life, urban scene and landscapes.

Nevertheless, it is easy to recognize that all these noble goals, reciprocally conflicting, are often translated in the following alternative actions, aiming:

- to "complete" ancient monuments, following Eugène Emmanuel Viollet-le-Duc, thus discovering and re-building their "lost unity", to give them again a presumed or supposed original completeness and perfection (impossible, ambiguous or useless goal, perhaps!);
- to "create and invent", as a counterpart, a new completeness that should be totally different from the original supposed one, basing our action upon the reasons and the rights of our culture to leave its signs upon the ancient monuments, as every other previous age made, during the past;
- to "correct or to delete", in such a perspective, any ancient or recent mistake or bad and incorrect previous interventions;
- to "ameliorate" those old things, in order to upraise their qualities, their performances and to ensure, to make possible or to preserve their legibility, at least when they are conceived as a text (better, a palimpsest) or a mine of knowledge and of information to be discovered and excavated (hopefully only in a metaphorical way!).

This complicated set of intentions and goals exist and always emerges right because conservation and restoration are not merely a matter of disciplinary discussion for artists, scientists, technicians, architects, historians, scholars or administrators, generically or directly involved in the responsibilities about the destiny of our Heritage. The pair conservation/restoration belongs, in fact, to the deepest roots of our societies; it affects the life of the individuals as well as that of entire human groups and communities, even if they are not always aware of that.

Of course, the answer (in terms of ideas, values, concepts, tools and intervention techniques) to the many and various questions involved in the over mentioned aims, could be theoretically and pragmatically very different. So, this circumstance brings us towards a second topic that is the question "how" we restore, that is an essential part of our teaching activity aside the theoretical one.

Regarding this argument, we have in any case to recognize that after two centuries of debate (deeply and completely aroused in the Western World or - even better - to be considered merely European), with the appearing and progressive consolidation of the opposite polarities of conservation and restoration up until the slow, but consolidated expansion's process "for kind, epoch of formation, for extension and quality" of the objects subjected to tutorship, we are accustomed to think in an all known universe of objects, though expanding progressively. Yet there are always new facets that can always make explode or implode our world of fragile certainties. In any case, what few

primarily have to teach our students is perhaps the awareness that we conserve for a future world of civilization, coexistence and sharing of memories, values and potential of future life. Otherwise: why should we do it?

(Knowledge) Study

In this perspective, an outstanding role has been acquired by the themes related to the knowledge of what we want to take care of. On this level, we must highlight, first of all, the crucial role that analytical and diagnostic apparatus have assumed during the past years within the Italian experience. A sort of satisfaction exist, a propos, because a common language has been developed on this field, with evident and appreciable fallouts, at least as regards research and didactic.

Nevertheless, some worries emerge as regards the risk of a kind of consolidated "orthodoxy", which may sometimes hide a formalistic respect for some apparently inescapable rules accompanied by a certain passiveness of our way to handle restoration interventions, reflected also in our didactic activity.

In any case, we are always intent in making our students able to execute and develop:

- rigorous architectural surveys, supported by adequate technological devices and, first of all, clearly based on methodological geometrical basis;
- serious historical inquiries, grounded on strong critic apparatus (at least at the Specialization level) and on rigorous archive studies;
- meticulous analytical and diagnostic studies, collecting and organizing data concerning the physical state of the artefacts, as regards the building materials, the techniques for their construction and their state of deterioration/conservation, faithfully visualized and synthesized in "thematic maps" of sure communicative and perceptive impact;
- refined and reliable virtual simulations of the designed interventions, regarding the built materials and elements but also the spaces of the ancient buildings we are working on.

From this point of view, teaching of restoration seems to have achieved, at least in Italy, a highly elevated common standard. This does not seem to solve all the existing problems and it seems to arise a few doubts about the efficaciousness of our teaching and the risks of a simply formal homologation not always corresponding to a strong awareness of the treated matters and of the challenges that any restoration work arises.

Here, no scandal would lay, but far too often this does not prelude to an effective generalization of the attention to the restoration themes, to the necessities and objectives by it postulated but, rather, it seems to announce the Heritage's depredation. Concerning this hazard, in fact, the apparent and soothing homogeneity of our technical apparatus can hide an uncomplaining or unconscious closure of our entourage as regards the transformation the world goes through.

Anyway, this rich methodological and technical apparatus supporting the analytical and diagnostic phases of many restoration studies and projects, is perhaps the essential contribution that Italy has given to the world and that still knows how to give to the conservation's culture, as usually recognized abroad.

(Action) Project

Project's topic, of course, emerges at this point as the main crucial one for our activity, often with profoundly different meanings and accents right because it is a crucial crossroad for teaching and for professional practice. Therefore, someone preliminarily underlines the many differences existing between a "project concerning a new object" and a "project concerning an existing object". At least if the second one would not just limit itself to be the mere sum of functional modifications, but also takes real care of the depot (full of memories, knowledge and potentialities) that our architectural Heritage carries with itself, offering it to the future in the most undamaged and undivided state, or even enriched by new resources and not certainly impoverished of the already existing ones.

On this side, many reasons would witness a vision for the restoration's project to demand a "specialized designer", an architect who should be particularly skilled in such subjects thanks to a specific formative path that it is on us to draw and manage. The greatest differences of opinions and accents about this subject consist, if ever, on the opportunity that this path could or should start as soon as the student enters our schools or if rather should be applied over an already or almost accomplished route, within a more general area of architectural studies. Of course, many topics supporting each thesis can be proposed and an accentuated and transversal gap emerges between those holding as prevalent the second hypothesis, considering rather dangerous to anticipate too much conservation's themes, for the risk that this could bring, despite all good intentions, a loss of knowledge and specialized competences, and less rigor in the preparation of what abroad is often called "conservative architect". The anticipation of such themes in the first course's years would paradoxically bring an over-specialization carrying the risk of a dramatic separation between conservation and architectonic planning's competences. On the contrary - not only for didactical, technical and content's concerns, but for pure pedagogic and educative reasons - many teachers claim that the urgency of the challenges of heritage's conservation, in the contemporary societies, should suggest us to alert students right from their

entrance in our schools. This in order to avoid that the waiting for more mature times might bring, in perspective, a sort of acquired indifference as regards problems of tutorship, safeguards and intervention on the existing heritage.

However there is a facet, which is often underestimated, sometimes even simply ignored. The project is doubtlessly a crucial point in the process of conservation/restoration.

In any case, we could easily list endless reasons why project of conservation/restoration of an existing artefacts is and must be different from projecting new architecture, therefore demanding different didactic forms in order to be correctly understood and governed by the students. In any case, we must first of all recognize that the project is just one even if fundamental moment in the conservation/restoration process of our historic, architectural and environmental heritage. Above all, it is a moment that "only apparently" ratifies its conclusion. Here, for some experts, an enormous risk lies. Centuries of discussions, in fact, have not solved (neither will do those to come) the many doubts and possible alternatives concerning goals, objects, instruments and methods of the conservation/restoration project or, better, process. Meanwhile, if our didactic action only concentrates itself on its riving contradictions, we risk to loose other key elements of the problem.

"Dimensions" and "objects"

Every day, in fact, we discover that is almost impossible (or even dangerous or un-useful) limiting our look to the conservation's culture and teaching, considered as a withdrawn, self-sufficient or self-related world. It tracks a route between teaching and learning marked by profound divisions and connections, by polarities and reflected images. This deals with a today's reality in which architecture and conservation often look like "poor neighbors", not reciprocally communicating and subjected to the perennial contraposition between the exaltation of pure (or abstract) "creativity" and the research for analytical rigor, between the tension towards knowledge and professional pragmatism, in a time of deep transformations which, on the contrary, would demand their profound and meditated integration.

The existing relationships between conservation and architecture, on the other hand, are not only deriving from their common affiliation to the same world of objects, methods or instruments. Conservation is 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" architectural education can offer to conservation's education, but also and with the same strength what and how much conservation's education can offer to architectural education. For these reasons, some scholars underline the urgent need for a higher integration with the architectural design disciplines, even by facing the risk that this process would end up in a loss of centrality (or power!!!) of conservation. However, it is necessary to question if our scientific, cultural and didactic activity can keep on being proposed as a sort of "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 already existing are actually ignored or half tolerated by the society for the welfare of which we are saying that they should be adopted.

On the other hand, it appears evident that the project, seen as a mere (even if complex) technical action, deeply tied to the artifacts and their destiny, could not be the only focal point of our teaching's activity. It should in fact claim, on the contrary, new attention for several different themes that are connected, for example, to the management or, even, to the construction of some conditions, which certainly and closely concern it. Unless we reduce our teaching to a mere research for more or less sharable technical solutions (by many or by few people, by a "school" or another), as simple attempts for answering questions which, at heart, others have selected before our intervention. We cannot just restrict the mere discussion or confrontation, sometimes hostile, exclusively on "how" technically intervene, completely ignoring "who" decides, "where" and, most of all, "why", what must or can be conserved or restored.

By and large, we cannot simply ignore, forget or avoid to face – while building school's path to be offered to the would-be architect for him to learn what restoration is and, most of all, how to restore (!) - the many facets and implications which the problem implies at larger scales (urban or territorial) of our built landscapes, and which exceed each artifact or building.

At this point, it seems also clear that the themes conservation and restoration treat are profoundly entwined with more general processes that are progressively conditioning our communities' and built landscapes' culture, now ever immersed in a global and planetary dimension but always seeking more or less certain identities which, just inside our heritage, one presumes they should be deeply rooted and clearly expressed, demanding an active tutorship.

New perspectives

For this reason it is necessary to broaden our point of view by referring to an article published in the newspaper Repubblica on June 22nd 2004 where Salvatore Settis, remembering Giovanni Urbani, highlighted his interest for the "important role of the Central Institute for Restoration, to which was entrusted... the practical demonstration that programmed conservation of the whole, and not the occasional and therapeutic restoration of isolated objects and monuments, responds to a logical economic convenience of the Country". The emphasis was thus already placed on the "programmed conservation" and on the "conservation of the whole" concepts. These concepts have remarkable implications because they pay attention to the "system" of goods that constitute the built heritage (from the single artifact, to the city and the landscape),

going beyond the single element, chosen as single objects to be taken care of, conserved or restored. This situation requires new competences and requisites the education also within process of the architects. In front of the challenges proposed by destiny of monuments, cities and cultural landscapes, in fact, what is needed is not only new and secure “technical professionalisms” (analytical, diagnostic and design oriented). In order to avoid that this crucial field for the future of the Country be reduced to an amount of single responses to the emergency, maybe acceptable but undoubtedly arguable (on the cultural, economic, technological, technical, functional, political field) is necessary that the “training” sector and the universities identifies and create new professionalisms and promote a strong sensitivity to the strategic aspects of the tutorship and recovery/restoration, i.e., for the structural and long term governance of the “system” of goods of our interest. This will not reduce the spaces devoted to the debate and to the experimental work even out the technical side of the question, that remains crucial in the quest for a more open and shared quality of the interventions. This goal, nevertheless, will be easily achievable only thanks to the existence of new professionals capable of facing the pre-existing problems and those emerging during and after the single intervention, rationalizing the resources, improving the possible solutions, exploiting the synergies, confrontations and corrections that can only the result of a clear accumulation of experiences. An example, in this perspective, can be found in the computerized systems applied to cataloguing cultural goods (it is not self-centered or exclusively directed to a passive administration of tutorship bonds), the technical databases used as reference by the operators (in the analytic, diagnostic and intervention areas), the management and improvement of the goods (in the planning, administrative, didactic and divulgation fields) or in other segments of our activities. In such a perspective, should emerge the full recognition of the global (systemic) and not occasional nature, of any intervention (yet in the respect of the local specificities), but above all, the awareness regarding the quality of the interventions themselves realized or existing artifacts (small or big, famous or unknown), maybe considered insignificant by our traditional but insufficient means of evaluation. All this requires an attention and commitment that the world of the university, of the institutions and of the companies still find hard to express loud and clear.

The didactical organization

Degree and Master's Degree Courses

This ideal background is connected to the conservation and restoration disciplines of the Faculty of Architecture of Genoa, with the support of DSA, of its structures and labs. The current curricula of the Master's Degree in Architecture and the Bachelor's Degree in Architectural Sciences foresee a first course of “Restoration Basics” during the third year. Its main goal is to give the students some basic knowledge of conservation and restoration, providing them with the capacity to understand, re-elaborate critically and use it correctly, even in support of the future project's intentions and choices. Within the discipline the following aspects are investigated: the theoretical, methodological, historical, philosophical and scientific basics; the analytical and diagnostic methods and techniques, even archaeological, of the existing buildings, specially those of ancient construction; the theoretical, methodological and technical basis of the planning and intervention phases on the analyzed artefacts; the national and international rules for the protection, conservation and restoration of the existing architectural, urban and landscape heritage. Within the Master's Degree in Architecture there's further on a “Restoration Laboratory” linked to the course in restoration held in parallel within the Master's degree in Building-Architecture Engineering in the Faculty of Engineering of Genoa. The main goal of the Laboratory is to give students the necessary competences and tools for the construction of a correct designing procedure directed towards the programmed protection, conservation/maintenance other than a sustainable restoration of the existing architectural and urban heritage, of ancient or recent construction.

To achieve these goals, the Laboratory intends to create the following competences so the student can:

- know and learn to correctly use the references to the cultural and disciplinary (ancient and contemporary) debate on restoration, the documents and regulatory texts (national and international) in matter of protection, conservation and restoration;
- individuate and consciously control the use of non destructive analytical and diagnostic techniques of architecture (direct and indirect), specially dealing with: the rigorous architectural survey and the archaeological analysis of the built object, the exam of the technological and constructive components of the examined artifacts, the chemical, physical, technological and mechanical characteristics of the materials and constitutive elements, the recognition and evaluation of the deterioration phenomena of the materials and constitutive elements and also the mechanisms of instability of the ancient or pre-industrial structures;
- drafting of correct and rigorous synthesis of the analytical and diagnostic phases (thematic maps, diagnosis frames, technical reports) necessary for the communication and motivation of the designing choices;
- select and properly apply the more suitable and efficient intervention techniques, generic and specific, regarding the character and state of the artifacts and also the goals of the project;
- draw up illustrative essays of “professional” nature of the technical and administrative elaborations that are typical of the definitive restoration projects according the current regulation in the field.

School of Specialization in Architectural Heritage and Landscape.

The school, active in Genoa since 1994, intends to offer a professional education in the field of architectural restoration, integrating the basic university education with an in depth knowledge of the methods and techniques for the active tutoring and conservation of the architectural and landscape heritage. Restoration is configured as a true "specialization" among an architect's activities. In this sense, the schools of specialization in this field follow the same logic of medical disciplines, where the general competences acquired by those who obtain a general master degree, are followed by specific competences acquired through post degree grad school courses. This analogy though, can generate several misunderstandings.

The restoration scene, in fact, is populated by many different operators: planners, technologists, chemists, physicists and biologists, structural and consolidation experts, urban planners, art and architectural historians, archaeologists, restorers and self-made operators and entrepreneurs.

A consequence of what has been stated above is a certain tendency towards anarchy that falls on those goods that everyone wants to defend and conserve, often with disastrous results. A certain misunderstanding can deal with the concept of "specialization" itself. The architectural restoration is not a specialization activity in itself, but more of a composite profession within which operate, from time to time, "single" specialists, such as: survey experts, analysts, chemists, technical operators capable of handling scalpels and compresses, structural experts, historians and so on.

The universe of artifacts that is object of the architectural restoration is extraordinarily rich of historical, constructive and formal varieties that slip out of each attempt of domination on behalf of a single operator. The materials change according to the resources of each place and of the historical moments and the constructive logics, working techniques, the execution solutions by smiths, masons and carpenters that belong to the different cultures involved tend to change as well. They tend to change from place to place, from time to time and from artifact to artifact (or building to building) determining an horizon that makes it impossible to imagine a figure with expertise in all these fields. If things are like this, we need to enquire in which are the competences an architect specialized in restoration should have if he wants to carry on an activity that is different from that of all the other professional actors that are involved in restoration, or from someone with a general degree in Architecture.

The School of Specialization in Genoa tries thus to provide its specialists with the knowledge and preparation they need to carry on and control the direct and indirect architectural analysis techniques, specially those dealing with documental and archive research, the rigorous survey, the physical, chemical and mechanical characterization of the materials, the examination of the technological and constructive components, the analysis of the degradation and alteration phenomena of the built material, the static and structural diseases, the environmental conditions that affect the artifacts. Moreover, the School provides the necessary competences to carry out and coordinate the different forms of intervention, from the general to the executive level, including methods to manage the whole process, up to the management of the building construction sites and the direction and testing of the works.

Service structures- MARSC Laboratory

The conservation and restoration teaching in Genoa can count on the technological and operative support of the Laboratory of Analytical Methods for the Restoration and the History of the Constructed (MARSC). The lab is articulated in two sections: one devoted to the architectural survey and the other to Archaeology of Architecture and its institutional tasks can be summarized as follows:

- development of research and scientific production activities in the sectors of longimetric survey, topography applied to the architectural and urban dimension, analytical and digital photogrammetry of the treatment and analysis of digital images (image processing), non destructive diagnosis (magnetometry, endoscopy, sound and ultrasound research...);
- promotion and fulfilment of the education of operators specialized in the various analytical and diagnostic sectors;
- research, consultancy and assistance for the Faculty, the University and for other public and private bodies;
- promotion of the information and diffusion of the activities of the restoration group through the publication of its theoretical and applicative results and through an active participation in conferences and debates.

The survey section

The MARSC has intense relationships of collaboration with public and private bodies, both in terms of consultancy and provision of services, but it also carries on research activities autonomously that allow a constant update of the people involved and of the instrumental endowment.

Among the research lines developed in collaboration with other Departments of the University of Genoa and national and international research institutes and centers (Opificio Pietre Dure, National Research Centre (CNR) Cultural Goods, etc.) we can highlight:

- the treatment and quantitative analysis of digital images for the recognition of materials and deterioration or decay phenomenon;
- the treatment of digital images for the simulation for the architectural conservation and restoration interventions;
- the rigorous longimetry for the three-dimensional survey and for the three-dimensional and solid modeling;
- the analytic or digital rigorous three-dimensional photogrammetry;
- the use of simple and mosaic straightening for the survey of flat surfaces;
- use of advanced informative systems for the management of the restoration project;

- the construction of repertoires of the intervention techniques for restoration that have recently led to the publication for UTET of the work: B. P. Torsello, S. F. Musso, *Tecniche di restauro architettonico* (2003), and of the didactical volume S. F. Musso, *Recupero e restauro degli edifici storici*, edited by Rome's EPC.

The section of Architectural Archaeology

The main goal of the architectural archaeology is the historical knowledge and its objects are artefacts built in the past, investigated due to their nature of direct "material source" of the events that have occurred. The Architectural Archaeology Lab was created, at the end of the 80's, as an initiative of Tiziano Mannoni. The researches it carries on are linked to those of the Institute of Material Culture of Genoa (ISCUM), in the archaeological and historical field of the so named "material culture". The consequences of a direct and in depth study of the historical buildings on the restoration or recovery projects are many and of different nature: the knowledge of the materials and of their historical behavior; the comprehension of the ways the structure of a building have been modified compared to the initial idea and construction; the punctual comparison between the outcomes between an analysis of the forms of degradation and alteration of the constructed material and the corresponding archaeological dating, thanks to which it is possible to take into account the "time" as a factor in the degradation diagnosis; the reconstruction of the rules followed by the builders and masters in the different periods and in the different territorial realities to build up artifacts that have already challenged the test of time. Time, on the other hand, like in every historical research, is a recurring factor that marks our past, but it also projected into the future by the project.