

Teaching Conservation/Restoration of the Architectural Heritage

Goals, Contents and Methods

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ΑΝΑΠΑΡΑΣΤΑΣΙΣ / RESTORATION

Teaching Conservation/Restoration of the Architectural Heritage

Goals, Contents and Methods

editors
Stefano F. MUSSO, Luisa DE MARCO

**Teaching Conservation/Restoration of the Architectural Heritage
Goals, Contents and Methods**

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Editors:

Stefano F. Musso

Luisa De Marco

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This book presents the contributions to the workshop that took place at the University of Genoa, Faculty of Architecture, on October 2007, as a new start for the thematic sub-network on Conservation, within EAAE and ENHSA. The workshop was the occasion to bring together educators in conservation, from various European Schools of Architecture, in order to:

- investigate similarities and differences, about contents and pedagogy of teaching, within the field of conservation/restoration of the architectural heritage;
- examine the ways in which the teaching of conservation/restoration is present in the curricula of different schools;
- critically compare educational objectives and strategies implemented by the schools in relation to conservation/restoration matters;
- exchange ideas and thoughts on new teaching methods and discuss the role of the teaching of conservation/restoration for an architect.

The workshop was attended by almost 100 participants representing: Belgium, Canada, Denmark, France, Germany, Greece, Ireland, Israel, Italy, Netherlands, Norway, Portugal, Rumania, Spain, Turkey.

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Opening Session

Stefano F. Musso

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**Teaching Conservation/Restoration:
Tendencies and Emerging Problems**

European Conservation/Restoration Teachers Network

Between October the 18th and the 21st 2007, the first meeting of the Conservation Sub-Network, enabled by EAAE - European Association for Architectural Education - and by ENHSA - European Network of Heads of Schools of Architecture, has been held in Genoa.

This initiative ideally links itself to the two meetings organized a few years ago at the "Lamaire Centre pour la Conservation" of the Katholieke Universiteit of Leuven (Belgium), held by Professor Herman Neuckermans.

We here present the documents concerning the meeting and this volume, with its enclosures, is offered to its participants and to the international scientific community as a contribution for the prosecution of the activities and initiatives of the Conservation Subnetwork.

Genoa's workshop

Addressing the invitation to all European Architecture Schools - either belonging or not to the Association - to take part to a Workshop, and not to a mere conference, has been meant to encourage the wider and freer participation and to establish conditions for the birth and development of a stable network of relationships between schools around subjects concerning the teaching of Conservation/Restoration.

The contextual use of these two terms was meant to avoid any preventive selection connected to the meanings they take in different European settings, while Architecture Schools are going through a stage in which they show a growing interest as regards tutorship, safeguard and management of the architectural, urban and environmental heritage. First pursued objective was, perhaps reductively, drawing a sort of "map" of what is happening in this field, to find out and fix information about "where" - that is in which schools of which countries Conservation/Restoration is taught - letting a free interpretation to the possible significances attributed to the two terms in different contexts, even if we are aware they tend to be indomitable set against.

Surely, the map's construction could also have been enhanced by an inquiry through questionnaires, or by drawing on the information available on the Web, but inviting teachers to a direct discussion has seemed to be the most efficacious choice. Genoa has been chosen as event's site because I teach at the Architecture's Faculty of this city and because Genoa appears to be, for its history and for its conditions these days, an emblematic place and a powerful metaphor of what a confrontation on Conservation/Restoration subjects, between people partly far from each other as regards their cultural education, competence and provenience, can bring.

We meant, in synthesis, to put conservation's teachers in confrontation, in its wider acceptance, in order to:

1. analyzing resemblances and differences in the contents and educational methods;
2. looking over the way the conservation/restoration's teaching fits in the different schools' curricula, as regards times, ways and wideness;
3. comparing educational objectives and strategies;
4. exchanging ideas and observations on teaching methods, discussing their role on the architect's formation.

Therefore, the Workshop has been organized with the aim of establishing a dialogue and begins from the written contributions sent by each participant and arranged in four sections, each one devoted to a specific theme expressed in the form of questions. Around these thematic arrangements, a panels' exhibition has also been mounted, showing the paths and results of the activities accomplished in the different schools. Debate's relations and panels' pictures are included, one as a recorded file, the others as images, in the enclosed CD.

Workshop's themes

In synthesis, the questions proposed by the workshop's programme were the following:

What is thought and taught as regards Conservation/Restoration and why?

The whole answers to this questions should have provided the ground for reflecting about limits and borders of what we intend to be "heritage", but also about various interpretations as regards ideas, concepts and activities spotted, for instance, by the words: preservation, conservation, restoration etc. Other topics concern the contents of such teachings in architecture's school, which are: subjects and objects chosen for didactic activities, priorities which are assigned to them, which theoretical and technical principles are leading the organization of the Conservation/Restoration courses, which are the educational goals pursued...

How Conservation/Restoration is taught?

The question attains directly to the Conservation/Restoration "pedagogy", not only in terms of efficacious transfer of the knowledge involved, but also as regards synergies with other subjects included in the school's curriculum, with a particular attention to theoretical and operative aspects.

We ask ourselves, as a matter of fact, "if" and "how" heritage's care and restoration can be taught in a project-laboratory and with which limits and prerequisites; which is the role of other disciplines in our didactic activities - for instance humanistic disciplines - which one pertaining technical-scientific contributions and history (not only architecture's history). This is under investigation while we are trying understand if our didactics is prevalently bound to create competences and ability "to know, understand and judge (analyses, diagnosis, etc.)" or rather if it should also provide specific "operative abilities (programming, intervention, management)".

Who teaches Conservation/Restoration?

Understanding who teaches subjects concerning conservation and restoration is a further contribution for drawing up a coherent framework of information and for understanding the results that teaching obtains in the diverse European countries. We ask ourselves, in fact, which should be the necessary background to make a teacher able to reach the goals of his work, which kind of experience, in case professional, he should have and how colleagues of different disciplines could collaborate for the development of teaching and formative's activities in such a complex field.

When and to which extent Conservation/Restoration is taught?

Absolutely crucial is the theme concerning the teaching time's collocation of Conservation/Restoration subjects in an architectural student's curriculum or, more in general, the formative routes offered by our school in this field. Often is asked in which year and in which kind of curriculum various themes connected to conservation and restoration should be fitted, but also "in which measure" and "how deeply" they should be faced.

Works in the classroom and discussions

Workshop seems to have encountered a good success, judging by the participation of more than 20 schools of Architecture, eight from Italy and the others from Belgium, Denmark, France, Germany, Greece, Ireland, Holland, Norway, Portugal, Romania and Spain, besides Turkey, Israel and Canada.

Bills here render the answers provided by participants - in total freedom - to the four proposed questions which were, nonetheless, so deeply entwined one another to make a disaggregated treatment almost impossible to display. Some participants have actually faced explicitly only one of those questions, respecting the programme and the themes suggested, in such way to avoid, at least partly, the dispersion that is often typical of our conferences.

Others have instead brought forward contributions which, despite being not always coherent to what was requested, offered interesting ideas and important documentary information to the debate. It is necessary to remind, on the other hand, that the themes to be faced were admittedly general and concerning very open features, and that the proposed questions were objectively difficult to be separated and reciprocally limitable in a clear vision.

Either way, the program counted on the fact that sent contributions would have been assigned to a key-note speaker, who would have introduced the corresponding session with his own remark and, if possible, would have rendered briefly of the various contributions he was in charge of. This is the reason why, each of the four parts in which this volume is organized, opens up with the text of the key-note speaker's intervention, the one who co-ordinated the corresponding work session in the hall.

Each one of them, given the difficulty to collocate each single written contribution to a specific section, has - moreover rightly - freely interpreted his role. In some cases, introductory reports have only incidentally rendered contributions assigned to the relator, while, in other cases, a more punctual synthesis of their contents has been expressed.

This has not affected the course of the work, because the confrontation aroused by the solicitations proposed in the introductory reports was the real core of the discussions, while publishing documents and posters will render precisely to the public the several contributions that the workshop received.

Workshop's activities began with an introduction by Paolo Torsello entitled "*Methods, procedure, protocols*", felt by many as challenging and very "provoking". Paolo Torsello has first of all argued around the possible sense and role that a method can have (provided that it exists), as regards restoration's teaching and also as regards professional practice.

By a bolted game of cross-references and comparisons with other domains of human knowing and activities - mainly as regards Medicine - he came to the conclusion that such a method does not actually exist and cannot exist, as one can teach how to analyze a handiwork, or also how to choose and accomplish specific technical actions, but, according to Torsello, cannot teach how to build a synthesis, because a project is eminently a synthetic action and, by many aspects, a "creative" one.

What we call methods, in the teaching of architecture and - even more appropriately - in restoration, for Torsello, are in fact frequently reduced to simple "ways of thinking or behaving" each one of us adopts and would aim for taking in charge a wider and more universal role. Therefore, it is not a matter of a method universally recognized by a scientific community, but of an indistinct ensemble of ethic or ideological rules, which call the risk to deepen the division between the different competences involved in restoration and encourage a project to drift toward a misunderstood freedom, totally unbind from a rigorous knowledge of the artefacts and their context.

From these solicitations, a passionate and informal debate has aroused, with many participants involved. Mostly was Per Olaf Field, Norwegian architect, Architectural Design's teacher at the Oslo Architecture's School and EAAE's President, to take part to the debate. He pointed out his interest in Torsello's report and, in particular, the crucial role that conservation's themes - in a "Nordic" and not at all disciplinary vision - have for the future of architecture and contemporary cities.

Hard challenges, also because it is plain to see how difficult is for this sector's teaching to satisfy the fundamental need to conjugate prerequisites of the analytic study on the existing objects (method?) as well as the creative and projective needs (for their own essence synthetic or holistic) in a framework requiring great severity. These are challenges also underlined by Herman Neuckermans, one of the main protagonist at the "Lamaire Centre pour la Conservation" at the Leuven's University, in Belgium.

He had a vivacious dialog with Torsello about the notion of method which he proposed, asserting, in contraposition, that a method *does* exist and it is necessary for teaching conservation, mainly consisting in adopting technical and rigorous instruments to avoid students to fall into the false myth of the "creation for the creation".

This should happen at any level, even if, according to Neuckermans - prefiguring a subsequent topic - education in this field should involve already formed architects (but not just only architects) and be therefore a part of the post-graduation courses. Far too committing is, as a matter of fact, the specialization that this profession demands in this ambit to be faced in architecture's student's first years of education.

The clear distinction proposed by Prof. Neuckermans, along with many of his North-European colleagues, between education in the architecture's field, appertained to schools - that is Academy, as they tell fearlessly and with no irony - and the education of the architect, pertaining to the professional world, through the unsubstitutable training's activity, is not completely stranger to such a matter.

After this introductive stage, Luc Verpoest has illustrated the didactic organization, goals and structures of the "Lamaire Centre pour la Conservation", highlighting the particular didactic proposal of one of the most internationally renowned centres in the restoration's field.

His presentation provided a reference point for the interventions of representative of other architecture's schools which, during the workshop, witness of a very vari-

egrated scenery, substantially differenced in the two opposite orientations already anticipated by Neuckermans' interventions and in the aroused debate.

First orientation, peculiar for instance in Belgium and North Europe, aims at the definition of an accomplished architect's professional figure to which ensuring, only subsequently and by means of an appropriated post-graduation (or master) school, a well defined specialization, with the teaching of the competences inherent restoration's field (modalities and analytic procedures for knowing a historical building, theoretical orientations, technical and juridical competences etc.)

Second orientation, much more diffused in Italy, aims instead to pass on to the architecture's student the basic elements to face the themes of conservation, right from the first years of studying. The advantages already recalled (a more diffuse sensitivity for such themes) are challenged by the risk of establishing from the beginning a clear separation between conservation and architectural design, but as regards this topic the discussion had kept on going in and out, as it will be pointed out shortly

First thematic section, concerning *"what is thought and taught as regards conservation/restoration and why?"*, has been coordinated by Loughlin Kealy (Architecture's School in the Dublin's University College, Ireland) and included specific contributions by A. Aveta (Architecture's Faculty, Naples' University "Federico II", Italy), A. Craciunescu (Bucuresti's University "Ion Mincu", Romania), G. Franco (Architecture's Faculty, Genoa's University, Italy), L.G. Larsen (Fine Arts Danish Royal Academy, Copenhagen, Denmark), J. Coenen (Delft's Polytechnic, Netherlands).

Second section coordinated by André De Naeyer (University College of Design Sciences, Antwerpen, Belgium), was concerning *"the way restoration is taught"* and included contributions by A. Anzani (Milan's Polytechnic, Campus Leonardo, Italy), J. Bastos (Lisboa's Polytechnic, Portugal), S. Casiello, A.A. Pane, V. Russo (Architecture's Faculty, Naples' University "Federico II", Italy), D. Fiorani (Engineering's Faculty, L' Aquila's University, Italy), L. Napoleone (Architecture's Faculty, Genoa's University, Italy), R. Prescia e F. Tomaselli (Architecture's Faculty, Palermo's University, Italy).

Third section, inherent the *"changes occurring in restoration's education"*, also as regards its objects, has been introduced by Herb Stovel (Heritage's Conservation Program at the Carleton University, Ottawa, Canada) with a special attention to the wider context of competences and problems which restoration must deal with, even in the range of international institutions in charge of the tutorship. F. Augelli (Milan's Polytechnic, Bovisa, Italy), A. Boato (Architecture's Faculty, Genoa's University, Italy), G. Caterina (Architecture's Faculty, "Federico II" Naples' University, Italy), M. De Vita (Architecture's Faculty, Florence's University, Italy), F. Doglioni (Venice's University's Institute of Architecture, Italy) took part to this section.

Last section, dedicated to the discussion about *"when and in which context restoration and conservation are taught"*, has been introduced by Carolina Di Biase (Milan's Polytechnic, Campus Leonardo, Italy – Mantua's Pole) who has firstly recalled Milan's didactics path starting from late XIX Century's school, and then came to show current orientations, however yet to be defined. Subsequent interventions by R. e M. Crisan ("Ion Mincu" Bucuresti's University, Romania), H. Wilquin (Mons' Polytechnic, Bel-

gium), C. Deom (Montreal's University, Canada), A. Baror (Tel-Aviv's University, Israel), Y. Salman (Istanbul's University, Turkey) offered further sceneries inherent the didactic routes and results in the diverse European's schools.

In this volume, all workshop's written contents are published and now, perhaps, it is interesting to highlight a few themes emerged by the confrontation which took place during the works, underlining the transversal and recurring presence of some topics inside many answers to the questions proposed by the initial program.

Project and "right times" to teach it

Project's topic, as already pointed out, emerged many times from the discussions and with meanings and accents profoundly different, regardless (it just had to be like this) the section that was under debate. We all know it is a crucial crossroad for teaching and professional practice, here and in other fields. Therefore someone underlined - also recurring to examples taken from concrete didactic experiences and with exhaustive critical analyses - differences existing between "project concerning a new object" and "project concerning an existing object", which would not just limit itself to be the mere sum of the functional modifications, but also takes real care of the depot full of memories, knowledge and potential that heritage carries with, to make it available for the future in the most undamaged and undivided state - if ever enriched by new resources and not certainly impoverished of the already existing ones.

On this side, many exhaustively analyzed reasons would witness a vision for the restoration's project to demand a "specialized projector" who could act, an architect (but not just only, at least for many North-European teachers), particularly skilled in such subjects, thanks to a specific formative path that it is on us to draw and manage.

The greatest differences in opinions and accents on this subject consisted, if ever, on the opportunity that this path could or should start from the beginning - as soon as the student enters our courses - 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 have been proposed and an accentuated and transversal gap emerged between those - in Italy but most of all in Northern Europe - 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".

For other participants, 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 mere pedagogic and educative reasons - many teachers claimed 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, to avoid that the waiting for more mature times might bring, in perspective, a sort of acquired impermeability or indifference as regards problems of tutorship, safeguards and intervention on the existing heritage, by most students.

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.

As regards, we could certainly list endless reasons why project of conservation/restoration of an existing object 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.

However, project will be just one (even if fundamental) moment in the process of conservation/restoration of our historic, architectonic and environmental heritage, but a moment that “only apparently” ratifies its conclusion.

Here lies an enormous risk, for some commenter. Centuries of discussions, in fact, have not decided, neither will do those to come, doubts and possible alternatives concerning goals, objects, instruments and methods of the conservation/restoration project.

Meanwhile, if our didactic action only concentrates itself on its living contradictions, the hazard is losing other key elements of the problem.

As regards, Stefano Della Torre, among others, has invited us all to ponder. Analogous warnings are marked in Loughlin Kealy's contribution (*“Teaching/thinking/learning/doing. Conservation and creativity in architectural education”*), who suggests not to limit our look to the conservation's culture and teaching, meant as a withdrawn world, all-sufficient or, worst of all, self related.

He tracks a route between teaching and learning marked by profound divisions and connections, by polarities and reflected images.

He speaks of a today's world in which architecture and conservation often look like “poor neighbours”, not communicating, subjected to the perennial contraposition between exaltation of creativity and research for analytical rigor, between tension for knowledge and profession's pragmatism, in time of deep transformations which would instead demand their profound and meditated integration.

According to Kealy, though, the relationship between Conservation and Architecture is not only inside the 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.

The reference to the contemporary philosophic and epistemologic thinking, starting from Lozano, has been the background to the report made by the professor of Architecture's School in the Dublin's University College which, on the other hand, has stimulated many in underlining the need of a higher integration with the architectonical designing disciplines, even by facing the risk – by many dreaded – that this would end up in a loss of centrality (or power!!!) of conservation.

However, it is required to ask ourselves if our scientific, cultural and didactic action can keep on, being proposed as a sort of “pillbox defence”, 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.

On the other hand, it appears evident that the project, seen as a technical action tied to the artefact and its destiny, could not be the only focal point of our teaching's activity, also thanks Herb Stovel's contribution who, introducing the section devoted to "what do we teach", brought to the discussion a wide amount of questions, themes and objects which, for all we know, seem to be almost absent from the teaching's programs of many schools, most of all in Italy.

With a strong experience matured firstly as ICCROM's director and ICOMOS member, and today as coordinator of a conservation's master programs in Canada, Stovel has recalled attention on themes connected to management or, even, to normative rules which, certainly, closely concern restoration's teaching. Unless we reduce our teaching to a mere research of more or less sharable technical solutions (by many or few, by a "school" or another), the only attempts for answering questions which, at heart, others have selected before our intervention.

The fact is that, perhaps, 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, as suggested by Stefano Della Torre in his contribution and as many others, included myself, focused during the workshop.

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

Most of all at these levels, it seems clear to us that the treated themes are profoundly entwined with more general processes, conditioning or marking our communities' and landscapes' culture, now ever immersed in a global and planetary dimension but always seeking more or less certain identities which, just as regards heritage, one presumes they should be deeply rooted and clearly expressed, demanding therefore an active tutorship and defence.

"Knowledge"

Introducing the works and looking at the many Italian contributions that we received, together with the posters laid by the respective Schools, I have highlighted, partly with pleasure and partly with some worries, the crucial role the analytical and diagnostic apparatus have assumed, at least in the "Italian school" of restoration and conservation (if just for one moment we accept the instrumental use of this expression, for other aspects ambiguous and little significant).

There was a kind of satisfaction because, in the restoration's field during last decades, a common language surely developed, having evident and appreciable fallouts at least as regards research and didactics.

How can we ignore, though, the warning and critical observation that Paolo Torsello made as regards, with the enrichments his intervention brought to the hall debate?

Worries relative to the risk of a kind of consolidated orthodoxy, which hides sometimes a formalistic respect for some apparently inescapable rules, erased from this reflections, accompanied by a certain passiveness of our way to handle restoration, reflected also in the didactic field.

The same posters of many Italian schools testify this state of being. It seems that, at least formally and irrespective of the declinations connected to the single realities and their specific academic history, a kind of consolidated homogeneity is now ever reigning.

Never lacking are the survey, often supported by relevant technological devices; rich are the historical-storiographical inquiries grounded, very often, on strong and rigorous critic apparatus; more and more present and spread are meticulous collections of diagnostic data concerning the physical state of the artefacts, as regards the building materials, the techniques for their manufacturing and their state of deterioration/conservation, faithfully and punctually visualized and synthesized in “thematic maps” of sure communicative and perceptive impact; more and more diffused is appealing to refined simulation of intervention’s techniques, both on the built material and on the structures and spaces of ancient architectures.

From this point of view, “Italian school” of restoration seems to have achieved a highly elevated common standard. This does not seem to solve all problems and, instead, raises a few doubts around the efficaciousness of our teaching and the risks of a formal homologation to which does not seem to correspond an analogous strong presence in our teaching, in a field that, according to many commenters, appears to be beset or endangered by other disciplines.

Here would lay no scandal, 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, world in which we operate and in which we send students may be educated in a weak or little aware, enthusiast or productive way.

In any case, it is a fact that, having to face these doubts, most of European colleagues have underlined, from time to time, how it is just the strength of this rich methodological and technical apparatus supporting the analytical-diagnostic stage of many of our restoration’s interventions, the essential contribution that Italy has given (and knows how to give) to the European conservation’s culture. We need to acknowledge this and make what others recognize us more and more and better correspondent to our actual didactic and scientific work.

Today’s’ reasons of conservation

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 now ever consolidated expansion’s process, “for kind, epoch of formation, for

extension and quality”, of the objects subjected to tutorship – we are now accustomed to think an all in all known universe of subjects, though expanding progressively.

Yet there are always new facets that can always make explode or implode our world of fragile certainties.

Amnon Baror, from Israel, has just reminded this, telling us about his fatigue and disillusion while working in those troubled land, where to conserve can mean to have to deal, not just and not as much, with the technical or theoretical alternatives within we often limit our work, but with wider horizons of sense and, in particular, with 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.

We conserve for a future world of civilization, cohabitation and sharing of memories, values and potential of future life, otherwise why should we do it?

We cannot just ignore such questions, pretending they concern exclusively political assets not regarding us or our possibility of acting, as we are responsible of “jewels” which we debate on their value but that certainly belong to a world of consolidated peace, for which these questions seem to have no meaning at all or have been already solved by fights that have aroused in ancient times.

Things are not exactly like this, neither for us European and it is plain to see we have to acknowledge the fact.

Loughlin Kelly has also reminded how, in Ireland, the restoration of catholic churches become protestant in time, abandoned and today reclaimed by Catholics, becomes a case in which technical choices have surely one role, but not because they are the real and autonomous protagonists of the problem. And this, being able to see through the curtains of unawareness and approximation, can concern also buildings of our “Bel Paese”, or, of other civilized European countries, not only those in the Balkan or more or less Near East areas, perennially at risk because of the many conflicts and radical contrapositions affecting them.

These and many other themes have featured Genoa’s workshop. There are others to be added for the constitution of the thematic network on Conservation/Restoration, for the European Schools of Architecture to be active protagonists in it. It only depends on each one of us.

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Method, Procedures, Protocols

Method. It is well known that this word keeps going around and around through the different fields of the scientific research and technical production. But we are also aware that it is often used in an inappropriate way. What I mean is that sometimes a “method” is called down like it was a kind of lightning-rod: where there is a method it seems there is certainty or, at least, we are confident that results are guaranteed. The word “method”, in some way, recalls the strictness of science, lends an apparent sort of objectivity to results, keeps us safe from possible mistakes or false steps and, therefore, eventual confutations. Nonetheless, if you look right through the point, method becomes sometimes a *post-formulated* theoretical construction, one tries to apply to procedures built more or less arbitrarily. Method may unfortunately become a windscreen that covers personal choices, contingent tastes, and humours of the imagination.

As regards restoration, what we focused on is even truer. Furthermore, it is right here that the use of this word is strictly connected to the particular complexity of this discipline.

Let us begin by recalling that, as regards its operative aspects, restoration is articulated on at least three levels, a well known matter that here is useful to recall briefly.

First level stands on the analytical stage, regarding the whole lot of inquiries that must be done to let us better “know” the object of our interest. The required activities, in this case, can involve both natural and “spiritual” sciences. Mathematical-geometrical, chemical, physics and biological analyses belong to the first group, while historical and archaeological analysis belongs to the second group. It is easy to understand that this is a rough separation, because both fields overlap and run through human and natural sciences in many ways.

Second operative level includes the purely creative and projective work, which does not have to be much connected with historical or natural sciences, because it regards activities connected merely with decision and, therefore, with a volition from the projector. In this case, each actor may adopt different solutions even starting from the same base of knowledge of the object and, consequently, the possible choices are innumerable and undetermined.

Third level is about the accomplishment of the project and the operations that must be executed in the yard. In this radius, procedures seem to belong prevalently to the universe of technology, even if in this case, the technical action is often subjected to the skill and sensitiveness of the agent and, of course, to the basements and scientific ascertainment of the processes.

Now, here is the question to be raised: is it possible to govern this kind of actions through a method? Or through a repertory of methods?

Let me point out that this is not an obvious question and I am convinced we ought to seek for an answer. This duty is unavoidable not only if we want to brighten our way of working in restoration, but also fundamental to see through our own didactical commitment: to understand, in a word, “what” and “how” we have to teach. As a matter of fact, we cannot ignore that the goal of education is a correct and complete imprinting for the future operators and that we are committed with a responsibility that we cannot underestimate. The decline of education in European universities, and we can see it in the restoration branch too, is tightly connected to this form of “distraction” with which we look at the didactical issue and its methods.

It is peculiar, by the way, that the term “Methodology”, currently used especially in the medical field, it is certainly referred to the application of a method and to the way it is applied, but it also defines the particular kind of pedagogy that is generally treating a method of teaching.

If we are here to take in examination of the problems as regards didactics, we should ask ourselves *what* and *how* to teach in restoration, well knowing that this necessarily involves *what* and *how* to restore. Therefore, the answer to the previous question is to be found on the significance of the word “method”, or at least on what we mean to say by using this word.

In the accepted meaning - the one taken from the dictionary - method is the way, the procedure that one follows to reach a goal, to develop a certain cognitive activity on a pre-established and controllable order. We can call it a “research process governed by established rules”

But what kind of activities are we talking about?

Latin people used *methodus* and in ancient Greek the word was *methòdos*, “going forward to research, to investigate”. Therefore, *methòdos* was “the path or the way for investigating”.

Researching and investigating. These are the objectives of a method. And it is not just a simple etymological game, because the whole literature regarding the subject insists on this specific turning point about the method: it is essential, in first place, to guide the whole cognitive path. In this path we can recognize two possibilities, two ways of operating: the inductive one, which from data tends to formulate concepts and general laws, and the deductive one that is bound from concepts to concepts and from laws to laws. In the concept of method we also use to distinguish analysis, capable to tell the principles from the consequences, and synthesis, moving from the principles towards the consequences that can arise.

Nicola Abbagnano warned us that this term is meant in two different manners: a) as research or research orientation (Hegelian Method, Dialectical Method, Geometrical Method, etcetera) and b) as a particular research technique (Syllogistical Method, Residue Analytical Method and so on).

But the core of each method is intrinsical to its general meaning: the Method is essentially a cognitive process. From Aristotle to Bacon, Galileo, Hume, Kant, Hegel this word has always been used in this accepted meaning.

In the scientific field, we are particularly interested in the past and present use of this word in Medicine. This discipline is certainly the most advocated by restoration agents, in which they often find, not wrongly, a certain similarity with restoration. This analogy, though, can play tricks on us because it relates to just two of the operative stages which we touched upon in the beginning of these notes: the analytical stage and the technical executive stage.

Nevertheless, this comparison can be useful for other reasons, as Medicine expresses, perhaps more dramatically than other disciplines, the crucial transfer of “the method” from the merely scientific-gnoseologic field to the technical processes. We know that this transfer had its beginning in the Seventeenth Century, when the strategic functions of a method, applied to philosophical and scientific inquiries, gained a “tactical” value in order to control the productive and executive processes. The efficacy of the cognitive action guaranteed by the method has been, from that moment on, more and more extended and sophisticated as regards developing merely technical

activities, to the point that science and technique had established a strong alliance, destined to strengthen.

Now, it is exactly in Medicine that methods belonging to scientific research would inform those belonging to the technical application, contributing to establish a strongly controlled system of patterns and “protocols”. There are quite a few examples of applicative protocols: from surgery in autopsy to the rules applied for the application tests in pharmacological products, from the procedures for clinical exams to those helping to formulate diagnoses.

Here we stand in front of a progressive dilatation of methodology from the strictly scientific and gnoseologic field towards the technical-applicative one.

In this regards, it seems that restoration can find in Medicine a useful model to organize both cognitive actions preceding the intervention and the application on the same intervention.

Can a method be extended to the creative enterprises? To those enterprises which according to Benedetto Croce are those of a genius? Is the existence of a method to compose poetry or a musical piece conceivable? Or to project quality architecture or a restoration?

In one of his *“Three essays on poetry”*, Edgar Allan Poe describes minutely all the work displayed to check, refine, sharpen the composition of the Crawl, but he would not tell us about the creative impulse and he would not tell us where and how the idea was born. He would not unveil any method. Neither any architect would show and tell his opera by speaking of a method. He would describe the passions, suggestions and intentions of his research, maybe by showing the coherence of the critical sources during his composition’s path, but certainly not restricting the whole significance of his work by claiming the adoption of a method.

This is surely true also for restoration. As a matter of fact, if the answer to the previous questions would be affirmative, one should deduce that, once the introductory inquiries are made on an opera due to be restored, the results of restoration would be univocally determined. But we know that this does not happen. If I assume a building as an object of restoration and I put all available inquiries about it at disposal, it is not sure at all that the different agents in charge of the project would jump to the same conclusions.

It is different, on another premise, if a method regards preliminary inquiries and the executive stages of the project. If I give to different groups the goal to make a 1/100 scale drawing of a building, or to recognize a material from laboratory analysis or, even more, to apply a consolidator on a stone surface, I could consider the fact that a method is used so that the results would have to be identical or, at least, very similar. The building’s plant, in the different versions produced by various groups, would have to be the same as regards their dimensions and disposition of the single parts. If there are differences, that means someone has made some mistakes and has not followed rigorously the prescribed procedures. This is also true regarding laboratory analysis: the recognized material would have to be the same for all. And of course the same as regards the application of the consolidator.

Thus, it is very odd that in the teachings and activities regarding restoration, everybody is anxious to evoke the Method, only to find out that the parts which are more lacking of a method, frequently, are those about the technical aspects of the discipline. Even the tender technical specifications, which should provide detailed and

rigorous information about the way the works should be executed, are often approximate and incomplete, when not downright incorrect or misleading.

The most obvious conclusion regarding these subjects is that there can exist methods for developing analytical and executive activities in restoration, but it is not possible to think of a method for the restoration itself. And this is true also for education: it is possible to teach a method or some methods for inquiring or controlling works in a yard (curiously this happens very seldom), but a method for projecting cannot be taught (even if this happens all the time by selling out as a method what it is merely ideology or, in the best options, an ethic principle or a general theory).

What does this mean? Is a project impossible to be thought or is it just a product of improvisation or fancy?

One can answer those questions admitting that the projective path, just because of its indeterminateness, follows a different logic than the one that a method would, but not for this is less effective. That is because, as we stated before, each conceptual problem admits countless solutions and the core of the subject comes out, from the vertigo of the unfinished horizon of chances, by choosing a concretely tractable way, that means a path, surely not linear but at least controllable, which leads with a certain evidence to a result.

A result, indeed. But to reach for it, it is necessary to go through a set of choices that we are called to make in order to define a particular transit into the wide scenery of possibility. Each choice is made by a decision. The projector, therefore, finds himself in a quite peculiar position. He is the arbitrator but cannot allow himself to behave arbitrarily: It is his duty to respond of his own resolutions. Furthermore, because of indeterminacy, each choice is submitted to failure's risks and, it is easy to see, the project implies the practice of hazard.

In this way, the privilege of being the arbitrator brings forth the weight of responsibility, the obligations for an ethical behaviour.

Ethical duty means, among other things, that each project must be measured with the "why" of the actions, beside the "what" and the "how". Competence, responsibility and rigour are inescapable premises for the projective commitment and are necessary conditions for permitting its development: necessary but not necessarily sufficient.

Therefore, we can only hope to see a new horizon rising in the research and new considerations as regards education to deal with, if we mean to pursue a kind of formation capable to sustain the responsibilities and goals that we maintain as regards tutorship. But also, those parts of teaching regarding the technical issues of this discipline are to be widely considered and cannot be left to generalist issues or to the approximation that seem nowadays to be practiced in the Universities.

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**An Intercultural and Interdisciplinary
Teaching Approach in Conservation**

History



The RAYMOND LEMAIRE INTERNATIONAL CENTRE FOR CONSERVATION (RLICC) has been founded in 1976 by Prof. Dr. Raymond Lemaire (1921-1997) as part of the College of Europe in Brugge (Bruges), under the name of "Centre for the Conservation of historic Towns and Buildings". Prof. Lemaire, was one of the authors of the Charter of Venice, which established the doctrine for the conservation of architectural and urban heritage in 1961. He was also a notorious advisor to the European Union, the Council of Europe and UNESCO. He established the centre which took his name to strengthen interest in the preservation of cultural heritage worldwide through interdisciplinary training and to promote further reflection on the best possible integration of heritage in today's society for tomorrow's generations.

The centre was transferred to the Katholieke Universiteit Leuven in 1981, in the Faculty of Engineering, as a postgraduate program co-organised by the department of Architecture, Urbanism and Regional Planning and the department of Civil Engineering.

After the introduction of the Bologna Bachelor/Master structure at K.U. Leuven, the program became a post-initial master (master after master) Master of Conservation of Monuments and Sites (MCMS).

The Raymond Lemaire International Centre for Conservation has an international and multidisciplinary teaching staff and an international and multidisciplinary group of students.

Today more than 600 students graduated from the RLICC and many of them have leading positions in national or international heritage organisations, own a private consultancy office or work for public authorities in the field of conservation.

Heritage conservation, diversity and development

About thirty years ago, architectural heritage was primarily understood as a single building or a building group of historical and architectural value, see the Charter of Venice (1964). The material evidence of *the monument* was valued most and was very much focused on in conservation and restoration projects. Today a more in depth approach is advocated which identifies various dimensions and aspects of the architectural heritage – the significances behind or within the material evidence of the past – as expressed e.g. in the Nara Document on Authenticity (1994) or the Declaration of San Antonio (1996). Evaluation of heritage has evolved towards the acceptance of a greater diversity of values. Consequently, there are many more ways of dealing with preservation. Increasingly, different cultures and societies develop a local cultural as-

assessment and preservation policy in a way that cannot be generalized or cannot be universally applied, even in case this local heritage is also recognised as being of universal value, as in World Heritage sites. This places the heritage preservation field at the centre of the world-wide debate on globalisation and indeed necessitates a multi-cultural, intercultural training of future heritage preservationists.

Valuable monuments, sites and landscapes are being threatened increasingly by large-scale or uncontrolled developments of the built environment, not taking into account in any way their established and potential assets for the future development of that built environment. Is our architectural heritage becoming marginal or even irrelevant as to the production of our built environment? The answer is indeed no, if at least we manage to convince society – and its policy-makers – of these values of historical buildings, sites and landscapes; and if we manage then to integrate these valuable monuments, sites and landscapes as essential elements of fundamental significance into the overall built environment unavoidably in constant development, physical and cultural. This asks for a radical integration of heritage preservation policies and practices into the overall architectural and urban development and environmental planning practices and policies, of course without losing – as preservationists – one's proper responsibilities, insights, aims, methods and techniques and this indeed necessitates a multidisciplinary, interdisciplinary training of future heritage preservationists.

RLICC programme

The MCMS is an English taught four-semester, research-based academic degree, spread over two years. It has a unique profile by offering a quite generalistic multidisciplinary introduction to conservation in the first year, whereas in the second year students deepen a conservation subject related to their initial discipline but now seen through the broad perspective they have acquired during their first year. The first academic year is primarily devoted to theoretical courses, seminars and case studies, and to project work. Up to 30 international experts are invited to the programme each year. The second year consists mainly of the master's thesis, i.e. individual research work in the field of conservation, supported by an ad hoc study programme. The programme is developed and continuously updated in close collaboration with international organisations, such as the UNESCO World Heritage Centre, World Monument Fund, The Getty Conservation Institute, University of Aachen (RWTH).

First year

The first year offers a general introduction to the field of the conservation and restoration of monuments and sites. It is primarily devoted to theoretical courses, seminars and project work. This year is spent in Leuven at the University. The programme is divided into 6 thematic modules: [ECTS credits/hours].

1. Conservation of the architectural heritage: history, theory and practice [11/104,0h]
2. Conservation of urban sites and landscapes: history, theory and practice [11/104,0h]
3. Analysing, registration and documentation techniques [8/65,0h]



4. Building materials and conservation techniques [11/65,0h]
5. Conservation policies [7/26,0h]
6. Integrated project work, trips and visits to construction sites, workshops and institutions [12/477,5h]

Second year

The second year is devoted to individual work, is not necessarily spent in Leuven. Most of the second-year students work at home or abroad. The possibility of combining professional activity with thesis work also exists.

1. Professional internship [15/82,0h]
2. Optional activities in the field of conservation [5/26,0h]
3. Research seminars [5/26,0h]
4. Paper on selected conservation topics [5/26,0h]
5. Master thesis [30/658,5h]

A fully detailed program and courses descriptions:

http://www.kuleuven.be/onderwijs/aanbod/opleidingen/E/SC_50269217.htm

Education and thesis research benefits from the research carried out at the Centre. Also the international network facilitates access for research and internships to be carried out in institutes at various places in the world.. Some students make their thesis within ongoing research projects at the Centre.

Considering the high level of the master thesis works, some students choose to continue this research into a shortened PhD research program at the Centre or at another University.

Research at the RLICC

The expertise at the Raymond Lemaire Centre for conservation has been developed through more than 15 years of research carried out at the Centre. PhD have been dealing with “The use of three-dimensional techniques of documentation and dissemination in studying built heritage” and with development of strategies for the conservation of archaeological ruins.

Earlier PhD work has been dealing with material research and structural issues related to conservation of the built fabric. Various research projects have been deal-

ing with the above mentioned expertise, sometimes related to specific archaeological sites as was the case in Sagalassos (Turkey); Jebley (Syria) or Bousu (Belgium). Some projects were overarching as was the case for the 7 years collaboration project with the Instituto Nacional dell Patrimonio Cultural in Ecuador (the Ecuabel project) that included various aspects of heritage preservation including museology, archaeology, architecture, conservation of archives and mural paintings.

RecorDIM: 2004 – 2007 Partner of the Recording, Documentation and Information Management (RecorDIM) Initiative. <http://extranet.getty.edu/gci/recordim>

UNESCO World Heritage Centre's IS capacity: 2004: collaboration with the UNESCO World Heritage Centre's Development of a World Heritage Information Management capacity in the Arab States (<http://whc.unesco.org/en/activities/58/> last reviewed 09/05/2007)

SPRECOMAH: 2006-2008: SPRECOMAH: Seminars on preventive conservation and monitoring of the architectural heritage, European Commission, Environment, 6th FP, Integrating and strengthening the European Research Area, Policy support and anticipating scientific and technological needs (www.sprecomah.eu).

Scanning of RAMSES II (Cairo, Egypt): 2004: Scanning of Ramses II (Cairo, Egypt) in partnership with Plowman and Craven, University of California Berkeley and Tariq al-Murri consultancy.

STOA Project: 2001: Technological requirements for solutions in the conservation and protection of historic monuments and archaeological remains (STOA Project 2000/13-CULT/04), report for the European Parliament, co-ordinated. by M. Cassar (University College London).

Info

http://sprecomah.eu/rlicc//index.php?option=com_frontpage&Itemid=1

<http://www.asro.kuleuven.be/rlicc>

<http://www.mastersinleuven.be>

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Session 1

What and Why?

Keynote Lecture by

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**Teaching / Thinking / Learning / Doing
Conservation and Creativity
in Architectural Education**

Introduction: Teaching Vs Learning

A characteristic question for EAAE-ENHSA workshops is “What do we teach?” I try to put the question – “what do we want students to learn?” However, students are not necessarily learning what we think we are teaching. I am referring here to a concept developed by Gregory Bateson in his book *Steps to an Ecology of Mind*. Called “deutero-learning” – a kind of second order learning that develops the ability to become skillful at solving problems¹. It depends on our minds being able to associate certain types of relationships and contexts, much as expertise in learning how to do crossword puzzles is built up over time – “learning to learn”. Bateson points out that the effect of our learning activities is to develop “habits of thought” and that these have profound influence on our abilities to understand the world and to act appropriately. In many ways the purpose of education is to inculcate habits of thought in students, habits that help them to become effective operatives in particular areas of society. But the matter goes beyond that. One of the criticisms of specialised education is that the habits of thought relate to a very narrow spectrum – to very confined understanding of the fields of action and their relationships to wider contexts. I want to return to that idea later on, considering it in the context of the relationship between teaching conservation/restoration and the field of architectural education. But in the meantime I should explain briefly the academic context for my comments.

I teach in a small school of architecture. Architecture is one of three disciplines in the academic unit along with Landscape Architecture and Civil Engineering at University College Dublin. Our basic programme in Architecture extends over five years, and for the time being it is treated as an undergraduate programme leading to a professional degree. We have about 300 students in the five-year programme. Then, after at least two years of supervised professional experience, those who wish to enter architectural practice must pass an examination in professional practice and practical experience. The programme here has over 100 students attending.

The five-year programme does not have a course that is called “conservation”. However, we teach a subject called “Ecology of Architecture” – it is an area in which we reflect on the experience of the built environment. We draw on the fields of environmental psychology to deal with perception; we consider the role of the senses, touch, sound, smell, as well as vision, from the perspective of how they lead to an understanding of the built environment. In that context also, we introduce issues of “sustainability”, including the re-use of historic buildings. This allows us to deal with the fact that our perceptions and value systems are intimately connected with how we act – the connection between ideas and technologies through which we, as architects, intervene to shape the future. Later in the programme there is a subject called “Design Technologies”. Within that subject students may choose to study the use of materials in historic buildings, the decay mechanisms that affect them, and the implications for intervention.

Conservation is taught as one of a range of specialist post-professional degree programmes. The range includes urban design, history and theory of architecture and designed landscapes and it is conducted in a framework that is research-based, and geared towards doctoral-level studies. About 40/45 students are registered for these

areas of study. For many years, as well being Head of Architecture, I have directed the specialist programme in conservation

Disjunctions and Connections

The dominant emphasis in architectural education is on architecture as a cultural practice, with a strong emphasis on development of creative engagement as a foundation for professional life. Can we connect: create an intellectual framework for conservation/restoration that animates the creative?

When we are thinking about how conservation/restoration fits within architectural education, we should ask ourselves why architecture and conservation seem so often to be poor neighbours – the often problematic relationship between building for today and the protection of the architectural heritage spills into the academic structures that support these concerns. It is possible to find oneself caught in a kind of dualistic trap so that it becomes difficult to think beyond the obvious conflicts. For this reason, when, in the context of an academic discussion about the future, conservationists must not just think in terms of the future of education and training in respect to conservation/restoration. It is essential that the question is asked about the contribution that conservation/restoration can make to the ability of architecture to address the future.

But before developing this argument further, I want to comment on the implications for this relationship, of the conceptual advances within conservation/restoration. When we look back over the past century, we can measure the advance by referring to the progressive elaboration of concepts within the conservation charters: the Venice Charter, with its codification of the concept of “monument”; the Washington Charter with its elaboration of the concept of monument from the perspective of how it applies to historic towns and urban areas; the shift in perspective embodied in the Australian Burra Charter, and the deepening of understanding evident in the dialogue between the Nara Declaration and the San Antonio document. Behind these, stand the reflections on experience that takes into account our increasing awareness of the diversity of cultural heritage and the debate has moved to consider complex questions regarding “globalisation of values/perceptions and the meaning of concepts of “integrity” and “authenticity” as they apply in disparate cultures.

One can see advance over time from a different perspective also: in the 20th century conservation has dealt with issues arising from industrialisation, the impact of world wars, regional and civil wars in which cultural heritage has been a psychological target, post-colonial experiences, and now the inter-penetration of sustainability and globalisation. At another level, part of the progress that has been made is that conservation/restoration is part of mainstream architectural practice and the requirements for inter-disciplinary collaboration are broadly accepted. The increased significance of conservation/ restoration within architectural practice has led to the development of systems of specialist accreditation in my own country as in others. In the UK such specialist accreditation is linked to grant aid from state organisations for conservation projects.

But at another level one can ask the question: has the advance of conservation/restoration halted at the margins of architecture? Architectural intervention in existing buildings over the centuries to create new cultural monuments remains outside architectural history and the theory that has developed on the basis of reflection and experience is not yet part of architectural theory. Histories are constructed out of certain understandings- as David Dunster has put it, as well as there being histories of architecture there are architectures of history. For conservation/restoration to find a place at this level will require a new level of scholarship and of engagement with the creative impulse that has defined the development of architecture over the centuries.

This disjunction suggests that while conservation/restoration is part of the contemporary architectural *problematique* – part of the redefinition of architecture and the practice of architecture that is underway under the social, technological and cultural transformations of our time - it is not seen to be central to the pedagogy of architectural education. I will return to these transformations at the conclusion of this essay. For the moment we might note that while, in the world of action inter-disciplinary collaboration is a reality, in the intellectual world represented by university structures and research orientation, inter-disciplinary collaboration is an orphanage for the unwanted. I believe that there is an epistemological basis for the disjunction – this polarity - between conservation and architectural creativity, and that we need to address this in the interests of producing a humane environment for the future.

Polarities and mirror images

The polarity is vividly expressed by Bernard Tschumi, one of the leading European architects and theorists of the past decade². He describes the historical and philosophical dilemma of architecture as a discipline poised between two goals of aesthetic experience; on the one hand that of maintaining the experience of de-familiarisation ‘- let’s say, a form of “art”’, and on the other that of its opposite, maintaining familiarisation, security, *Geborgenheit*. Tschumi elaborates:

Here, of course one recognises the constant opposition between those who see architecture and our cities as places of experience and experiment, as reflections of contemporary society and those that see the role of architecture as re-familiarization, contextualization, insertion.

This is a statement of the classic dilemma of the architect as creative artist - a dilemma that stems from the particular understanding of the role of the creative artist that has animated modern movements in art and architecture, since the late nineteenth century. “Creativity” has meant supercedence and ultimately destruction of the old, and the cycle of creativity and destruction represented the essence of progress. In a metaphysical sense, artistic endeavor became a metaphor for the human condition as envisaged by Nietzsche³.

This understanding of creative action is also connected to the idea that human progress is achieved through competition/ struggle/dialectic rather than through organic development. There is a contrary view that maintains the legitimate role of the

artist to be the expression of the values of the community, from a position embedded within it. A version of this polarity is given in Lozano's depiction of opposing traditions in community design; the popular/local tradition generated from experience and knowledge, as against the professional tradition, which emerged after the industrial revolution⁴.

The sequence of high-culture design, styles and typologies is one of cyclical breaks with the status quo and innovations rather than of smooth improvements. New 'solutions' are incorporated as fast as individual designers can develop them. The professional tradition places relatively less emphasis on the evaluative stage, and fewer experiences are transmitted from one work to the next.....professionally designed environments are organised according to abstract rules or laws of composition.....tend to be differentiated from the surrounding urban patterns".

In his view, design solutions, deriving from the professional tradition, aim at achieving masterpieces, seek uniqueness and innovation, and are animated by the desire for prestige. The resulting work stands out from its context. In contrast, popular designers operate according to morphological determinants, improving on the problems, activities, access, topography, climate and resources.

The risk of being caught by this kind of polarization is clear enough: Lozano can assert that "popular designers are cultural agents", thus suggesting that designers in the professional tradition are not. Is it fair to ask which of these two polarities most resembles the image that architectural conservation has of itself?

In architectural education the design project dominates and other elements of the curriculum – representing areas of specific knowledge that students need to acquire – often struggle for hearts and minds. Conservation/restoration, as well as being value-based, is also knowledge-based and from that perspective has much in common with these areas of architectural curricula. There is tension within the heart of architectural education – the tension between education geared towards professional practice and education geared towards architecture as cultural practice. I believe this tension to be a positive opportunity, and that, as schools try to re-balance themselves, there will be new opportunities for conservation/restoration to achieve its place in the heart of architectural education. But first, it is worth reflecting on a wider context for the disjunction.

In the broader picture, while the development in theory and practice in the field of conservation cannot be denied, that success can have mixed results. One of the defining difficulties of post-industrialised societies is the fragmentation of knowledge into discrete silos and the speed of information transfer within the specific silo. Applying specialist knowledge within professional areas has to overcome the tendency for it not to percolate to the point where it informs early strategic decisions. When we ask the question about the contribution that conservation/restoration can make to the ability of architecture to address the future, we are also saying that talking to ourselves is unlikely to develop dialogue to any useful extent. However successful we are within

our own terms, however far we develop our techniques and refine our ideas, the issue of communicating beyond the boundary still remains. One could suspect that failure to see the wider context, to jump over the fence intellectually in favor of cultivating our own garden will be self-defeating in the longer term. Self-referential success may eat its young - we need to find ways of moving beyond these polarities of self-reference, ignorance and low esteem.

Some questions

Just for a moment we should ask ourselves some questions; from the side of conservation we can ask what has conservation/restoration to offer teaching in architecture? We can immediately refer to the cultivation of observation, "seeing", recording, analyzing; the emphasis on materiality; the essential, inter-disciplinary focus, and the sense of history becomes part of the present. From the side of architecture we can ask what has architecture to offer teaching in conservation/restoration? At once we are struck by its future-orientated focus, problem-solving, development of spatial acuity and space-forming ability, ability to shift scale, concern with tectonics and with the building as an organism. Perhaps these questions are primitive or naïve. It is always an option to do nothing – to be wise, to keep one's head below the parapet. But it is not so much a matter of arguing that there is more to be gained by re-orientation. For me, eliminating this disjunction is both a practical and conceptual necessity.

There are already ways of opening the door/ jumping over the fence. This workshop on conservation/restoration arises out of an EAAE-ENHSA network on conservation. The network is one of several and they offer an immediate opportunity to take some steps in the right direction. For example: in the workshops on Architectural Design, one could look at the design issues in the re-use of historic buildings; in the workshops on Urban Design one could include projects on dealing with the morphological inheritance of towns and cities; the Construction network meetings would, I am sure, welcome contributions on teaching repair techniques, consolidation and structural stabilisation; and in the Theory workshops, the explorations of "authenticity" and "significance" that take place within conservation, would find a home. Conservation/restoration can take a lead – what do you think?

"Think globally; act locally" is a slogan used in promoting an ecological approach to living. So far I have been writing about the need for us, as conservationists, to act to bridge the gap – to act locally, as it were. It is however even more important that we take a wider perspective as well – that we see ourselves as being relevant to the issues of today and that we present ourselves as having something useful to say. There is a compelling agenda set by transformations occurring in our civilisation, day by day. I will mention just four to illustrate what mean.

territorial The past half century has seen an escalating transformation of settlement patterns: the development of the megacity and the emergence of the urbanised territory. Only recently have the issues of habitation, globalised development and sustainability begun to be seen in juxtaposition. Conservation has begun the task of examining how its concepts

- extend to landscapes of cultural significance, and to apply those concepts to urbanised areas, contemporary as well as historical.
- ecological Issues of ecological stability have begun to make themselves felt in architectural education. There an increased focus on designing to improve building performance. Conservation must continue to explore the introduction of renewable energy sources in historic buildings and most particularly where buildings are being adapted for new uses
 - humanistic Our awareness of human rights extends to issues of access to knowledge as well as to economic opportunity. Conservation, as well as having to grapple with the issue of universal access to historic buildings and areas, is centrally concerned with issues of environmental justice and particularly with inter-generational justice – with protecting the cultural inheritance of future generations
 - conceptual All aspects of life experience the impact of the digital revolution, particularly as it impacts on access to information and the media. Conservation/restoration has to engage with the question of how this revolution affects our sense of time and history and with ideas concerning cultural identity in a globalising world.

Scholarly reflection on these and similar issues within the field of conservation has much to offer beyond its own constituency. Within the discipline of architecture there are many outstanding academics and practitioners actively engaged in these issues. These issues already impact the minds of students. Addressing them within the field of conservation studies will help provide a re-orientation for our own discipline. If we can do that we will find ourselves leading a broader discussion of the place of architecture, past and present, and of the place of human culture, within the emerging ecology of the planet and its peoples.

And so, to conclude

The polarities in the understanding of architecture and the place of conservation offers us a choice between transcendence and marginality. Dialectics are good for argument, but actions based on dialectical understandings have a habit of going badly wrong. Creativity does not have to be defined in Nietzschean terms of destructive creation/ creative destruction.

At the beginning of this essay I referred to Gregory Bateson and his ideas about learning. He wrote about the development of “habits of mind” - deeply engrained ways of thinking that become the armature for our ideas about the world. One of the most important of these “habits” in Bateson’s view is that of separating our purposes from the methods we use to achieve them – in abstract terms we separate “means” from “ends”. Going further, we prioritise “ends” above “means”. The result is that we develop an “instrumental view of reality” – one in which the world is subjected to our purposes. At this time we are beginning to understand that the instrumental view does not work for ever: that systems need to achieve balance and that the new balance that the planet achieves may not include the products of our civilisations. Bateson’s thinking is that ideas are instruments. The ideas that we have developed over centuries allowed us to

make the world subject to our understanding of it. The impending consequences tell us that those ideas were not adequate when dealing with very complex systems. In a fundamental way, ideas are the major human contribution to world ecology.

I believe that ideas about ourselves (as conservationists) are also instruments and that these instruments shape the way we think as well as what we do. We propagate these ideas by reference to our role in defending the cultural inheritance of the past, and we are uneasy with the idea of creativity in the context of action on historic monuments – not without reason. But creativity takes many forms and one can argue that no conservation action is possible without a creative act. We have to ask ourselves whether our ideas about ourselves are adequate for today. I believe that if conservation/restoration is to take its rightful place within the culture of architecture, then we, as conservationists, have to situate our discussions within the larger debates stimulated by the transformations of our times. As conservationists devoted to transmitting this inheritance we need to embrace the future and embrace creativity. By doing so we can reclaim a place within the core of architecture and in turn, contribute to the ability of architecture to shape the the material culture of the future.

The mathematician Francisco Varella, when asked about why, given that the world now knows a great deal about the operation of complex ecological systems, we are still so slow to take appropriate action, replied that one had to have “the being adequate to the understanding”.

Notes and references

1. Bateson, Gregory. *Steps to an Ecology of Mind*. Paladin, NY. 1973
2. Tschumi derives this dichotomy from Walter Benjamin's discussion of the reproducibility of images and his conclusion that, since reproducibility reduced their “aura”, the only thing that made them memorable was their “shock” value, the surprise factor.
a+u Architecture and Urbanism. March 1994. Special Issue: Bernard Tschumi
3. David Harvey, in his account of the emergence of modernism in early 20th century, provides an insight into the process whereby art and architecture created distance between themselves and the wider society in which they operated. Within the framework of economic development and changes in the nature of patronage, artistic endeavor within modernism operated in a commercial ambience, which generated a commodification of creative production. This in turn resulted in the emergence of the idea of the avant-garde - the nature of creative work was now to explore the boundaries of art, and in the process, the boundaries of perception also. In Harvey's description, modernism represented the transformation of the pre-eminence of knowledge into the pre-eminence of creative action, and novelty and innovation acquired the highest value. See Harvey, David. *The Condition of Postmodernity*. Oxford 1989. Chapter 2. Modernity and Modernism. pp10-38.
4. Lozano, Eduardo E. *Community Design and the Culture of Cities*. Chapter 2. Traditions in Community Design. pp12-23.

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**L' Architecte pour la Restauration:
Une Experience Didactique a Naples**

A. La signification et la portée de l'enseignement de la Restauration

Un certain nombre des réformes caractérise les dernières décades en ayant le but de réorganiser les Universités italiennes et les Facultés d'Architecture aussi. Toutefois, il faut dire qu'aucune juste correspondance avec les développements de la culture de la Restauration et de la Conservation s'est vérifiée. Il est vrai que l'importance des apports qui provenait de la communauté scientifique n'ont pas été tenue en considération. De ce fait, la normative la plus récente prévoit, pour l'enseignement de la restauration de l'architecture, uniquement un nombre minimum de "crédits" que les cours doivent assurer dans le cadre des cours universitaires uniques (de cinq années) et des cours «magistrali». On peut affirmer, sans doute, que ce nombre le ressort très restreint. En effet l'expérience dans l'Université de Naples Federico II représente le résultat de l'application des directives ministérielles: l'enseignement de la Restauration architectural est présent dans les parcours des études soit du diplôme universitaire de premier et deuxième niveau (du système de 3+2 années), soit dans le cours universitaire quinquennale. Mais tout cela arrive avec une série de différenciations considérables qu'il n'est pas possible les approfondir dans ce contexte d'analyse.

Il est utile rappeler que la discipline de la Restauration caractérise particulièrement la formation de l'architecte européen, et davantage l'architecte italien parce que en Italie l'ensemble des interventions se vérifie sur les bâtiments historiques qui marquent si fortement le paysage urbain. D'autre part, la loi actuelle prévoit la présence de l'architecte dans les processus du projet et de la direction des travaux de restauration des monuments.

Après ces premières considérations, on va réfléchir sur les orientations et sur les contenus de la *Laurea Magistrale* en Architecture-Restauration qui se déroule dans la Faculté d'Architecture de Naples Federico II il y a trois années. Le parcours est bienal (après la maîtrise triennal) et permet de s'inscrire à l'Ordre professionnel des Architectes, et non à celui des Conservateurs. A ce propos, on remarque que la normative permet l'architecte-conservateur seulement "la diagnosi dei processi di degrado e dissesto dei beni architettonici e ambientali e la individuazione degli interventi e delle tecniche miranti alla loro conservazione" (d.P.R. 328 de 5/6/2001). Cela est vraiment très limitatif et tout à fait contraire au principe partagé par la plupart des enseignants italiens appartenants au secteur disciplinaire de la restauration: en fait il est bien reconnu que l'architecte-restaurateur doit avoir toute la capacité relative à concevoir le projet d'architecture et tout cela à travers une nécessaire formation que puisse conjuguer des connaissances soit techniques et soit humanistes. Il s'agit, donc, d'une figure professionnelle complexe qui ne craint pas des comparaisons avec les autres techniciens. L'architecte-restaurateur doit être capable d'élaborer un projet de nouvelle architecture, mais une intervention sur un bâtiment historique aussi; cela, comme il est très évident, est possible uniquement à travers la maîtrise des instruments théoriques, méthodologiques et pratiques et la capacité de gérer la coordination des composantes qui caractérisent une activité complexe et interdisciplinaire tel qu'est la Restauration de l'architecture.

En suivant ces objectifs, deux cours sont consacrées à la restauration dans les deux années du cours dont on y discute: le premier *Théories et méthodologie de la Restauration* ayant un caractère de formation de base; le second est constitué par le *Laboratoire de Restauration*, c'est-à-dire un cours qui prévoit l'élaboration d'un projet et qui

permet les élèves de mener à bien une étude multidisciplinaire pour l'intervention de conservation sur le bâtiment ancien.

De ce fait des enseignements tel que *Théorie et Histoire de la Restauration, Diagnostique et Consolidation, Stabilité des Constructions monumentales, Législation des biens culturels* sont introduites dans le cours de Théories et méthodologie de la Restauration; on peut bien noter qu'il s'agit de matières spécifiques de l'ICAR 19 et, même, des autres disciplines qui ont une liaison très fort avec la conservation et l'organisation du projet de restauration.

De la même façon, des enseignements fondamentales pour la formation sont prévues et mises à côté de la matière principal dans le *Laboratoire de Restauration* qui suivi: ils sont *Histoire de l'architecture, Projet architectural, Science et la Technique des constructions*.

Malheureusement l'articulation des cours, qu'est le résultat des raisonnements sur le caractère de la formation de cette figure professionnelle, n'est pas appliquée ni partagée dans les autres cours de maîtrise; et cela ni à Naples ni dans autres Facultés d'Architecture, où toute la formation de restauration est très réduite et confié uniquement à un cours de *Laboratoire de Restauration*, qui montre de n'avoir aucune base technique consistante. On saisi très bien qu'à cause de problèmes de nature diverse, les professeurs se trouvent obligés à enseigner de la théorie et de la pratique dans le même temps en ayant peu d'heures disponibles.

De plus, l'articulation en semestres n'apporte pas une bonne organisation des leçons qui, en se déroulant pendant trois ou quatre mois, rendront insatisfaisant le niveau atteinte des connaissances.

En un mot, si on a l'intention d'obtenir des résultats de formation qui soient véritablement positifs, vu le délai de temps disponible, on peut bien affirmer que le "modèle" napolitain qui a été jusqu'ici décrit pourrait être censé comme une très bonne référence.

A Naples la formation post-maîtrise a la possibilité de se compléter soit à travers l'École de Spécialisation en Restauration des Monuments, ayant le but de former exclusivement des professionnels, soit à travers le Doctorat en Conservation des Biens architecturaux suivi par ceux qui aspirent à la recherche scientifique.

Pour ce qui concerne les contenus disciplinaires, et notamment les Théories et Histoire de la Restauration, le sujet de la doctrine est analysé par B.G. Marino dans la relation suivante.

Cependant, il faudrait ajouter encore quelque mot à propos du cours de *Diagnostique et Consolidation*: dans la Faculté de Naples on donne beaucoup de place à l'approfondissement de la phase préliminaire du projet de la restauration, et de ce fait toutes les analyses propédeutiques sont étudiés au but d'avoir les instruments nécessaires pour bien choisir l'intervention à faire. Dans le «chantier de la connaissance» - comme souvent il est nommé - les techniques d'analyse sont, sans aucun doute, des moyens que la nouvelle technologie nous offre: mais il ne faut pas oublier que, dans le domaine de la conservation du patrimoine, la diagnostique ne doit être pas considérée comme un ensemble des résultats qui donennt facilement la compréhension de l'architecture, mais plutôt comme des connaissances que l'architecte doit intégrer à travers une vue globale du problème de la conservation. Donc, l'architecte même doit participer activement au projet d'échantillonnage et à la identification des enquêtes à faire et qui sont constitués, selon les différents cas, par des ultrasons, la thermogra-

phie, les scanners laser et toutes les autres appareils. Ces derniers peuvent fournir les informations utiles pour définir la stratification du bâtiment historique et pour connaître la consistance des matériaux qui gardent les valeurs à transmettre aux générations futures. Pareillement, la Consolidation exige une formation spécifique et des connaissances adéquates aussi. Il s'agit d'une matière qui est intégrée dans le processus de construction du projet de restauration et, en raison de ça, la consolidation ne peut pas être déléguées à des autres spécialistes tel quel les structuristes, bien qu'ils soient bien qualifiés. La restauration et la consolidation constituent deux côtés du même problème et elles doivent être conçues de telle sorte. L'importance de la Consolidation est beaucoup perçue en Italie: les effets naturels des séismes ont éprouvé les bâtiments historiques et la plupart du terroir est déclarée "zone sismique". L'architecte italien doit nécessairement connaître toutes les orientations et les décrets qui ont été formulé pendant les années par les commissions ministérielles et par la législation des travaux publics.

En synthèse, il faut souligner que la *Laurea Magistrale* en Architecture-Restauration a l'objectif de la formation d'un architecte généraliste (comme prévue par la directive NOUS 2005/36), mais notamment avec une formation spécifique dans le domaine de la restauration architecturale et urbaine. En tenant compte de tout ça, la formation devra viser à donner des connaissances qui soient d'aide pour gérer ces différents aspects du projet (de l'architecture à l'urbanisme) avec un regard attentif aux exigences sociales actuelles qui demandent forcément une conservation active et intégrée du patrimoine architectural et des sites.

Dans cet esprit on apprend aux élèves l'évolution moderne de la notion de conservation parce qu'elle s'est bien modifié pendant les années passé en passant de la signification de monument isolé et son entourage à celle de réputer les restes de la culture matérielle importantes avec particulière attention à la valeur anthropologique; de même façon la nécessité d'une vue globale qui concerne les centres historiques tel que l'opportunité de protéger l'architecture moderne et contemporaine constituent une partie connotative du cours.

Après avoir expliqué ces réflexions en relation au déroulement du secteur ICAR 19 dans la *Laurea Magistrale* en Architecture-Restauration, on souligne l'importance d'approfondir deux aspects du sujet. Le premier concerne le rapport entre la Restauration et le Projet architectural qui pose des questions très complexes en raison des "parties ajoutées". Il est évident que dans une action qui vise à conserver et valoriser un monument on saisi des problèmes liés à la nouveau «utilisation» du bâtiment (ré-utilisation), c'est-à-dire à l'adéquation de lui-même à nouvelles fonctions compatibles avec les caractères du bâtiment et aux exigences de la collectivité, comme l'art. 5 de la Charte de Venise justement reconnaît. Il faut dire que très souvent la pratique courante ne correspond pas aux orientations théoriques les plus averties. On peut justement noter que les parties ajoutées, dans la plupart des cas, montrent leur incompatibilité avec les valeurs et les caractères du bâtiment, bien que l'intervention soit haute de gamme et puisse être censé l'occasion d'un enrichissement de l'identité du monument et. En effet, les interventions contemporaines se revèlent évidemment des envahissements de l'image des monuments eux-mêmes, en ayant l'idée di réaliser un' «oeuvre» plus que une «restauration». Naturellement le résultat ne peut être que l'anéantissement des valeurs historiques et esthétiques. Il faut que l'architecte aie la conscience que son rôle est extrêmement décisif pour la survivance de l'identité du bâtiment. Nos élèves

doivent être mis au courant de cet état de choses: ils sont informés sur les projet qui interessent des bâtiments historiques dans tout le monde par des revues prestigieux mais qui ne touche vraiment pas l'essence de l'intervention en s'arrêtant trop souvent à l'«image». Il faut, par contre, apprendre les élèves que le processus du projet de restauration va bien au delà de l'utilisation des matériaux modernes ou des formes pour célébrer l'architecte lui-même. Il est aussi vrai que dans la société de l'image rien est de plus facile: les restaurations de pseudo-maîtres sont glorifiés comme chef-d'oeuvre, mais - on espère très tôt - le moment finira et le passage du "maître" sera rappelé comme un "malheur" pour le monument.

Il est clair que l'époque contemporaine a son langage et il faut qu'il s'exprime, mais l'éthique d'un architecte ne peut pas permettre qu'un langage puisse en détruire un autre.

L'autre côté qui devrait être ici souligné concerne le rapport entre les domaines disciplinaires de la Restauration et ceux de la Technologie de l'architecture: un rapport qui manifeste une totale dyscrasie lorsqu'on approche au problème de l'entretien des bâtiments historiques et notamment à l'interpretation de la dégradation.

Dans le cadre disciplinaire de la restauration le sujet de la "dégradation" est analysé et saisi de manière non univoque. En un mot, la dégradation peut être réputé symptôme de mauvaises phénoménologies qui concernent la matière, mais aussi elle est un signe du temps qui a modifié la matière esthétiquement parlant. De ce fait, il s'agit d'interpréter la dégradation avec ses valeurs historiques et esthétiques aussi, car l'architecture est un organisme en changement.

Ces aspects, sûrement complexes et problématiques, agissent sur l'architecte-restaurateur de point de vue culturel et scientifique; il mene à bien le projet en recueillant les données historiques, esthétique, psychologiques que le bâtiment possède. En synthèse, il y a des aspects matériels et immatériels exprimés par le patrimoine architectural qui demande d'être protégé et valorisé.

Après avoir souligné telles réflexions, il faut noter que les collègues "technologistes" ne montrent pas, dans la plupart des cas, la sensibilité due à l'entretien du monument parce qu'ils ne sont pas impliqués dans la considération des valeurs symboliques et esthétiques de l'architecture historique. On réalise des restaurations, des remplacements et, en quelque cas, des démolitions; les fondements de la culture historique et critique ne sont pas considérés.

En toute vérité, il faut comprendre que la pratique courante dans le champ des interventions sur les constructions historiques est inspirée à des critères d'épargne économique et de standardisation des interventions. Il est facile à saisir qu'en agissant avec l'objectif de s'opposer tout court à la dégradation on élimine systématiquement la possibilité d'approfondir l'essence vraie de la conservation et de la restauration.

Dans la sphère du patrimoine architectural n'est pas alors permis la "substitution" pure de l'élément constructif qui est par les technologistes considéré simplement "abîmé". D'autre part, il faudrait envisager que les problèmes que le restaurateur se pose ne sont pas en ligne avec les temps du chronoprogramme. Les raisons économiques prévalent et constituent l'orientation générale du secteur des bâtiments qui a la tendance à la préfabrication, à la standardisation et à respecter les exigences de soutenabilité malentendue.

En veulent étendre ce dernier *modus operandi* au milieu urbain, les interventions sont inspirés à des recompositions de l'image urbaine en appliquant critères d' homo-

généité, similarité et uniformité. Les conséquences sont opposés à la nature des sites en remplaçant ce que M. Dezzi Bardeschi a bien identifié comme "l'elogio della diversità anziché dell'analogia, come rispetto dello stratificato e dei segni del tempo"; les critères susdits coupent ce qu'on peut appeler « processo di accumulazione » stratigraphique. Les interventions contemporaines que se réalisent visent à des opérations de maquillage et c'est pourquoi que, malheureusement, beaucoup de centres historiques italiens (parmi lesquelles, Palerme, Naples et des autres villes importantes du centre-nord) sont en train de se faire ce traitement « cosmétique ».

Il faut aussi souligner qu'aujourd'hui les logiques d'investissement estiment la valeur immobilière à travers les attraits pour les investisseurs, comme par exemple, le décorum et l'esthétique des façades qui, si dégradés, baissent la valeur économique en éloignent les affaires financières. C'est pourquoi que plus les sites conservent ses caractères originaires et authentiques, moins le marché immobilier est dynamique et rentable.

De plus, en ce qui concerne l'entretien, malgré les références législatives qui obligent un programme d'entretien pour les bâtiments, il n'y a aucune véritable pratique de l'entretien; cela n'est pas vraiment concevable dans une nation culturellement et techniquement avancée dans le domaine des biens culturels. On souligne, donc, l'absence des programmes d'entretien et de sa activité de sondage; le rôle secondaire attribué à l'entretien; l'accès d'opérateurs non spécialisés au secteur de la restauration; la tendance prédominante aux interventions dictée par l'urgence pure qui favorise des oeuvres extraordinaires; l'incapacité de faire acquiescer à l'opinion publique l'importance de l'entretien qui est très souvent réduite à l'élargissement de facilitations fiscales; la vision de l'entretien comme un'opération très convenable pour des sponsors et pour les programmes politiques qui se posent le problème d'une bonne image à réaliser en peu de temps.

De toute manière, à côté des fautes qu'on a pu y expliquer, il existe une culture théorique de l'entretien appartenant au secteur disciplinaire de la technologie qui a structuré des méthodologies analytiques et procédurales dans ces dernières années. En somme, les "technologistes" ont la tendance à tenir le système en "efficacité", c'est-à-dire l'édifice qui marche à plein régime: on reconnaît les problématiques de "dégradation" et d' "obsolescence" du patrimoine architectural mais au but d'élaborer des "stratégies" qui en garantissent la "durée" qualitative dans le temps. En suivant ce dernier principe on arrive, par exemple, à la définition ISO de "qualité" comme correspondance aux « performances » des produits aux "qualités requises" et aux "demandes de l'usage", cette dernière est le destinataire seule des choix. Tout est finalisé à tenir en compte le caractère du "service" des bâtiments qui doit garantir à l'homme une vie utile, (service life), fiabilité, durabilité, inspectionnalité, complaisance, curabilité, adaptation, souplesse, bien-être de l'habitation et sûreté. La valeur de l'usage est prédominante: cependant, dans ce cas, la productivité fonctionnelle et économique de l'immeuble doit être assurée. Il faut dire que cette orientation, ainsi proche aux sociétés immobilières, est également très lointaine du domaine des biens historiques et architecturaux qui, à cause de leur identité, ne peuvent que déterminer des bénéfices sociaux.

En somme, la différence entre les deux perspectives - celle « technologiste » et celle de la conservation attentive aux valeurs historiques ainsi que de la matière - est facilement visible.

Dans le cours de la *Laurea Magistrale* en Architecture – Restauration on attire l'attention sur des qualités des édifices qui ne sont pas faciles à classer, à estimer; on parle de patrimoine et non de bâtiment.

Dans le cours de la *Laurea Magistrale* en Architecture – Restauration il faut apprendre les élèves la culture technique et la culture historique afin de ne pas interpréter l'architecture une chose qui est possible couper en tranches; c'est pourquoi l'objectif est de garder toutes les valeurs de l'architecture qui est partie intégrante des nos villes et de la vie de la communauté entière.

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**L' Architecte pour la Restauration:
Une Experience Didactique a Naples**

A. La théorie de la conservation: tradition italienne de la formation dans le domaine européen

Une récente et dernière reconnaissance de la compétence italienne dans le domaine de la restauration et de la conservation du patrimoine architecturale est constituée par la charge du projet d'entretien des grottes du site archéologique d'Ajanta, en Inde¹; cela représente, sans doute, un des innombrables exemples de la renommée internationale de l'excellence tout à fait italienne dans ce domaine.

Cependant, dans l'état actuel, le moment historique caractérisé, d'une côté, par la formation in *feri* de la nouvelle organisation politique et, même, économique européenne, et de l'autre côté, dans notre contexte national, par la réforme de l'enseignement universitaire avec ses nouvelles classes de diplômés, nous porte (à partir du moment où nous sommes concernés soit comme intermédiaires, soit comme appartenant au corps académique) à mener à bien diverses réflexions.

Ces dernières, en tout cas, ne peuvent pas s'abstenir de tenir en considération quelques situations qui ne sont pas vraiment cohérentes dans un processus de formation de l'architecte-conservateur, c'est-à-dire d'une figure qui puisse avoir toutes les compétences pour opérer dans le domaine du patrimoine architectural et des sites historiques.

Toutefois, il faut reconnaître que cette opération d'analyse n'est pas simple: pour cela faire il est nécessaire avoir une vision globale des susdits processus de transformation et, dans le même temps, la capacité de saisir le décalage parmi les différents poids attribués aux diverses disciplines qui font partie des divers cours existants au sujet de la conservation.

En même temps – et cela donne une mesure de la délicatesse et de la complexité problème qui nous concerne –, on ne peut qu'enregistrer, au niveau international, le travail consacré à la fixation de la signification de la notion de «patrimoine».²

À ce propos, les distorsions possibles ne nous échappent pas lorsque la mise en œuvre des principes de la conservation du patrimoine concorde avec les opportunités politiques et économiques visant au renforcement de quelque identité nationale dans le contexte, tant bariolé que délicat, de l'Europe.

Dans le but de mener à bien un discours qui saisi vraiment les aspects de la formation de l'architecte-conservateur il est nécessaire de tenir dans la bonne considération ces flottements du concept de l'«objet» qu'on veut protéger et, encore, la connaissance des dynamiques dans lesquelles l'architecte se trouve à exercer sa tâche professionnelle.

Le contexte italien, du reste très semblable – mais avec les *distinquo* – aux autres réalités internationales, se montre caractérisé par une production architecturale qui est, d'un côté, le résultat des grandes charges aux architectes du *star system* international, de l'autre côté, à travers l'absence d'un véritable programme de changement des villes en relation aux exigences urgentes du parterre social. L'architecture à travers laquelle les bâtiments publics s'expriment est, très souvent, tout à fait standardisée et, même, sans aucune recherche architecturale.

Dans ce contexte, même s'il est approximatif mais sûrement correspondant, à grands traits, à la situation urbaine que nous apercevons, le démarrage d'une politique de la conservation vient de s'identifier souvent avec la mise en valeur de sites d'«excellence», tandis qu'on saisi la faute d'un processus qui concerne d'une manière

intégrée toute le tissu urbain et celle, plus large mais aussi méritant beaucoup d'attention, du paysage et de l'environnement culturel.

Il est donc assez évident qu'un programme attentif en ce qui concerne la formation ne peut se faire qu'en ayant très claire la notion de «patrimoine» et ses spécificités, en montrant fortement la nécessité de doter le *curriculum* d'étude d'un vigoureux cours qui contienne beaucoup de théorie et d'histoire de la conservation et de la restauration. Ce dernier, c'est clair, doit être entendu non seulement comme *excursus* historique des diverses théories qui dans le temps se sont déroulés, mais surtout comme un débat des thèmes internes à la discipline et même de la discussion des termes doctrinaux.

Ainsi que pour la production de la nouvelle architecture – comme réponse au mauvais panorama contemporain et à la pauvreté des questions épistémologiques par rapport à l'architecture – et de même que pour le projet des édifices et des sites historiques, l'interrogation et l'élaboration théoriques des principes constitue un prodrome positif et indéniable pour la gestion du domaine complexe de la conservation, juste pour les côtés relatifs à la *praxis*.

Les domaines du projet du nouveau et celui-ci de la restauration de l'architecture apparaissent comme deux sphères différentes seulement en premier ressort; en réalité ils constituent les mêmes domaines de réalisation d'une activité qui s'exprime à travers une réponse culturel avec la pleine conscience de toutes les données et des valeurs présentes et à relever.

D'autre part, dans l'esprit de tracer le système des contenues appropriés à la formation d'une figure professionnelle qui puisse marcher avec son temps – mais aussi dans le but de faire sortir notre discipline des difficultés dans lesquelles elle reste souvent emprisonnée – il est très utile de parcourir l'*iter* de la réorganisation des enseignements universitaires en relation avec la conservation et la restauration qui, dans les temps, s'est développées.

À niveau international, à Ravello, il'y a eu le *I Convegno internazionale dei docenti di restauro dei monumenti*, en 1975. On peut y retrouver l'analyse d'une situation compliquée et, encore, un nombre de professeurs de restauration des monuments vraiment réduit, pas seulement en comparaison avec le nombre actuel, mais aussi par rapport aux exigences de ce moment là, c'est-à-dire les années soixante-dix.

Cependant, ce qui est sûrement remarquable c'est la conviction – qui, d'autre part, intéresse le problème actuel après trente années – avec la quelle l'enseignement doit être interne aux Facultés d'Architecture³ et, de plus, l'affirmation de l'organisation fondamentale pour former des techniciens et des figures professionnelles qui soient à côté de l'architecte-conservateur.

Mais, surtout en relation avec l'évolution du concept de «monument», il a été affirmé «la necessità di chiarimento, anche in sede didattica, dei fondamenti teoretici e storiografici e, quindi, della disciplina stessa del restauro e dei suoi confini, delle sue articolazioni, dei suoi rapporti con le altre discipline, per una consapevolezza, un confronto e un affinamento delle teorie, che, calate nella prassi, incidono nel vivo delle opere da tutelare (...)»;⁴ et tout cela avec le souhait d'avoir un débat dans les temps.

Au niveau international, à la même période, la Déclaration d'Amsterdam attirait l'attention sur le problème de la formation en nous faisant remarquer dans quelle mesure, il y a trente années, le thème de la formation⁵ très qualifiée était perçu, comme

juste par rapport aux exigences d'une gestion moderne et de mise en valeur du patrimoine architectural et culturel.

Il est assez clair que la notion de *conservation intégrée*, basée sur la coordination des différentes disciplines et des domaines concernés par les transformations du contexte urbain et du terroir, ne pouvait que souhaiter et prévoir la globalité soit pour les analyses d'étude, soit pour tout ce qui est en relation avec le projet et sa réalisation. Cette globalité, naturellement nécessaire au parcours de la formation,⁶ est à mettre en relation avec cinq domaines disciplinaires: les disciplines historiques et critiques; celles de la représentation et de la communication; celles mathématiques, physiques et scientifiques; les disciplines techniques et la technologie; enfin celles relatives à la gestion, en comprenant, parmi celles-ci, les disciplines économiques, juridiques et de la sphère du projet. Les trois premières appartiennent au contexte de la *connaissance*, la quatrième est inhérente à la *conservation*, le dernière à la *fruition*.⁷

Il faut ajouter que le cadre de la formation démarré de cette manière n'est pas censé complet pour une pleine acquisition des moyens nécessaires à la réalisation des projets dans la conservation; il y a une phase successive qui se déroule dans les Ecoles de Spécialisation où l'opération d'approfondissement des divers domaines disciplinaires et mises à jour y relatives trouve sa place.

En 1981 le Vœu final de l'Assemblée Internationale de l'I.C.O.M.O.S. souligne qu'en plus de la nécessité que chaque Etat aie un centre de formation au niveau national et régional qui se coordonnent, le caractère inéluctable de la centralité de la Théorie de la restauration, comme "matière qui définit les bases logiques de cette profession"; et, encore, que "doit servir de catalyseur pour les diverses disciplines concernées".⁸

Dans cette optique qu'on peut dire «globale» et qui donne à la théorie un rôle constitutif dans la structure des principes doctrinaux, s'oppose une situation pas bien définie: le décret qui règle la réforme de l'organisation universitaire (D.P.R. n. 806/1982) supprime les enseignements "Restauo dei monumeni" et, même, «Caratteri stilistici e costruttivi dei monumenti» en favorisant une fragmentation de la matière de la restauration (architectural, urbain, et de plus l'enseignement de *Théorie de la restauration*).

L'éloignement de toutes les disciplines critiques et historiques qui, par contre, constituent la base de la doctrine de la conservation est assez évident; cela est ressorti comme une condition extrêmement négative par les professeurs de restauration lorsque, pendant le XXI Congrès d'Histoire de l'Architecture en 1983 (*Storia e restauro dell'architettura: aggiornamenti e prospettive*), la tendance courante de tenir séparé l'*histoire* de la *restauration* venait d'être soulignée.

Il s'agissait, bien sûr, d'une tendance ambiguë, mais qui marche au fur et à mesure de la propagation d'un «tecnicismo, che vede l'intervento conservativo come sommatoria di momenti tecnico-scientifici sostanzialmente separati e indipendenti non come operazione di necessaria sintesi, dei pur diversi apporti specialistici, illuminata e diretta da un atto di intelligenza storico-critica».⁹

L'impasse de l'opération de réorganisation de l'architecte-conservateur est très bien manifeste dans le VI Convegno nazionale dei docenti di restauro dei monumenti: on trouve, dans son rapport final, la requête d'une véritable vérification des lois responsables de la réorganisation des Universités, des Facultés d'Architecture et des Ecoles de Spécialisation, en étant, pour ces dernières, les lieux où les mises à jour et les études de doctrine les plus spécifiques se déroulent.

En d'autres mots, l'opposition entre les arrêts gouvernementaux et le corps entier des enseignants, pendant les années quatre-vingt, continue: les premières à faire avancer programmes visant à la séparation de la sphère des disciplines scientifiques des doctrines humanistes; les enseignants, en revanche, renforcent leur idée de la nécessité de l'intégration des cours d'études dont référence ci-dessus dont la forte cohésion constitue la base indispensable de la structure de l'iter de la formation.¹⁰

Le sujet est saisi à niveau au international aussi. Le *Convegno internazionale di studi sulla formazione universitaria e post-universitaria dei tecnici del restauro dei monumenti* avait été lieu en 1986 en démarrant un débat auquel ont participé des représentants de l'UNESCO, de l'ICCROM et, en plus de quelques enseignants italiens, un très significatif groupe d'enseignants étrangers;¹¹ cela a permis, en effet, d'apercevoir la nature essentiellement européenne du problème.

De ce fait du 10 giugno 1985 que date (85/384/CEE) la première Directive européenne – même si elle se réfère à l'architecte généraliste – pour les professionnels diplômés en ingénierie et architecture prévoit l'accès à la profession dans toutes pays appartenant à la communauté européenne.¹²

Si tout cela correspond très justement à l'objectif d'éliminer toutes discriminations pour l'exercice de la profession, il faut ajouter qu'on a bien contribué à donner une nouvelle et ultérieure menace au destin du patrimoine monumental.

Malheureusement, le décalage des différents situations de la formation professionnelle parmi les pays de l'Union européenne était (mais est encore) plus que fort, mais, en outre, l'enseignement de la discipline de la conservation ressort vraiment faible dans le curriculum des études universitaires concernant l'architecte.

De ce fait, si l'exercice de la profession d'architecte et d'ingénieur dans les divers pays européens est accordé aux différents techniciens qui atteignent le titre à travers des instituts, des polytechniques, des écoles supérieures, des académies, etc., pas toujours de niveau universitaires,¹³ il est encore plus compliqué de saisir dans les cours et dans les programmes d'étude l'enseignement de la discipline de la restauration du patrimoine architectural et, même, des autres censés proches de la conservation; et tout cela, cependant, montre évidemment la prédominance de la technique sur les autres composantes de l'architecture.

Avec la suppression de la Directive susdite de 1985, on peut apercevoir plutôt une simplification de la définition des traits qui doivent caractériser l'architecte, qu'un approfondissement du sujet et de la réglementation de l'exercice professionnel.¹⁴

Par conséquent, une amplification remarquable du danger s'avère pour l'avenir du patrimoine architectural et européen mais aussi: la faute d'une coordination équitable et attentive des enseignements universitaires et académiques qui soient au-dessus des contextes nationaux et, même la position minoritaire du secteur de la restauration confié aux Instituts ou aux Centres présents longtemps sur le territoire européen, miment à la base non seulement la possibilité de formation de professionnels avec un savoir-faire considérable pour opérer dans ce domaine, mais tout cela offre aussi la possibilité à la myriade des Centres de recherche (parfois privées et à travers de conventions sponsorisées par la Communauté européenne elle-même) d'entamer les biens culturels.

Ces centres (très souvent sous la forme de consortium) en détenant les systèmes techniques et scientifiques ont la prétention d'*être* (et non d'*offrir*) la solution de problèmes que la restauration et la conservation du patrimoine posent; ils deviennent, de

fait, le premier instrument à opérer *sur* le patrimoine architectural et urbain, en montrant et soulignant l'éloignement du monde académique qui représente, c'est sûr, la place d'élaboration des bases théoriques qui ont la tâche de conduire la pratique.

C'est alors qu'on revient, après avoir tourné en rond, à la question des fondements, et quand on entend le *corpus* des «raisons d'être», les causes internes de la nature de la structure disciplinaire doivent alors toujours être vérifiées dans leur nécessité rationnelle.

Sont les bienvenus, donc, le progrès scientifique, le démarrage de protocole pour la praxis, le développement méthodologique avec l'approfondissement de ses phases, la standardisation des analyses les plus sophistiquées, la coopération internationale, l'évolution des modèles pour saisir les fonctions soutenables, l'utilisation des techniques digitalisées pour la connaissance et la transmission au public toujours plus curieux de patrimoine artistique, et tout ce qui peut mettre en valeur notre réseau culturel.

Mais, dans l'esprit d'une protection des significations de ce que l'architecture, à travers sa présence sensible, transmet, il faut que le caractère scientifique des processus de conservation soit plongé dans le tissu constitué par les fondements qui devraient en régler l'application.

Ce tissu, en voulant donner suite et confiance à la notion moderne de conservation du patrimoine, doit être nourri par les enseignements d'histoire de l'architecture et de l'art, d'historiographie artistique, de littérature artistique, de philosophie, d'éléments de la construction et stylistique de l'architecture, histoire de l'entretien et de la science de bâtir, et, en dernière position bien-sûr, d'esthétique.

De la force doctrinale et de l'intégration de ces champs disciplinaires avec l'acquis scientifique et technologique dépend l'avenir de l'architecture du passé le plus lointain, mais aussi de celui plus récent, dont la compréhension est liée aux paramètres contemporains de l'interprétation.

Pour cette raison principale, et afin de vraiment comprendre ce que peut-être aujourd'hui la conservation de l'architecture et sa restauration, il est assez clair qu'il est convenable d'avoir les idées claires aussi bien sur ce qu'est l'architecture, mais sur ce que l'architecture est pour *nous*.

Cependant, il est aussi clair que les expériences didactiques récentes ne permettent pas d'apercevoir un alignement entre ces principes et ce qui est prévu aujourd'hui pour la formation par la loi. Il serait vraiment suffisant d'analyser l'organisation soit des diplômes triennaux (avec l'enseignement de *Fondements de restauration*), soit de celles des spécialistes en Architecture-Restauration (avec l'enseignement *Théories et Histoire de la Restauration*).

La réforme, en comprenant deux moments de formation différents, a obligé dans le premier cas à une synthèse de la doctrine de l'époque en ne pouvant éliminer aucune matière qui la concerne (histoire, théorie, législation, questions urbaines et archéologiques, technique, etc.); dans le deuxième cas, par contre, la réforme apparaît donner beaucoup plus d'espace à l'enseignement de type théorique. Mais dans ce dernier cas, même si il est *théoriquement* possible d'approfondir des thèmes doctrinaires, il n'y a pas un *background* adéquat de formation de l'élève qui permet de mener à bien les approfondissements souhaités.

Cela concerne non seulement l'attribution du nombre des crédits-heures du cours, mais surtout l'essence et les contenus des cours mêmes: ceux d'Histoire de l'architect-

ture, par exemple, sont concentrés sur des périodes chronologiquement différentes qui ne permettent pas à l'élève d'avoir une vue d'ensemble de la matière; l'histoire de la critique et de la littérature très souvent n'est pas apprise; aucun fondement d'esthétique n'est d'ailleurs souvent donné. En fin, à tout cela s'ajoute le défaut de la préparation générale dont l'école secondaire est responsable.

On assiste, alors, à un *gap* très profond entre la situation actuelle de la discipline avec son développement et les moyens de *faire*.

S'il y a d'un côté des centres d'excellence qui mettent en place d'imposantes restaurations que les medias amplifient, d'autre côté il y aura des architectes qui, très probablement, ne réussiront pas à utiliser les connaissances apprises pendant tout le temps passé dans les universités.

A ce propos l'effort de l'Etat en ce concerne l'organisation de la profession des restaurateurs appelés seulement pour la conservation et la restauration des «surfaces décoratives des biens architecturaux» (!) n'a pas été éclairante.¹⁵

On laisse au lecteur la perception immédiate de la complexité (mais aussi du danger) de ces distinctions qui montrent une vision de l'architecture, pour dire peu, médiocre. Le restaurateur, pourra, donc, faire des projets, réaliser et évaluer des interventions sur les susdites «surfaces»; aidé dans sa formation par les «Agenzie formative» avec une identité douteuse et non spécifiée.

Pour conclure, le domaine de la restauration et de la conservation apparaît plein d'obstacles insidieux et est parfois frappé par une mauvaise idée du projet, soit dans le champ de l'architecture, soit dans celui de sa protection.

Il est utile pour ne pas dire nécessaire d'avoir un effort conjugué à partir des Universités afin que la communauté scientifique appartenant à la restauration puisse être une force active dans le cadre de la réorganisation de l'enseignement que le défi européen appelle à jouer.

Le parcours est difficile et en pente: mais il faut juste le savoir et n'être pas étonnés par le progrès scientifique et l'usage exclusif dans la conservation.

Tout cela afin d'être moins complice de la destruction des valeurs que le patrimoine architectural, malgré tout, continue à garder.

1 Le site d'Ajanta est un des lieux les plus importants du patrimoine culturel de l'humanité; il est aussi dans la liste du patrimoine mondial U.N.E.S.C.O. La présence italienne en Inde représente le résultat des accords pris dans les années passées entre le Ministère des biens et des activités culturels d'Italie et les autorités indiennes.

2 On ne peut pas manquer de relever, à partir de les années quatre-vingts, les Recommandations et les Conventions nombreuses ayant le but de approfondir la notion de patrimoine. Un débat, par ailleurs, qui est encore en cours. En particulier, il a été très justement affirmé que «il faut rompre très nettement avec une notion du "patrimoine culturel" qui résume celui-ci au processus et aux techniques de préservation des monuments (c'est à dire d'"objets"), et à des pratiques liées aux traditions nationales»; et encore «on doit procéder à une réorientation du 'contenu' et du 'sens' même de la notion de patrimoine culturel, telle qu'elle est pratiquée par le Conseil d'Europe». V. R.Weber, *Introduction a Prospective: Fonctions du patrimoine culturel dans une Europe en changement*, Recueil des contributions d'experts, Conseil d'Europe, 2002, p. 6. Afin d'avoir une vue sur les documents européennes en ce qui concerne le patrimoine culturel v. A. Aveta, *Conservazione e valorizzazione del patrimonio culturale. Indirizzi e norme per il restauro architettonico*, Arte Tipografica, Napoli, pp. 9-18.

- 3 On saisit la présence inopportune des cours de diplôme universitaire dans les Facultés qui ne sont pas d'Architecture (comme Instituts Universitaires - même si de bon niveau -, Facultés de Littérature, et de toute façon, Facultés humanistiques ou scientifiques); cela ne permet pas une bonne étude des matières techniques de l'architecture, ni, dans l'autre cas, de celles historiques et artistiques qui caractérisent l'architecture elle-même.
- 4 On peut voir le point II du Vœu du I *Convegno nazionale dei docenti di restauro dei monumenti*, en "Restauro", n. 124, 1993, pp. 85-86. Il y a eu des autres Congrès des enseignants de restauration des monuments en 1976, 1977, 1978; ce dernier formulait l'hypothèse de base pour l'organisation du cours universitaire de «Conservation des biens culturels»; par contre, un autre congrès, le cinquième qui a eu lieu en 1980, non seulement recommande de démarrer d'un diplôme finalisé à la formation des professionnels préposés à la conservation des biens culturels, mais aussi le Congrès demande qu'au moins une orientation en «Conservation des biens architecturaux et de l'environnement» soit institué dans le cours d'étude du diplôme universitaire d'Architecture.
- 5 Egalement à la *Déclaration d'Amsterdam*, la *Charte Européenne du Patrimoine architectural* (1975), en soulignant l'action de la *conservation intégrée*, réputée indispensable le perfectionnement des moyens techniques, administratifs et législatives (v. point 8 de la Charte); ces derniers regardent l'adéquation de la formation pour les architectes, les techniciens, les entreprises spécialisées, les artisans qualifiés.
- 6 R. Di Stefano, *Il recupero dei valori. Centri storici e monumenti. Limiti della conservazione e del restauro*, E.S.I., Napoli, 1979, pp. 169 et ss. Les sujets traités font partie de la Relation introductive au *IV Incontro dei docenti di Restauro dei monumenti* ("Giornate di studio sulla formazione universitaria dei professionisti addetti alla conservazione dei beni culturali", Napoli, 28-29 aprile 1978).
- 7 V. *ivi*, p. 173. Il faut dire que le débat était finalisé à l'organisation du cours universitaire en «Conservation des biens culturels», dont il faudrait aujourd'hui vérifier la cohérence avec les exigences professionnelles actuelles dans notre contexte national.
- 8 V. le vœu final du "Colloque de Rome", Assemblée Internationale I.C.O.M.O.S., en «Appendice» à R. Di Stefano, *Restauro e monumenti. Formazione e professione*, cit., p. 101
- 9 V. vœu final du Congrès *ivi*, pp. 28-29.
- 10 Un exemple très indicatif est constitué par le travail de la Commission du Ministère (Formazione e qualificazione professionale degli operatori del patrimonio culturale e ambientale, 1987). On proposait d'organiser la formation en différents Facultés: de cette manière, en ayant plus d'une «compétence» (!) l'élève n'aurait pas eu de la difficulté à trouver un emploi dans le marché du travail. Ces cours étaient les suivants: "Storia e tutela dei beni culturali" dans les Facultés de Littérature et dans les Facultés de Magistero; "Analisi e recupero dei beni architettonici e ambientali" dans les Facultés d'Architecture. Il est très évident comme dans ces cas l'anéantissement de la restauration et de ses significations modernes se vérifie.
- Nombreux professeurs s'opposaient à cette résolution : à ce propos on peut voir le Document sur la relation finale de la Commission du Ministère signé par G. Carbonara, P. Fancelli et T. Scalesse. Pour avoir une référence précise de ce débat, v. R. Di Stefano, *Restauro e monumenti. Formazione e professione*, cit., pp. 31 et ss.
- 11 Le Congrès, en partenariat avec le Ministère de l'Instruction Public, était démarré par l'Ecole de Spécialisation en Restauration des Monuments et le Dipartimento di Conservazione dei beni architettonici e ambientali. En plus de R. Bonelli, R. Di Stefano, S. Boscarino, M. Dezzi Bardeschi, des enseignants étrangers y participaient, comme J. Barthélemy, N. Moutsopoulos, A. Tomaszewski. En particulier, ce dernier a traité le sujet de la formation à niveau international et pour ça v. *Remarque sur la situation de la formation universitaire et postuniversitaire dans le domaine de la conservation et la mise en valeur des monuments historiques et des sites* (1985) et *Les formateurs en conservation; introduction à l'expertise pour l'UNESCO* (1989).

- 12 À ce moment cette Directive a été remplacé par la 2005/36/CE (en Italie DLgs 206/2007) qui est relatif à la reconnaissance des spécialisations professionnelles; la Directive 2006/100/CE est inhérente à la libre circulation des gens après l'adhésion de Bulgarie et de Roumanie; v. la GU n. 261 de 9-11-2007 - Suppl. Ordinario n. 228.
- 13 Afin d'avoir une vue de ce gap extrême entre ces niveaux de formation dans les divers états membres, il serait suffisant aller voir le chapitre III des Directives du Conseil de la Communauté Européenne de 10 juin 1985 et la successive mise à jour 88/C 270/03 de 19 octobre 1988 et 89/C 205/06.
- 14 Avec la Directive de 1985 il y avait un Comité consultatif pour la formation dans le domaine de l'architecture chez l'Union Européenne elle-même; le Comité était chargé de vérifier la compatibilité entre les cours universitaires nationales et les contenus de la formation établis par la Directive. A présent le Comité a été remplacé par le Comité de réglementation.
- 15 Cela est rapporté au projet de loi "Disciplina dell'insegnamento del restauro dei beni culturali" de 30 août 2002.

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**Why Teaching Conservation at all
in a Mercantile Society?**

While the most important question is “what” do we teach in conservation field, “why” do we teach seems to become one of the most important not asked questions today, in some developing countries!

One might say, visiting Romania in present days, that history of architecture, heritage and the problems that come with it are studied just because it is traditional to do so and not because it is an essential part of the professional development of an architect. In a country where the creation of the society of architects, of the national school of architecture and of the law concerning historic monuments are all related to the same social/professional movement at the end of the XIXth century (1891 - 1892), traditional approaches should be a natural trend. In fact, tradition and history are not enough anymore; they are sometimes - more and more often - perceived as a brake for the economic development.

Organizing information for the students

Traditionally, in the University of Architecture and Urbanism “Ion Mincu”, heritage was studied on the basis of both theoretical approaches and practical ones. As in many other schools of architecture around Europe, more attention is given to the theoretical courses such as: history of architecture, history of architectural conservation, theory of the conservation project, legislation and so on. Practical parts are more and more reduced to workshop applications at the level of fourth and sixth year of studies – obligatory – and of the fifth year of study for those students that have the option for the specialized workshops. Practical things, done upon historic buildings are few and are mostly related to the surveying techniques taught in the fifth year on study. Scanty workshops are also proposed to students opting for brief training periods based on voluntary work with specialized construction teams or individual specialists. The study trip of the fourth year became recently more and more important. It is the occasion for many of our students to get to see landmarks of the history of architecture in Romania and, through the direct presentation, to better understand heritage.

To summarize, here is the structure of the courses dealing primarily or indirectly with the concept of heritage within the curricula of the University of Architecture and Urbanism “Ion Mincu”:

- First, second and third year have “packages” of compulsory courses dealing with: history of architecture (evolution of the phenomenon of architecture worldwide), elements of traditional architecture in Romania, morphology of the styles (optional). During these first three years some other courses are touching heritage in indirect manner by analyzing the urban morphologies or by speaking of context and landscape.
- Fourth and fifth year are bringing more possibilities of option for different areas of interest, heritage being one of them. Still, compulsory remain the course about basic notions and concepts of heritage protection and the workshop of restoration (short restoration project as application) that go along with it. Also obligatory are the course of history of Romanian architecture since the XIXth century, the one week study trip and the two weeks period of architectural survey. More applied courses can be chosen by students such as: technology of building rehabilitation, recycling the built areas, styles, restoration techniques, heritage inventorying,

types and theory of interventions in heritage conservation. Also optional is the workshop with the project on insertion of new buildings in protected areas.

- The sixth year of study has just a semester for teaching since the second one is destined for the license project. During the first semester it is compulsory a short project of restoration applied on the building surveyed in the fifth year. Some optional courses, having a more theoretical, even philosophical approach, are available for students. They are related to: theory of the historic monument and to the relation between architecture, culture and society.

Present challenges in terms of internal professional necessities

The question of "WHAT" is taught in our school is much affected by the way the school is organized. The courses presented here are mostly the responsibility of three departments: History and Theory of Architecture and Heritage Conservation, Technical Sciences and Urbanism. That leads to the fact that information is not always given to the student in an integrated, concentrated and coherent way, even if that is the ultimate intention but accordingly to the objectives of each specialized chair.

A step forward, taken by the University of Architecture and Urbanism "Ion Mincu" was the creation, this year, of a specialized school in Sibiu (Sibiu is the European Cultural Capital in 2007), focusing on teaching architecture based on heritage issues, as the result of the initiative of the chair of History and Theory of Architecture and Heritage Conservation and of the chair of Technical Sciences. The aim of this new branch of the university is to concentrate the efforts and to provide integrated information in order to produce architects (bachelor of architecture, initially) better qualified in both understanding and creating architecture in a built environment or in preserving heritage.

This follows, in a way, a certain success we had with our students in putting together the expertise of the chairs for design and that of history and theory of architecture, for a practical exercise in a workshop project of the fourth year having the theme "insertion of a condominium into a established built environment". This specific project started with the in depth analysis of the site conducted by the chair of history and theory of architecture and, based on the conclusions obtained by observing and revealing the characteristics and values of the site (materialized in a general set of rules for the neighborhood), within each studio followed the development of the concepts for the new buildings in accordance with the rules previously determined. Guidance provided simultaneous by teaching staff of the two chairs was an important experience for both students and professors as this exposed several misconceptions in perceiving the notion of protected areas, means of enhancing the quality of established environment and so on.

Having this as a background, the new bachelor program in Sibiu was set to function following the principle of integrated teaching. Basically, the nature of information will be similar to the one provided in Bucharest, most of the teaching staff being also the same, the difference consisting of the way it will be delivered. Still, the major difference is that the starting point of any lecture or workshop will be an existing building or an established site (not necessarily legally protected) that will require the time and effort to adapt architectural themes and programs to the context.

Therefore the structure of the three years of the bachelor program in Sibiu consist of four pylons or modules:

- Introduction to architectural design
- History and theory of architecture
- Building techniques
- Urbanism

The four modules are wrapped in a larger module of compulsory and optional lectures of heritage conservation.

Lectures of the four modules will be split into two parts: a broad one meant to give the general frame of the specialty and a more specialized one, inserted in the different workshops with practical architectural projects.

To give an example let's imagine a topic: "metal in architecture". Within the training period of the second year, a compact segment is dedicated to the study of metal in architecture. The module of architectural design serves this by developing the theme of hotels with the specific task of designing a metal structure. During workshops for this project, the module of history, apart from the general study of the evolution of architecture in XVIIIth, XIXth and XXth centuries, will dedicate some lectures for detailing case studies as Eiffel Tower, Les Halles de Paris, Crystal Palace, Iron bridge of Cernavodă and so on. In parallel, from the module of building techniques, some lectures by invited civil engineers will enable students to learn about modern details and requests of a metal structure. From the module of urbanism some time might be dedicated to debate on the constraints of urban configuration might involve in designing a new structure. Overall, during practice, survey of the iconic cast iron bridge (1859) from Sibiu might be chosen and some lectures about restoration of metal objects can come with it.

Having all focused on the same item – metal – from different angles, students might have at the end a better and concise view over architecture. Studying also with care of existing examples and sites might hopefully get them to develop a more respectful approach of heritage.

Present challenges in terms of external needs

External needs might be considered to be the requests of the market and of the society in general, those not necessarily being met by present architectural education, at least in Romania.

Unfortunately, until now there are not enough courses of economy, sociology related to the issue of making use of heritage, as regular people understand that. It is critical for architects trained as conservationists, restorers or simply as architects with respect for context, to be able to communicate with their clients – private or public. In order to do so, an architect should be provided with the skills of communications and with the knowledge of the type of perceptions that their clients have over heritage. An architect perfect connoisseur of restoration doctrines cannot do anything if facing a mayor who does not care, or a private client which is narrow-minded, unless he is equipped with the ability of transmitting and sharing the values he stands for.

This brings us back to initial question, not so frequently asked lately: "WHY?". Why should we care so much of built heritage when building tend to become just a technical matter, when a new building is cheaper, easier and faster to build and, in addition to that, stands for 25-30 years and does not really matter if it is put down afterwards?

It seems that something (quite a lot) changed in the mentality of most of societies since the times when heritage conservation emerged as a concept. We are studying today what John Ruskin and Viollet le Duc preached more than 150 years ago, probably missing a little bit the real motivation of their work at the time. Since motivation of clients (state, administration, private) would have changed since then, a new approach of tackling this issue has to appear. This should happen because today, a client would, in the first place, wonder if it really worth it to care for authenticity, to preserve the original substance and to do all the “moral” or “right” things that were clearly articulated since Camillo Boito.

The problem in Romania is that we had experienced half a century of abnormality and, after that, an abrupt turn towards a wild market economy and – the way the first postrevolutionary president expressed it in 1990 – an “original democracy”.

These stormy times changed completely mentalities, ripped apart traditions, therefore, putting also in question the notions concerning heritage. Hasty economic development and the ever stronger pressure of the real estate market are heavily influencing today the way people see built heritage (buildings and urban or rural protected areas). It is more and more common that students in architecture are wondering why they are asked to study history and principle of conservation, as they are the first generations to be raised and educated after the revolution, in an social environment that reevaluates its ideals and principles, adopting more and more “the American way” – so to say – where money and immediate profit of the investor come first, where everything is replaceable/disposable and monuments are perceived, in so many cases, as caprices of a minority.

What should be today the arguments in front of an ignorant client when even an extremely well educated and one of the best Romanian architects, a respectful professor, considers that it is right to demolish the client’s building in order to rebuild an exact copy just to make room for an underground parking, considering this a way of actually saving the building (as the client just wants to clear the plot to build a high rise)? And since, in fact, the ignorant “client” manages – with no articulate intervention of authorities – to destroy the house as a vandal, while specialists still are debating on the issue, why even think of appropriate concepts and techniques? Of course, this is an extreme example, not singular, from Romania, but there is no doubt that this happens in every place in Europe where the economic pressure is strong enough and the authorities not vigilant enough.

The point of this is that high quality architectural training is definitely not enough anymore today. Good notions of structural engineering, economy, sociology, administrative policies would not compensate the lack of well-trained specialists in those specific fields, able to understand and promote the notion of heritage within the society along the architects. Thus, students have to be trained to better connect with those specialists and with their communities. For this reason, a new overview of the general motivations of society to preserve heritage has to be performed. It is also the time now to teach “heritage” not only the students but also the civil society and the authorities.

This is probably why the most important question to put today would be: “Why teaching heritage conservation at all?”. As soon as a clear answer to that will exists, it would be probably much easier to define “what to teach” in order to meet the specific needs of the today mercantile society.

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**Technology of Architecture
towards Conservation**

Technological disciplines towards conservation

The paper is mainly – but not exclusively – related to section n. 2 of the preliminary program, where the promoter wrote questions concerning possible ways of teaching conservation in the Schools of Architecture. Among these various questions, the paper intends to go deeper into possible integration between disciplines and to emphasize the significance of design, both in the acquisition of knowledge and in cultural elaboration.

The teaching examples presented regard the recent experience carried on with the students of the annual “Laboratory of construction of architecture” within the undergraduate course of Architectural Restoration, in the School of Architecture of Genoa. The Laboratory is settled at the second year (10 credits). The same approach, with different contents, also characterises the teaching method inside the ph. Doctorate in “Building and environmental renewal” (in which are involved, all together, professors from the Universities of Genoa, Naples and Palermo) and the School of Specialisation in Architectural Restoration and Landscape Heritage (for degree architects all over Italy, held at the School of Architecture of Genoa).

Specifically, the “Laboratory of construction” is organised as a sort of “atelier”, emphasising technological and constructive knowledge, specifically oriented towards the themes of conservation.

Main purpose of the teaching activity is therefore, beside the acquisition of a set of competences, a deeper thought on the significance and the role of technological disciplines and technique, to be considered as a tool and not as a final aim, as seems to be in contemporary architecture and society¹. In our culture, building market is rapidly developing, both producing new materials (or traditional materials added with new ones in order to achieve better performances), and testing new construction techniques. This condition in one way enriches the catalogue of available solutions but, on the other hand, may direct the teaching towards the presentation of different and various techniques, never really up-to-date, because under fast evolution; in such a way the contents of teaching could become a sort of collection of a catalogue among which the student could choose, at the end of his design process and with more or less indifference, materials, details and building techniques.

The specific attitude of the teaching is, considering these possible risks, more focused on the traditional meaning of technological discipline, that is a reflection over the world of techniques, especially in its complex relations with the theory and the practice of the architectural design process. Even though many years passed through, it is still actual the idea of Giuseppe Ciribini, who marked the difference between technique (method-tool), intended as the way and the object of doing, and technology (science), intended as the way of thinking or, in other words, the theoretical reflection around the techniques².

Consolidation, maintenance, modification, integration, addition are in fact ways to intervene, that means technical operations, used to answer general questions regarding the destiny of a built heritage, of an environment, of a way of living, of a landscape through a clear design process, that should be intended as a conscious and responsible choice.

Conservation as a “multiple approach” teaching

The experience of the Laboratory is based on few premises.

- a) An active safeguard of our cultural and historical heritage passes through modification and changes (even if in the way of living a space).
- b) Architecture is one of the domain in which interdisciplinarity represents a fundamental requirement, where (following the thought of Blaise Pascal) it is not possible to know (or to understand) single parts without knowing the whole. Limiting the teaching of conservation to an analytical approach, the student could lose the general sense of its work. Certainly the discipline delimitates a domain of competences, without which the knowledge would become “intangible” and, on the other side, it constructs the objects of the scientific study. Anyway, the institution of disciplines involves the risk of hyper-specialisation of the researchers and, consequently, the domain of the disciplines could be perceived as a self-sufficient object. Is it possible to see a link between the following of specialized duties and the weakening of the sense of responsibility? It is convenient to remind to the students that the recent history of sciences is the history of the break of the disciplinary borders, of the circulation of concepts, of the forming of hybrid disciplines destined to become autonomous, or the forming of complex in which different disciplines are aggregated.
- c) The design activity, assumed therefore in its trans-disciplinary dimension, could fill the gap between “knowing” and “doing” and, especially regarding conservation, between “ancient” and “new”³. A long path of theoretical thought emphasized the central role of the project, as prevision of a new arrangement and of the induced effects, as sustainable activity, as creativity, able to match the attitude to research and to protect built heritage and environment.
- d) Working in the field of conservation, built heritage – to be protected and/or modified – is the main constraint to the validation of the project. What is really important to control, beside technical operation on the existing building(s) or environment and on the new addition (integration, modification...) is the mutual relation between these two worlds (ancient and new...).

Goals of the teaching

Main educational objectives of the teaching activity in the Laboratory are:

- to know built architecture and environment within its physical consistency and related to the whole constructive process. To develop a trans-disciplinary and complex understanding and knowledge of built environment, traditional architecture is a preferential field, also because it is far from normalization. The effort that is asked to the students is to refine their way of investigation and understanding built architecture as a first step to develop a complex knowledge and to face innovation vs. tradition;
- to understand the relations between materials, morphologies, structural principles and ways of connections that characterise different parts of an architecture;
- to face an architectural project (from the morphogenesis to the development of building details) merging architectural needs with other requirements linked to

the active safeguard of the existing object, the building facility, the duration in time and future deterioration, the possible maintenance and energy saving.

Regarding point two, in particular, it seems necessary nowadays to hardly propose again, as one of the main purpose of the teaching, the knowledge and the comprehension of the physical feature of architecture, in its complex material, constructive and linguistic meanings. Architecture, in fact, has always been the art and the ability to join different shapes and materials, dominating the mutual relations in the technical and constructive sense and solving, in morphological terms, the functional role inside the building.

More precisely, general competences to be acquired by the students of the Laboratory are:

- Trans-disciplinary and complex understanding and knowledge, especially regarding built environment, that is in fact the main field of application of the undergraduate course of Architectural Restoration. In other terms, the teaching attempt is to help the student to understand the main origin and meaning of the word “complexus” that in fact means “what is tissue together”.
- Ability to understand the objects in their complex and as a sum of parts with mutual influences – trying to stimulate the curiosity of students for all is settled in the built environment and especially for reasons, ideas and concepts that are behind forms, signs and, in general, architecture.
- Capacity to apply a spirit of “synthesis” in the design of new buildings or part of them (that is in fact the most important feature of the design process but, at the same time, the most difficult aspect to be taught because involves invention, innovation and creativity).
- Ability to develop a design process as General Problems Setting and Solving (4) together with experts, following a circular method named by contemporary scientists as “attempt and error” increasing therefore the sense of responsibility of the future architect for each personal choice that raises up from his mental design process. This means, in other terms, to verify each design choice in terms of future possible consequences on each system and sub-system (as the environment, the duration in time, the expectations of final users, the comfort, the energy consumption...).

These questions are, more or less, also strength inside the “Tuning project”, one of the main topic of the activity of the Association. In fact, the best answer that we could imagine, has to be expressed in terms of a set of competences, as:

- a) The ability to develop a pertinent knowledge: it is in fact necessary to substitute a way of thinking that separates and divides (reductionism) with a way of thinking that distinguishes and connects (holism) and, in other terms, it is necessary to recognize and understand the risk of mistakes and illusions (a very common risk that could be hidden inside the concept of “discipline”).
- b) The capacity to develop a project finalised to the optimization of a result (and not to the maximization of an aspect (that often means the prevarication of a system over the others, as happened in our contemporary culture with the hyper techni-

ality and the myth of progress). On the other hand, the design process, because of its innovative character, implies the risk of the choice and it is therefore necessary to recognise and to face, in every innovative or design process, the possibility of risks and the risk of possibilities.

- c) The ability to elaborate a strategy that takes in count the complexity of specific purposes and their implications on systems and sub-systems (following the theory of systems that characterises the contemporary science).
- d) The capacity to “contextualize” the choices (that means to have in mind that each design process involves specific cases, decisions, relations, risks and unexpected events).

The way of teaching: architectural design as testing ground

During the course the students are invited to explore “small architectural themes” inside an existing fabric (a roof structure, a system of new openings, a staircase, a small addition...), to choose autonomously materials and building techniques, studying also in detail the relations between built shape, materials and way of connecting different parts and, of course, concepts and ideas that support the architectural choices.

Furthermore the students are invited to carefully reflect over the implications and the consequences of their personal choices on the field of the possibility to construct, the economic feasibility, the inclination to physical decay, the duration and, at last, the way of future maintenance.

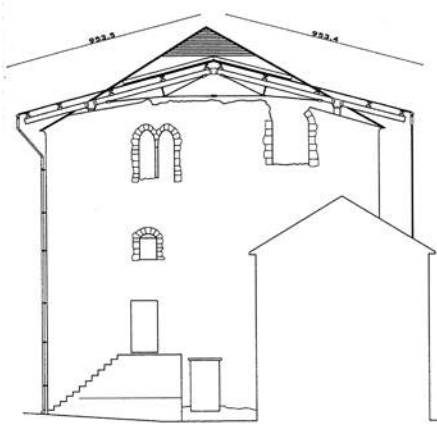
The students, within a common theme, are invited to work on a specific and existent object to be recovered and refurbished (a single building, a complex of buildings...) and to develop their personal choices of intervention, also with the help of specialists, trying to face and to solve, with a strong architectural “idea”, main problems as: morphogenesis of the parts and the whole architecture and “insertion” in a real landscape and territory; possibility to read and to interpret the existing “signs” and marks also developing architectural details; use of new materials and compatibility with the existing ones; structural behaviour and shape of the new parts and compatibility with the whole structural behaviour; knowledge of existing technologies and of phenomena of decay of materials and techniques of intervention; consciousness of the “environmental behaviour” of the new building or of the complex...

As an example, few main objects of the courses I have been: the design for the “missing tower” of the castle in Saliceto, near Cuneo (low Piedmont), “the reconstruction of parts” in the medieval complex of the Abbazia of Valle Christi, near Genova, the addition of a new roof structure on a medieval uncovered building near Genova. The sites are chosen because contextualisation becomes a preferential field of experimentation.

During their work, the students are helped to understand the very close relations between materials and man work; relations between products and building construction; relations between building techniques and environment. As a first step, the students are asked to analyse the site and the object of the new design in a such way like the described one, to capture also the ideas and the concepts hidden behind simple signs.



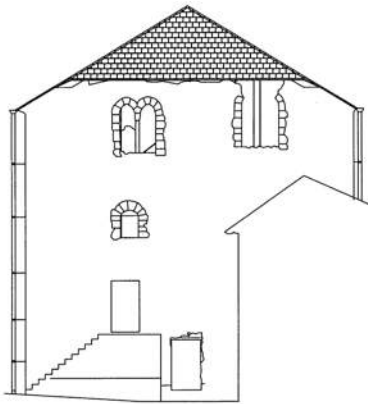
Fig. 1 & 2
Medieval building around Genoa, partially uncovered.



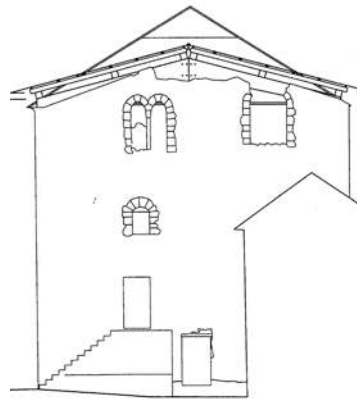
Drawing by Margherita Barberotti, Claudia Marchini, Anna Rosselli.



Drawing by Valentina Chioccoli, Valentina Marra.



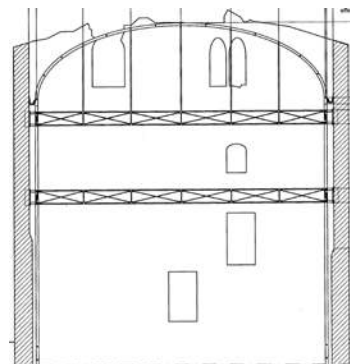
Drawing by Pasquale Stano.



Drawing by Maria Francesca Berta, Giovanna Turri.



Drawing by Paola Bongiorno, Monica De Giorgio.



Drawing by Elisa Ornis, Chiara Pasquale.

Fig. 3-8

Solutions for the new roof (shape, materials, building techniques).

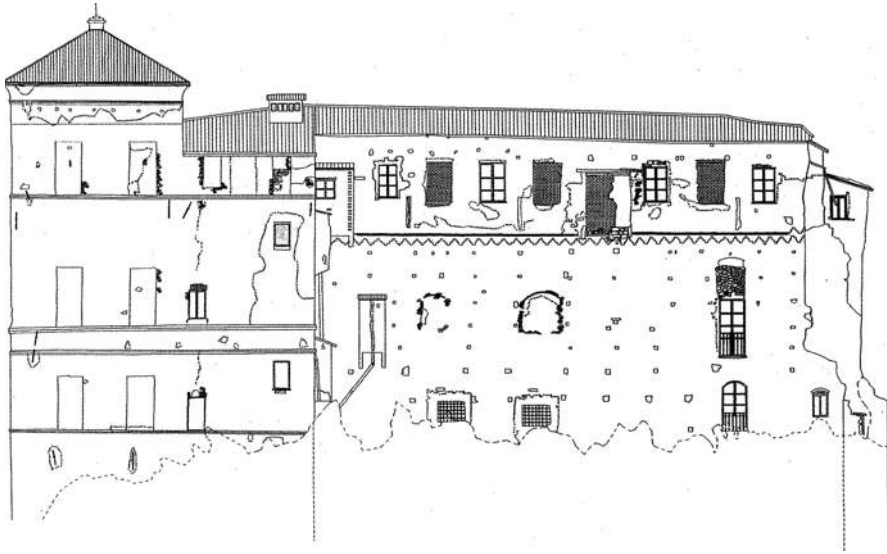


Fig. 9
Castle of Saliceto, low Piedmont, lacking tower (survey and drawings by M. Armellino & F. Poggio, Associated Architects).

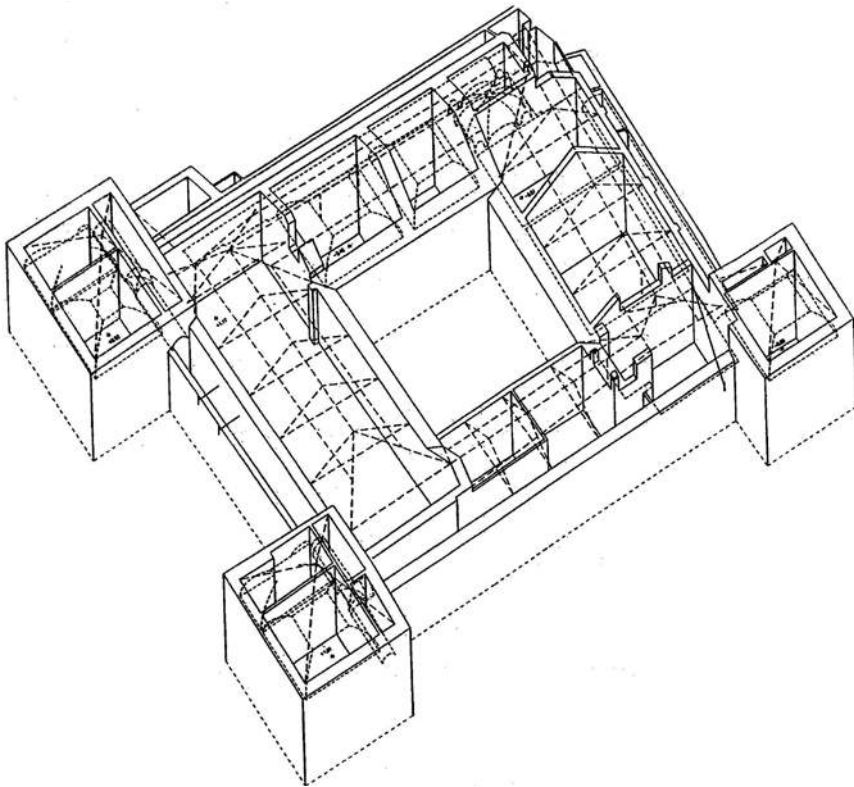
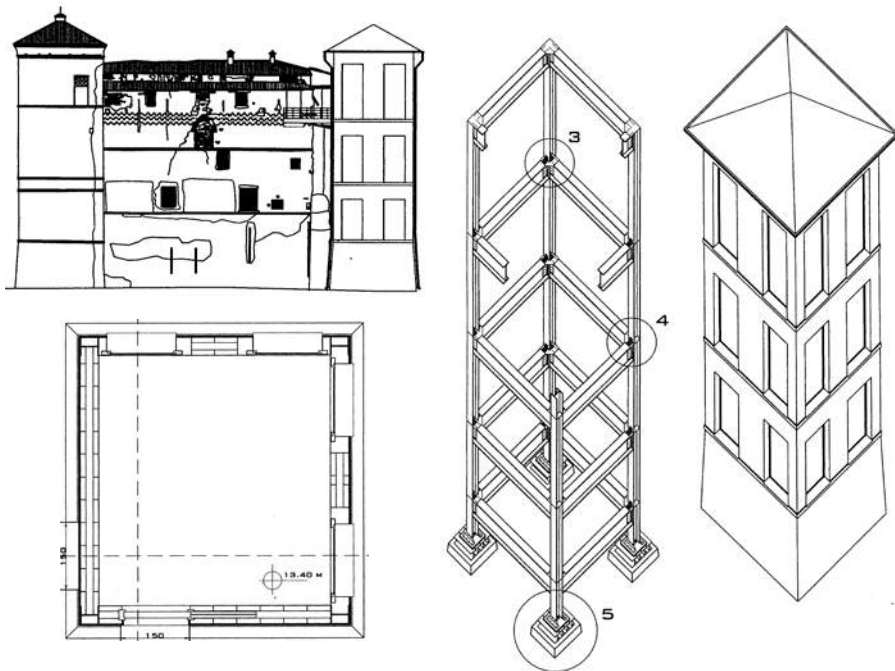
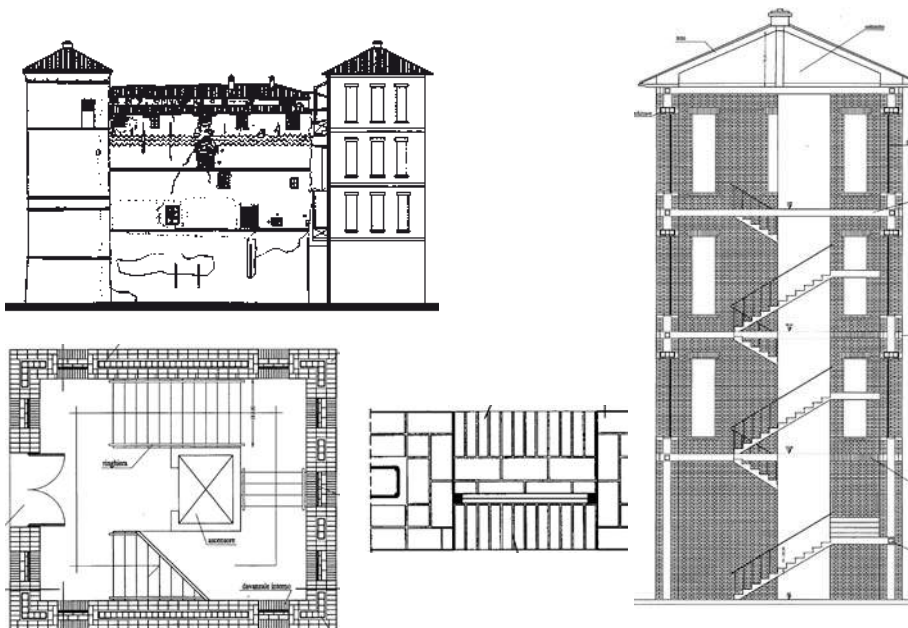


Fig. 10
Castle of Saliceto, axonometry of the upper floor.



Drawings by Margherita Barberotti, Claudia Marchini, Anna Rosselli.



Drawings by Paola Bongiorno, Monica De Giorgio.

Fig. 11-18

Solution for the new tower (shape, materials, load bearing structure, building techniques).

To acquire specific competences, more related to the ability to face built environment, the design process is carried on continuously verifying ideas and their consequences (mutual actions) on “sub-systems” or partial approaches.

Specifically, in relation to the assigned item, the students are asked to develop preliminary ideas and to immediately verify their consistency in relation to:

- Materials (traditional and innovative) they want to use and structural conceptions (new facing existing architecture)
- Industrial products and building market (research on new materials, their possibility, their performances and, again, the relation between tradition and innovation)
- Building techniques and connections between parts and elements (that means to deepen the language of detail, the significance of signs)
- Connection between new building and existing one/s (language, morphology, structural behaviour especially in the joints between old and new)
- Relation between building/s and environment (indoor comfort – use of renewable sources – energy saving, especially related to the new parts)
- Tools to evaluate environmental quality of the building
- Inclination to a future decay and maintenance strategy of parts and the whole building.

As the students are located at the second year of their curriculum, it is almost impossible to cover all the requested items without the help of experts: the dialogue with them (most of whom belong to the School of Architecture) is at the same time useful for the specific contents and – moreover – for the curiosity they are able to stimulate in the students and for the possibility to solve specific problems all together around a table.

Conditions and implications of architectural design

During the design experimentation – where the students are invited to hardly work in the class – the teachers try to clarify the essential conditions of the project:

- A prevision of the compatibility between the purposes of each project, among which specific importance is assigned to the conservation and safeguard of the existing fabric and, in the meantime, the rising up of standard quality (new quality facing sustainability).
- A clear consideration of specific conditions and constraints (relations with environmental and cultural context, way to use the fabric, choice of a new physical configuration, choice of technical operations).
- The specification of possible conflicts that could rise among needs for the new use, economic problems, technical constraints, legislative frame...
- The choice of the most suitable tools to solve all the problems before raised.

The way to capture the attention of the students towards these theoretical problems is the confrontation with small architectural problems to be solved: very often (but not at all times) the students, facing traditional massive architecture, are oriented towards the research of a different language, through the use of light, flexible, translucent materials. Remarking the difference, the students seem to be able to emphasize

existing qualities (material, expressive and environmental) and, on the other hand, the elegance of the design and of the assemblage of new parts.

In other cases, the students choose a traditional way to add new parts: in this case, they develop – beside the necessary knowledge of traditional building techniques to be drawn again for the new construction – the sensibility towards immaterial values.

Anyway, the research of an architectural quality at the scale of detail is expressed through technical choices, as finishing and treatment of surfaces, combination of different materials, design of shapes and way of junction between materials and parts.

For these reasons, also “swimming against the stream” in respect to actual tendencies that prefer diversification and specialisation, it has been assumed to come back to the foundations of the technological discipline, that in some way have been lost, especially regarding the correspondence between the idea, the concept and the way of building.

Few years ago Giancarlo De Carlo was writing: «decorative and constructive details leave the stage. We are no more able to connect correctly and with competence two or more different materials, neither to solve naturally and with elegance the transition from an horizontal or vertical plane to a sloped or curve one»⁵.

This important teaching has to be kept in mind especially flipping through the pages of the numerous contemporary architectural magazines that propose a lot of images; it is clear that the students – also thank to the use of digital technology – tend to rapidly use and elaborate them. The risk in the use of images is similar to the collection of a repertoire of shapes (false images) that could be proposed in different situations, out of context and loosing the real meaning of concept.

As a matter of fact this risk was been marked, prophetically, by Italo Calvino during a cycle of conferences held in the United States, concerning literature and culture. With regard to the «inflation of prefabricated images» (typical effect of the contemporary society, that is a society of images) he warned against the danger of the «recycle of the images used in a new context that changes its sense»⁶.

The attempt of the teacher, working together with the students, is to make them looking at their specific design within the complex relations between “intention” and “building convention”, “sign” and “practicality”, “image” and “intentional thought”, working preferably on architectural details, that express the way and the shape to join parts, elements and materials.

Certainly the practice of assembling, huge consequence in the building market of the last industrial revolution, often completely modified the design process, turning it from the work of an artisan into a section of a more complex working structure, that is progressively depriving itself of the poetic content and delegate to specialised enterprises the choose of one, among the possible, detailed project⁷.

However it still remains a wild space, also in the post-industrial society, to conceive architecture as a synthesis of shape (in the Aristotelian meaning), function and executive technique, in its turn conditioned by the material and the language.

Drawing and thinking to specific materials and elements, the students better appreciate contemporary architectural debate round about conservation vs. modification, massive vs. light, solid vs. void, natural vs. artificial, thick vs. dissolved, perpetual vs. ephemeral, not to be seen as terms in contradiction (results of the past vs. results of the “new”) but as complementary words⁸.

Notes

- 1 Gregotti V., *Architettura, tecnica, finalità*, Editori Laterza, Roma-Bari, 2002.
- 2 Ciribini G., *Tecnologia e progetto*, CELID, Torino, 1984.
- 3 See Rossi A., *L'analisi urbana e la progettazione architettonica*, Clup, Milano, 1970; Grassi G., *Il rapporto analisi-progetto*, in Rossi A., 1970; Boaga G., Giuffrè R., *Metodo e progetto*, Officina, Roma, 1975; Perego F. (a cura di), *Anastilosi. L'antico, il restauro, la città*, Laterza, Roma-Bari, 1987; Spagnesi G. (a cura di), *Esperienze di storia dell'architettura e di restauro*, Istituto della Enciclopedia Italiana, Firenze, 1987; Musso S., *Questioni di storia e restauro*, Alinea, Firenze, 1988; Torsello B.P., *La materia del restauro*, Marsilio, Venezia, 1988; Di Biase C. (a cura di), *Nuova complessità e progetto per la città esistente*, FrancoAngeli, Milano, 1989; Masiero R., Codello R. (a cura di), *Materia signata-haecceitas. Tra restauro e conservazione*, FrancoAngeli, Milano, 1990; Benvenuto E., Masiero R., *Sull'utilità e il danno della conservazione per il progetto*, in "Casabella", n. 579, 1991; Fontana C., *Recuperare. Le parole e le cose*, Alinea, Firenze, 1991.
- 4 Morin E., *Introduzione al pensiero complesso. Gli strumenti per affrontare la sfida della complessità (Introduction à la pensée complexe)*, Sperling&Kupfer, Milano, 1993 (tr.).
Morin E., *La testa ben fatta (La tête bien faite)*, Raffaello Cortina Editore, Milano, 2000 (tr.).
Morin E., *I sette saperi necessari all'educazione del futuro (Les sept savoirs nécessaires à l'éducation du futur)*, Raffaello Cortina Editore, Milano, 2001 (tr.).
- 5 De Carlo G., *Nelle città del mondo*, Marsilio, Venezia, 1995, pag. 22.
- 6 Calvino I., *Lezioni americane. Sei proposte per il nuovo millennio*, Mondadori, Milano, 1993, pag.107.
- 7 Campioli A., *Il contesto del progetto. Il costruire contemporaneo tra sperimentalismo high tech e diffusione delle tecniche industriali*, FrancoAngeli, Milano, 1993.
- 8 Tatano V., *Tre conversazioni*, in Sinopoli N., Tatano V. (a cura di), *Sulle tracce dell'innovazione. Tra tecniche e architettura*, FrancoAngeli, Milano, 2002, pp.54-57.

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**Learning pre-modern
Architectural and Construction Arts
at the Faculty of Architecture,
University of Rome Three**

Over a number of years, research released through a series of publications known as the *Manuali del recupero* ("*Restoration Manuals*", for Rome 1989, 1997; Città di Castello 1990, 1992, Palermo 1997), together with other parallel initiatives, has presented an integrated vision of the arts of pre-modern construction.

Just slightly more than 20 years ago, pre-modern building materials seemed untrustworthy to conservation and restoration professionals. The technology linked to these materials and the historic construction values themselves were perceived as a dying culture, unsuited not only to keeping pace with modern technological performance, but also inadvisable for conservation and restoration operations for historic built heritage.

In the conservation-restoration field at that time there was little attention to building techniques. Resorting to a somewhat drastic simplification, the restoration situation could be described as a pendulum oscillating between two extremes: on the theory side there was an ideological approach dominated (obsessed?) by the imperative of differentiating between the pre-existing *corpus* and contemporary revisions, while on the side of actual practice was a highly specialised scientific approach devoted to identifying the level and causes of deterioration and to developing hypermodern techniques of intervening on materials identified for "conservation".

In other words, as in other fields of human activity, restoration had seen the typical specialisation of the industrial era: on one side the conservation theoretician (not necessarily a materials expert) devoted to determining what had to be conserved in a given building and what could be manipulated; on the other side the hands-on specialist in the materials under restoration, due increasing respect according to his ability in developing still greater expertise in restoration techniques and knowledge of innovative conservation products.

By bringing materials, techniques and composite models of pre-modern construction to the forefront, the *Restoration Manuals* offered architectural conservation practitioners and restoration planners new instruments of awareness and procedures, refreshing an otherwise stagnant situation.

Over the twenty years since the first publication of the *manuali*, the rediscovery of the art of pre-modern building has developed in three directions, linked to three corresponding fields in the practice of architectural conservation. Satisfactory results were soon achieved in two, but not yet in the third and most important of these fields: the actual application of construction techniques.

The first result that was achieved can be identified as "inventory". Since the 1980s, the manuals have functioned successfully as directories of heritage assets to be preserved. Reflecting local construction features, each has contributed to development of an "antiquarian taste" for the language of each cultural area of construction. Wall construction, vaults, floors structures, roofs, doors and windows, flooring, fasteners and hardware, once relegated to the background of daily perception by the occupants of historic buildings, have been placed under the magnifying glass of accurate archi-

tectural documentation and are now recognised as heritage assets not to be lost. Even though there is still much to do in this field, today we can assert that there are only rare historic centres and communities where there are not sincere efforts to promote and capitalise on each instance of unique architectural identity.

Later, during the course of the 1990s, another important result was achieved in the systemisation of the collected knowledge. The principles and technological practices of pre-modern construction were re-evaluated and brought to the attention of technical planners as alternatives to the indiscriminate application of seismic standards inspired by the technology of reinforced concrete to all walled construction. The person of Antonino Giuffré was decisive to this accomplishment. Through his university classes and his campaigns with the "Association for Building Restoration" (*l'Associazione per il Recupero del Costruito*, or ARCo), he committed himself to updating and reaccrediting the new practices inspired by pre-modern techniques.

As to actually applying these practices: the results are still insufficient, today.

It is true that the application of traditional worksite techniques, which only a few decades ago could seem a traditionalist utopia, is today an expanding reality. Traditional techniques are not only applied by a few "enlightened" administrations, but are also rooted in the building industry, driven by a small but significant "niche" demand. A renaissance is under way in the production and installation of pre-modern finishes, and unlike a short time ago it is now not difficult to organise a worksite capable of furnishing materials and producing decent work in stone, brick, plaster, wood and traditional finishes.

But there is robust resistance to extending this renewal into the field of structural planning, a field in which modern industrial construction practices still prevail.

Indeed, it is well known that the relevant regulatory and legal responsibilities associated with undertaking an anti-seismic construction project induce conformity in techniques – a conformity that is more than understandable.

The actual norms in force, as well as new norms pending, guide planners down methodological pathways derived from the standards of steel reinforced concrete. They also delegate responsibility for accreditation of any restoration plans that deviate from the regulative norms to the professionals that sign off on the project. These professionals thus prefer to conform to the well-trod path of standards, calculations and planning as traced by the existing norms and supported by readily available software on the market.

It falls to university education to take the guiding role in forming the next generation of professionals soon to arrive on the market, creating awareness of conservation and restoration planning models that respect pre-modern construction. The crux of the problem is training those who contribute to the success of a restoration project and worksite, a problem whose solution has been much discussed (and little enacted).

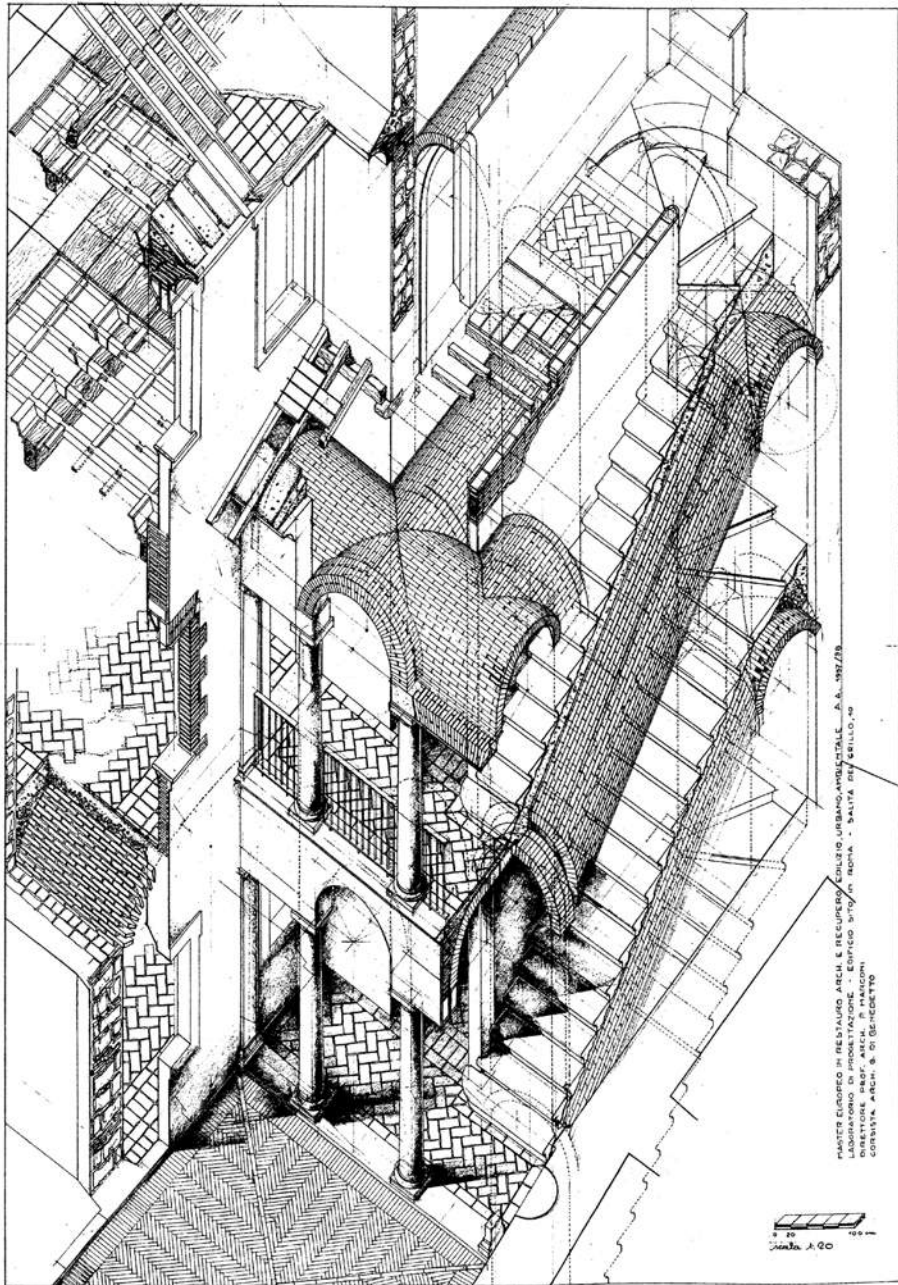


Fig. 1

Municipally-owned building at Number 10, Salita del Grillo.

This project, by G. Di Benedetto for the 1998-99 Planning Laboratory, postgraduate European Master's programme in Architectural Conservation and Structural, Urban and Landscape Restoration, proposes a reinterpretation of the courtyard-stairwell nexus in a 17th century roman house.

In this paper we wish to present the results of the teaching experience, still growing, first developed between 1995 and 2006 in the Faculty of Architecture at the University of Rome Three. This school, founded and inspired by Paolo Marconi, applies the art of pre-modern construction in all its ramifications, in both lessons from the podium and in applied laboratories. Over a period of 10 years, at least two generations of students have been fully immersed in planning in the style of pre-modern construction arts, in courses such as the 4th year *Restoration Laboratory*, the 5th year course *Restoration of Historic Structures*, the *Bachelor's Thesis* in the same discipline, and the *Planning Laboratory* which forms part of the *European Master's - Specialisation Programme in Architectural Conservation and Structural, Urban and Landscape Restoration* (recognised as a Master's level II programme since 2003).

Our faculty prepares students for the widest scope of planning activity possible, following the integrative principles of contemporary architecture. In the conservation discipline, apart from instruction promoting awareness of history, restoration theory, and techniques for analysing the condition of historic architecture, the desire is to propose an approach to historic architecture that lies in its "re-planning". This doesn't mean the standard development of restoration projects for existing buildings, which proceed from the compulsory analytical work to proposals for modifications to conserve the fabric and facilitate its use. Instead, the approach is to planning "from the foundations up" for historic buildings that don't exist, or more precisely, that no longer exist.

"Re-planning" is understood as a mode of retracing the conceptual and construction phases of a building, showing the formative moments in which the building evolved into a more complex organism. The students are taught to discriminate between the changes that are consistent with the structure's preceding history, i.e. contributing to a "normal state" for the building, from those transformations that have negatively impacted either the structure or the people who use it.

This educational model derives in part from the work of Saverio Muratori, in the 1960s and Gianfranco Caniggia, from 1983 to 1987, with the exercises they offered in re-planning Rome's urban fabric, in *Architectural Planning* courses at the Faculty of Architecture, University of Rome La Sapienza. These courses applied methods for reading and re-planning the formative and transformative phases of a structure: from the subdivision of lands for the initial installation of first building types, to the gradual choking of space, additions, incorporations and over-layered construction implemented to obtain building types suited to the changing urban context.

Following this model, students are encouraged to take ownership of the integrative method necessary for historic buildings, planning as a pre-modern architect would have done.

This approach affirms the principle that historic architectural heritage will be better conserved and restored by architects capable of expressing themselves in the language of pre-modern construction arts, rather than by their colleagues who lack expression in such language.

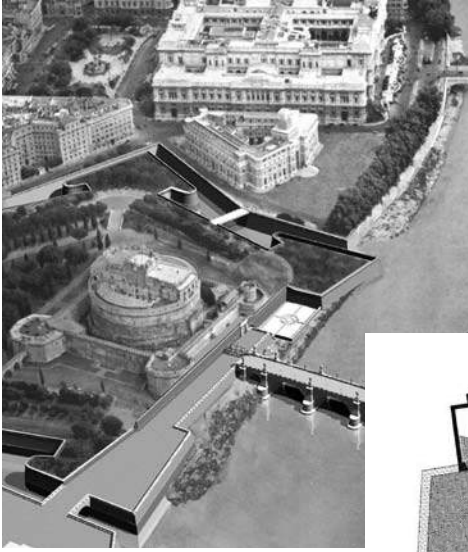


Fig. 2

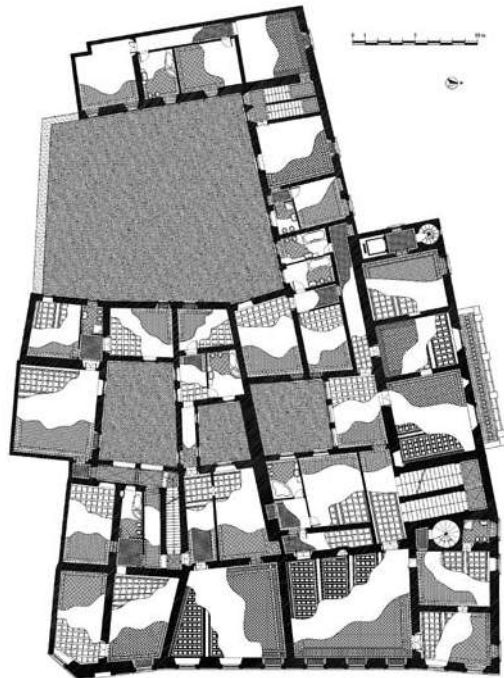


Fig. 3

Fig. 2-6

Restoration of areas at the foot of the Elio Bridge, Castle Sant'Angelo, Piazza di Ponte and Altoviti Palace.

Emilia Lacché's bachelor thesis project (2001-02), reconstructs the urban landscapes at both ends of Ponte Elio, an integral part of the Via Papalis. The project restores the original significance of Castel Sant'Angelo as Rome's fortress, once again isolated in its re-filled moat (fig 2). The project rebuilds Sangallo's bastions of Saint Peter and the church of St. John of the Florentines, returning the complex to its status following the 18th century works under Urban VIII. The return to original grade levels brings the doors by Giulio Buratti back to their original role in the frontal wall, instead of their incongruous current location below street level. At the opposite foot of the bridge, thesis projects by Livia Facchini and Daniela Matteucci (2002-03), accurately reconstruct the little known 16th century Altoviti Palace (fig 3, 4), demolished by the Tiber embankment work. It originally looked out on Piazza of Ponte St. Angelo, the apex of the first trident of streets built for the Renaissance urban plan, which led from the Rione Ponte to the Vatican (fig 5). The photomontage developed by Andrea Canale shows the Altoviti Palace reinserted in the modern context (fig 6).

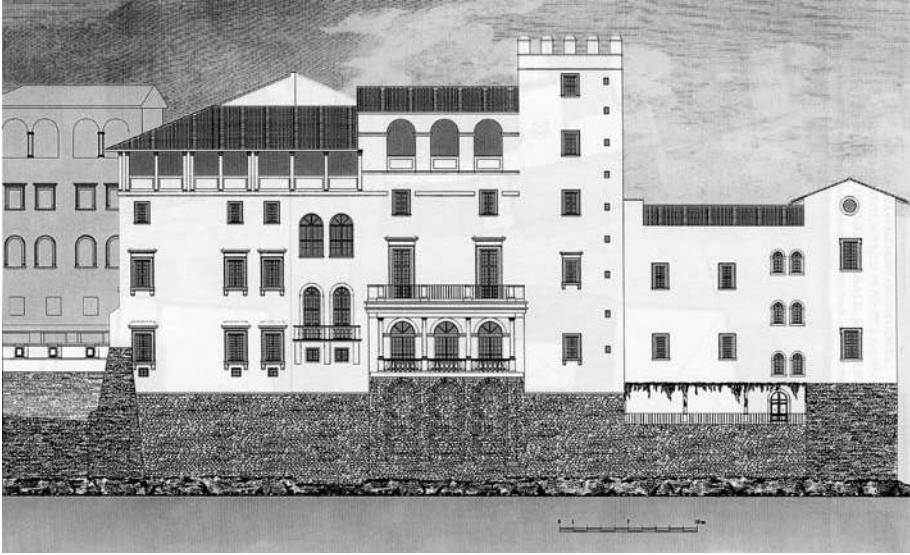


Fig. 4

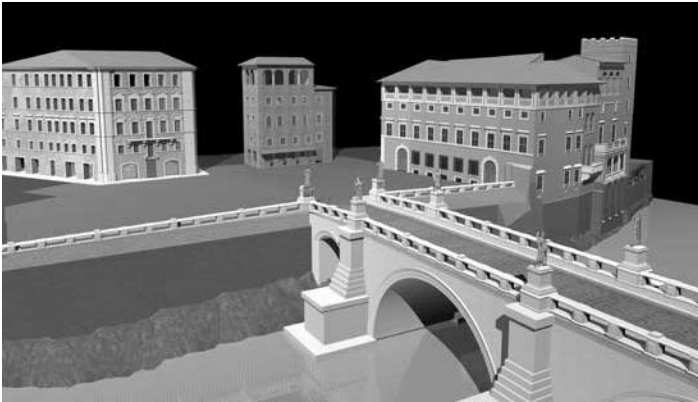


Fig. 5



Fig. 6

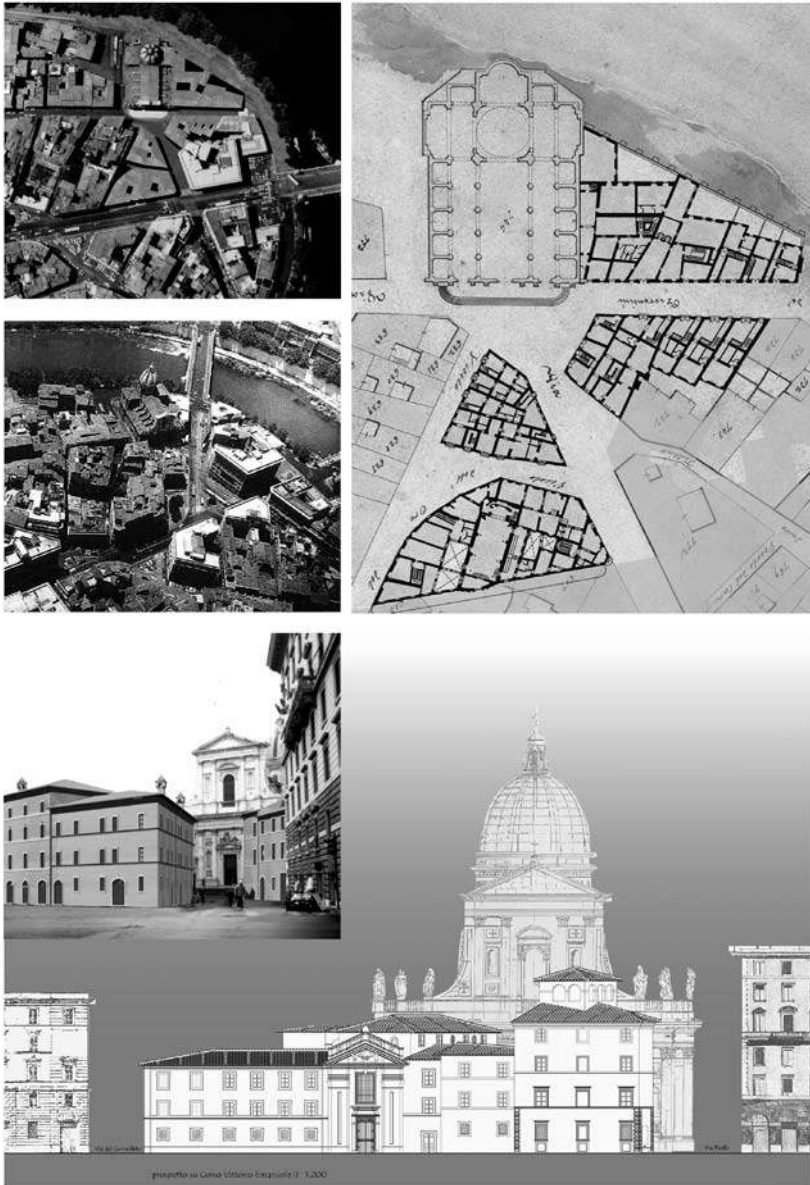
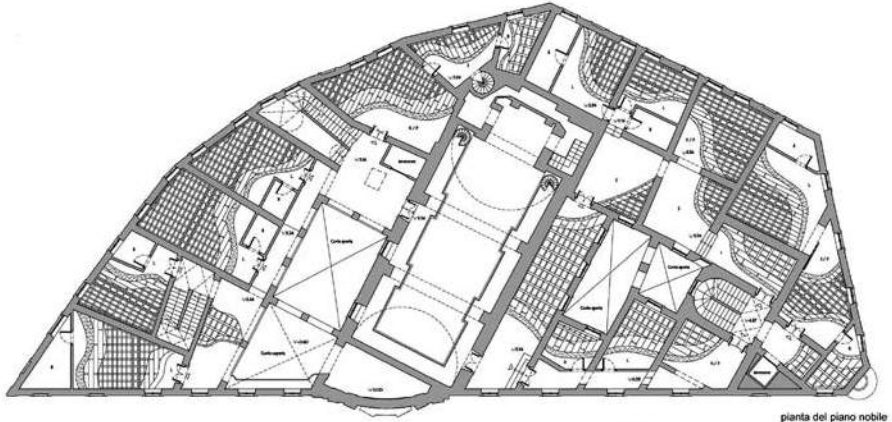


Fig. 7

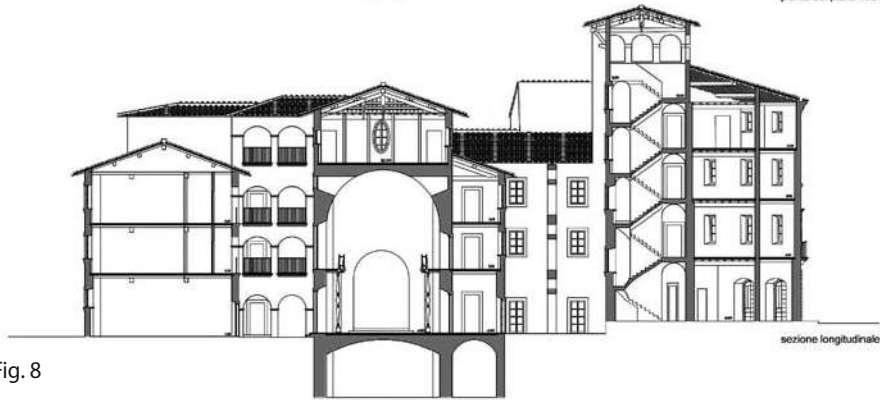
Fig. 7-9

Restoration of the Ponte trident.

The Ponte trident, the urban street plan uniting Castle Sant'Angelo with Via Giulia and St. John of the Florentines church, was disfigured in two phases: the laying out of Corso Vittorio Emanuele in 1888 and the construction of the Prince Amedeo Savoia Aosta bridge in 1938, which connected Corso Vittorio with a new tunnel under the Gianicolo Hill. Three projects (fig 7) recreate the 19th century street elevation (fig 8, Bachelor's thesis by Beatrice Frattali, 1999-2000), restore the Renaissance structure of the small triangular piazza that framed St. John of the Florentines (Bachelor's theses by Roberto Agrippino and Carlo Baffi, 2000-01), and reconstruct the city block setting of the same church (fig 9, Bachelor's theses by Marco Crisciotti and Andrea Leidi, 2000-01).



pianta del piano nobile



sezione longitudinale

Fig. 8



Fig. 9

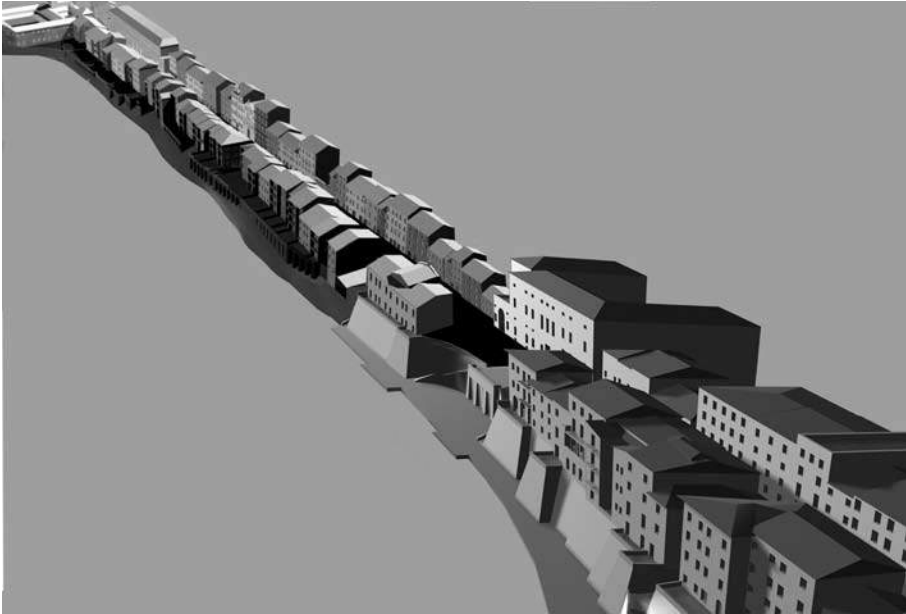


Fig. 10



Fig. 11



Fig. 12

Fig. 10-14

Restoration of Via della Lungara: reconstruction of the city blocks near the Tiber and Leonino Port.

The *Lungara*, the second *via nuova* under Giulio II, which corresponds to the location of via Giulia on the other river's bank, was reduced to a position below surrounding grade by the construction of the Tiber embankments, reduced in width along almost its entire length, and deprived of its frontage on the river. Bachelor's thesis projects by Ginevra Coppi and Simona Tonelli (2000-01), Morgana Biaggi and Cinzia Capitani (2001-02) propose the reinstatement of the original 12 metre street width, the reconstruction of the series of city blocks fronting on the Tiber and the port, as realised by Leone XII in 1827 (fig 10). The apartment blocks create a continuous and decorous urban frontage towards the street (fig 11) while presenting an animated but modest prospect towards the Tiber due to the loggia extensions and variable garden depths projecting towards the river (fig 12). The building techniques applied here are taken from the City of Rome "Restoration Manual" (fig 13, 14).

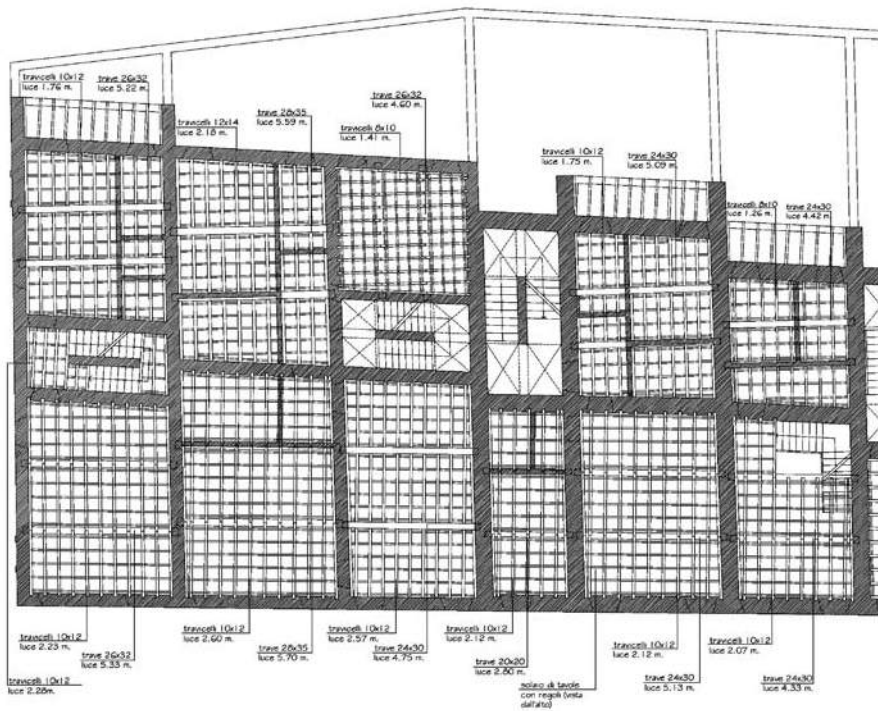


Fig. 13

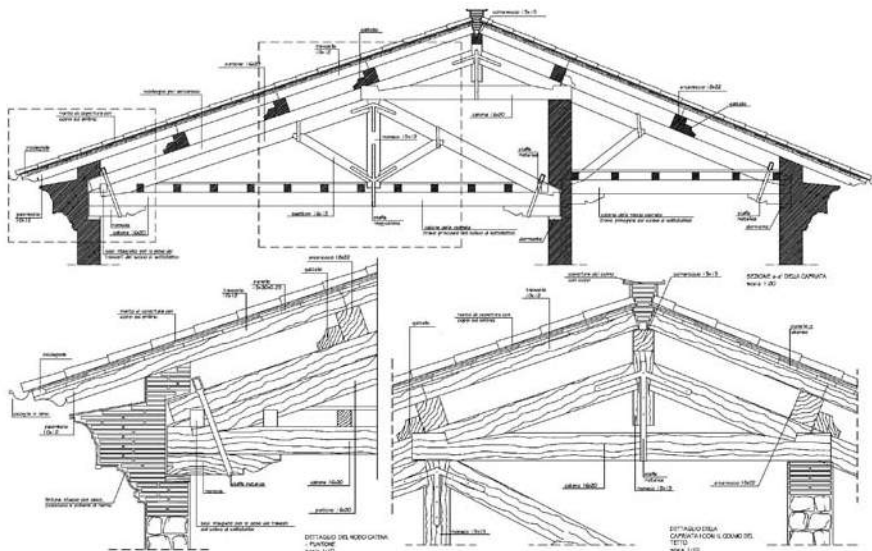


Fig. 14

The planning laboratories realise total immersion learning in the modes of planning and construction that formed the basis of the pre-modern city and its structures.

The first experiments in this type of learning proceeded in a more familiar manner, with the student choosing notable existing buildings (sometimes the subject of previous experience in another course), which they then subjected to a series of processes: ascertaining the state of conservation, analysis of structural integrity and deterioration, recognition of values, proposals for interventions, and finally an assembly of the total components of a restoration project.

It soon became apparent that this method could give positive results only through the form of a bachelor's degree thesis, for which the student is given time, support from teaching staff and the means necessary for an integrated experience, going through the complete procedure from analysis of on-site conditions to the final planning of details.

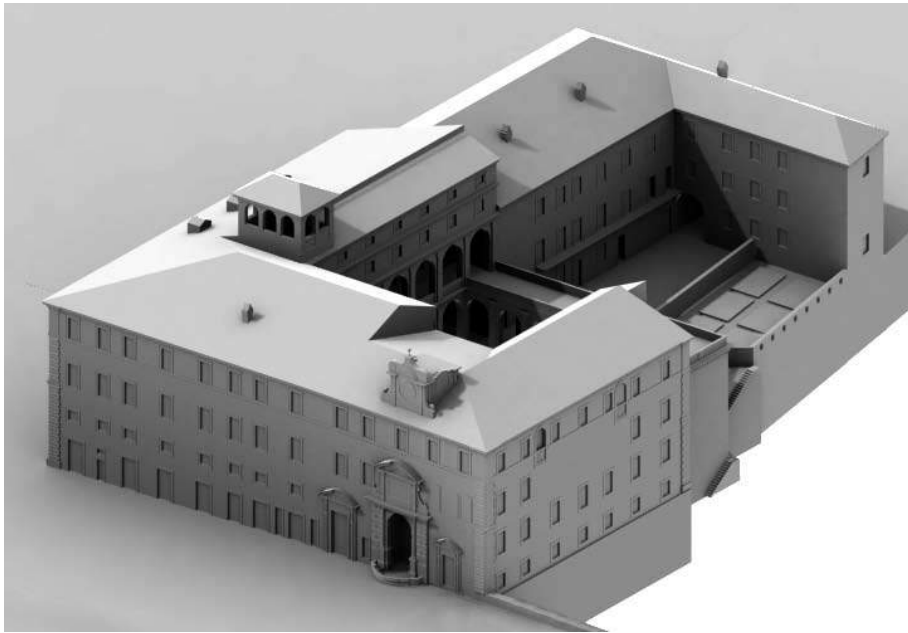


Fig. 15

Restoration of the *Cento Preti* hospice.

Constructed in 1587 by Domenico Fontana, under Sixtus V, the Beggars' Hospital marked the triple intersection of Via Giulia, Via dei Pettinari and the Sixtus Bridge, the obligatory crossing to Trastevere. The great fountain of the Acqua Paola, now located in Piazza Trilussa, had been located here since 1613 to mark the extremity of the Via Giulia prospective. With the construction of the Tiber embankment road the Hospital lost its riverside frontage and its suggestive link with the Sixtus Bridge. The bachelor's thesis project by Emanuela Mastrogiovanni (2001-02) restores the rapport between the Tiber and the bridge, reinstating the structural volumes, the porticoed courtyards and the progression of facades that opened towards the river. The great fountain also returns to its place (fig 15).

This body of time was not available in the smaller planning projects within the bachelor's level courses or in the planning laboratories of the master's level or post-graduate courses. The tendency of students to follow the traditional tracks of both their previous education and parallel courses (the sequence of analysis, evaluation, planning), inevitably led them to consume their entire time in analytical activities where they had already developed methodological confidence (bibliographic and documentary research, on-site verification of the documentation obtained, interpretation of modifications enacted over time, etc.).

The result was that the innovative planning that formed the actual goal and the novelty of the educational approach was being conducted hurriedly, along with only a simple application of restoration techniques to the building under study, without realising the true learning desired.

The change came about in the 1998 Master's programme, when it was proposed that the planning laboratory take on the theme of restoration planning for buildings that no longer existed, having been demolished in the course of the urban machinations that followed the selection of Rome as the new Capital of the Italian nation, in 1870.

The assigned teaching materials consist of maps showing the limits of the building, obtained from the land registers of the Pontifical State, and illustrative and descriptive sources brought to light during preparatory work by the teachers. Deeper research into historic documentation is not encouraged (nor is it prohibited). The students are obliged to take on the planning of the building "where-it-was, as-it-was", with the aid of suggestions by the teachers and with the help of a limited bibliography, of which the centre piece is the *Restoration Manual* of the City of Rome¹.

Along with comprehension of information from the archival sources, the repertoire of building elements offered by the *Restoration Manual* permits identification of the building features suited to each planning theme. Tutors guide the students in the choice of structural and architectural elements adapted to the purposes of the subject buildings and to its urban context. The programme teaches the students to carry out their exercises in a pre-modern architectural language that achieves principles of "suitability" in the elements chosen (ceilings, floors and decorations) for each level and room of the building.

The students are assisted in defining the "normal state" of the building, or the structural state that represents the most organic possible development, with rarely coincides with the state of original construction and even less to the state that would have existed prior to its final demolition, which usually represents a 150 year accumulation of highly fragmentary transformations and mismanagement of spaces and partitions. This approach provides experience through an on-the-job learning method, which instead of following the traditional analytical-inductive path (analysis by professional discipline - projects by discipline - final synthesis), follows a synthetic-deductive path (building as organism, inserted in an urban context - relationship of parts and architectural languages - choice of appropriate structural elements).

Starting from the city registry of 1824, from the *Libri delle case* (registry compilations of building plans), from documentation ordered during expropriations and from prints, photographs, and other archival documentation, students have been guided to recreate buildings and environments decimated by the 19th and 20th century eras of both extensive and localised demolitions.

The numerous students and graduates who have chosen this full immersion approach to planning “where-it-was, as-it-was” have gained confidence with the structural types of the historic city and have learned to exercise the language of the architectural profession in all its temporally stylistic variations, from early Renaissance to late Baroque.

They have learned the delicacy of modulating these languages according to the importance and the use of the building: church, grand house, multi-story apartment building or smaller side-by-side house.

The theme proposed has always included a group of buildings significant to the urban context. Integrated planning has developed the building shell in step with the cohort structure.

Adjustments to the building function and operating plants to bring the historic building up-to-date have not been excluded but have never been given overall prevalence within the projects.

The segments of the city that have been “reconstructed” in this mode demonstrate a high degree of integration of urban planning with the forms and technological languages of pre-modern construction arts.

Drawing from this experience, we would like to use the illustrations that follow to highlight several bachelors’ theses dealing with segments of built heritage in the historic centre of the capital city, many of which are thematically linked along a *General restoration project for the Tiber River embankments*². This assemblage of work brings into discussion the doubtful and incomplete layout of the so-called “*lungotevere*”, the riverside ways that sacrificed important neighbourhoods of Papal Rome, while leaving others isolated and humiliated behind the imposing relief of their embanked roads.

Notes

1 University of Rome Three, Faculty of Architecture, Academic Year 2002-2003

European Master’s – Postgraduate Specialisation in *Architectural Conservation and Structural, Urban and Landscape Restoration*

Planning Laboratory Programme

Project theme:

The project consists of urban restoration planning for one of the most important renaissance achievements in Rome - Via Giulia.

The setting of the central portion of the Pope Giulio II’s street was first devastated by the 19th century construction of the massive walls along the Tiber, and the street was then directly damaged by the urban plan of 1931. These interventions, neither of which was ever com-

pleted, brought about the present distorted layout, with interruptions in the historic street, poor connections to the river, and disgraceful modern shambles that are incompatible with Rome's urban decorum.

The scope of the restoration project is to reconstitute the lost city segment, with some necessary adaptations, but with rigorous respect for the architectural language of Roman tradition and with techniques drawn from pre-modern construction arts.

The exercise consists of two phases: the first consists of the urban restoration of the whole through the reintegration of the frontages of Via Giulia, the second consists of the reconstruction of demolished building volumes.

The potential planning themes for the completion of the second project phase are:

- The block between Via Giulia and Moretta and Malpasso Lanes
- One or both of the city blocks that once existed in the area presently falling between Via Giulia, Via delle Prigioni, Via Bravaria and Via St. Eligio.
- Reconstruction of the original frontage along the Tiber delimited by the river itself and the major roadway of Via Bravaria, Largo Perosi and Via di S. Eligio.

The architectural project will be laid out according to guidelines to be established with the teaching staff, based on documentation and figurative material either provided or referenced by the course. The structural planning, building techniques, materials, building elements and finishes will be developed in a manner adapted to each situation, from the basis of the types proposed by the *Restoration Manual* of the City of Rome, and from other bibliographic references and extant architecture indicated in the course of the programme.

Project phases and products.

- A. General urban plan (recommended scale 1:500), including elevations, ground level plan and plan of volumes, correlated with the immediate context.
- B. Architectural and interior space plans for a single part of the complex. Drawings will be in 1:100 scale and will present the ground and first floors, roof structure, elevations and a longitudinal section, including stairwell.
- C. Construction planning: the drawings may present the entirety (recommended scale 1:50) or use scales closer to actual dimension to present significant details of the object, architectural features and construction details of the proposed project, presented according to standards of the *Restoration Manual*. Isometric cross-sections and perspective drawings are appreciated.

The drawings, which can equally be prepared by hand or with computer assistance, will be presented in A2 format (42 x 59.4 cm) preferably in vertical orientation, on lined paper (40.6 x 58 cm grid) with a 3 cm. high title area at the base reading: "Università di Roma Tre - Facoltà di Architettura - Anno accademico 2002-2003 - Master europeo - Corso di perfezionamento in restauro architettonico e recupero edilizio urbano ambientale - Laboratorio di Progettazione, student name".

Required texts:

P.A. Frutaz, *Le piante di Roma*, Salomone-Staderini, Rome 1962

Guide rionali di Roma, *Ponte - IV*, Palombi, Rome 1981

L. Salerno, L. Spezzaferro, M. Tafuri, *Via Giulia*, Staderini, Rome 1973

Associazione Artistica fra i Cultori di Architettura, *Architettura minore in Italia. Roma, Crudo*, Turin 1929; (reprint Colombo 1990)

M.G. Corsini, *Tessuto e tipi edilizi a Roma*, Kappa, Rome 1998

G.L. Maffei, L. Bascià, P. Carlotti, *La casa romana*, Marsilio, Venice 2000

P.M. Letarouilly, *édifices de Rome moderne ...*, Paris 1840-57 (reprint IGDA 1994)

G. Valadier, *L'architettura pratica ... I - V*, Roma 1828-39 (reprint Sapere 1992)

Manuale del recupero di Città di Castello, DEI, Rome 1992

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- 2 Cf. *Roma e il suo fiume*, supplemento "Giornale dell'Arte", April 2002; F. Giovanetti, M. Zampilli, in "Ricerche di storia dell'arte", 89/2006, pp 46-66.

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**The Restoration Teaching
in the Laboratories of the Second Year
at the Faculty of Civil Architecture
of the Politecnico di Milano**

What And Why

The aim of the *Laboratories of architectural restoration* (in Italian "*Laboratorio di restauro architettonico*") of the second year at the Faculty of Civil Architecture of Politecnico di Milano is to awaken students of architecture, above all, to the respect of the old architectures like cultural heritage. The students who frequent the Laboratory (compulsory in the formative *iter*) start to study restoration of the existing building with all the knowledge offered them during the first year by the 3 basic courses of historical building conservation, that is *Fondamenti di conservazione dell'Edilizia storica*.

The general few information that the students have on this argument made very difficult to explain all the topics of the conservation of historical buildings. The activity of the one-year Laboratories is subdivided in *ex cathedra* lessons, in practices and, always, in direct surveys of ancient cities and building yards. All Laboratories, of 120 hours each, are integrated by two one-year thirty hour courses of Topography and Monumental architecture survey.

The Laboratories start from a rereading of the specifically cultural bases of "restoration" and "conservation", showing and explaining historical examples of "restoration" (starting from the case of the Carcassonne fortress, restored by Viollet Le Duc, to the one of Broletto in Brescia, restored by Paolo Marconi) and highlighting the aporia or difficulties that those restoration works showed and revealed about, especially, the authenticity, or truth, of the monument.

This first part of the course involves the critical reading of the restoration *iter* that, in the period between the Eighth and Ninth Centuries, was characterized by the different points of view and opposed theories of conservation architects (followers of Ruskin's idea) and restorers (followers of Viollet-Le-Duc's idea). These arguments are able to make comprehensible the cultural fundamentals of the School represented by



Fig. 1

Laboratory of architectural restoration, a.a. 2006-2007, prof. G. Guarisco

Villa Tedeschi, Parma. Rectified image of north façade.

Students: Giovanni Bonaretti, Tommaso Brighenti, Claudio Cini, Andrea Dell'Acqua, Stefano Sala.

these Laboratories. This phrase is not painless, because, very often, the information given by mass media shows restoration as a “return to an original splendour”, and the students have difficulty in assuming a critical position about it.

This first step in the Laboratory is fundamental for funding the basis for the subsequent practice. The critical commentary of the theory of the conservation fathers, like Hugo, Ruskin, Boito and, especially, Riegl, analysed with the contemporary misrepresenting works made by European and national restorers (D’ Andrade, Rubbiani, Beltrami, etc.), and, in the same time, the study of the scientific and cultural development (i.e. the technological innovation, the scientific discovery, and the changed analyses method of the artistic historiography), represent the students training cornerstone, because give the necessary conceptual basis for thinking the design on the historical constructions and their reuse.

Some words, like “authenticity”, “complexity”, “peculiarity”, “uniqueness”, “singularity”, etc, offer the key for understanding the design phase of practice.

In the Laboratories (there are two Laboratories at the Degree Course of Architecture of Construction and six at the Degree Course in Science of Architecture) the students have to face up to the case of research defined by the professors. The practice topics are decided with small groups of students who submit the example to the professor.

Rarely, the professor himself suggests only one practice topic for all students (small ancient cities in Lombardia, disused big industrial units, etc.). In both cases the students have to design a conservation project direct to obtain a compatible reuse and the respect of existing construction.



Fig. 2

Laboratory of architectural restoration, a.a. 2004-2005, prof. G. Guarisco

Molino del Cantone, Monza, (MI)

From the top: Rectified image; material decay survey; mapping of the conservation project on the south façade.

Students: Paolo Antonioli, Oriano Arrobbio, Alessio Saporiti, Laura Tosi.

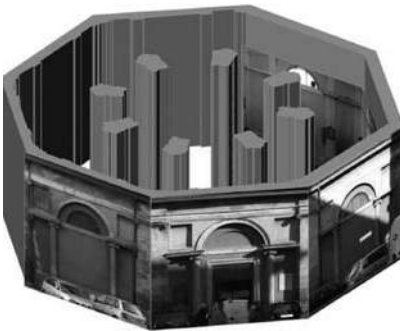
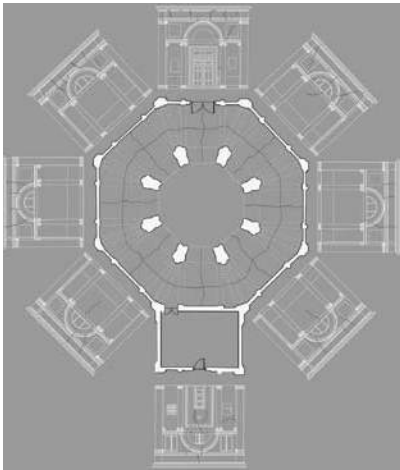
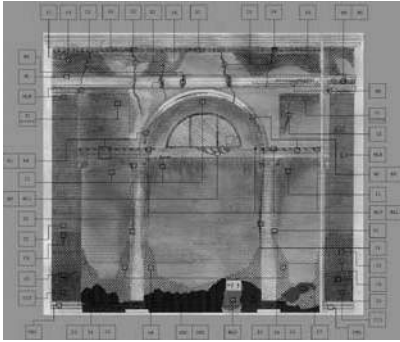


Fig. 3
 Laboratory of architectural restoration, a.a. 2006-2007, prof. N. Lombardini
 From the top: material decay survey; structural decay survey; 3D model and rectified images of the façades.
 Students: Carolina Lucaccioni, Giorgia Menozzi, Silvia Peragine.

The fact - not negligible - that the students in the second year may find some difficulties in dealing with the Laboratory, especially in relation to the information offered by the Faculty during the first year of study, has involved several "adjustments" in the years (the Faculty of Architecture at Bovisa was one of the first Faculties in Italy to pursue the teaching autonomy from 2001).

In fact, while in the old regulation the courses of restoration were taught in the fourth year and students already knew the required information, the teaching at the second year has caused new difficulties due to the poor students capacity of researching and studying. At the beginning of the Laboratories of the second year, the difficulties of the teachers concern the same problems: the insufficient preparation of the students, especially on the geometrical building survey and on the drawing; both represent the actual difficulties of this teaching, not for making design, but almost for facing up the conservation topics.

The aim of the Laboratories is not to give a definitive skill on conservation, but they are intended (especially if we consider that in the Laurea specialistica exists, in the first and second year, the Restoration Laboratories that permit the student to prepare the second level degree thesis) to increase the students' interest and sensibility on the complicated problem of the building conservation design, also because it is impossible to solve the same complex problem with a teaching "marred" by information that cannot (and must not) be good now and forever (the "curse" of the manuals ...). That is, lessons, practices, surveys, help both a much more in-depth consciousness of the existent constructions and a listening and reading the building material in front of the transformation of the city and of the territory, in relationship with a good reuse

design that can join together both the necessity of transformation and conservation. This kind of design have to adjust according to the places, to the local constructive system, to the identity of the site, through a deep consideration on the cultural continuity and respecting the differences between ancient and new construction. The course target is to increase the attention of the students on the “conservation”, which is not the end of the project, because in the same time the student has to think the “designed of new” in a sustainable, autonomous, compatible and clearly recognizable way.

Who

Eight professors teach in the Restoration Laboratories during the second year. Two of them teach in the Degree Course of Architecture of Construction and six are employed in the Degree Course of the Science of Architecture. Two of them are Associate professors, four are Assistant professor and the others are architect whose skill has been obtained with a PhD course or Master course (in Italian *Scuola di Specializzazione*).

Also the most of permanent employed (four on six) obtained the PhD. All the teachers are forty or fifty years old and they belong to the Dipartimento di Progettazione dell'Architettura or to the Dipartimento di Ingegneria strutturale at the Politecnico di Milano. Some of them are involved, also, in the administrative job for the Faculty.

Gregers Algreen-Ussing

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**Summary of Educational Programme
in Transformation and Conservation
at Department 5;
Architecture, Space, Habitation
and Building Culture and of Research
at the Institute of Building Culture**

Focus on training in architectural conservation and transformation has increased in keeping with the economic and political role of historical building culture, in Denmark as well as internationally.

In addition it is estimated that around 80% of future building activity in Europe will take place in historic surroundings. These figures include not only officially designated heritage like castles and manor houses but also buildings, or areas, that constitute spaces of financial or narrative value or that are in some other way open for further development and new utilization.

Studies in Building Culture

In the field entitled *Bevaring af den Arkitektoniske Kulturarv* -conservation of architectural heritage- this resulted in a tripartite model for training.

It consists of a 3-year Bachelors degree covering the fundamental elements of architecture and common to the entire college. At the next level, this is supplemented by a 2-year specialized Masters-degree entitled *Studier i Bygningskultur*- Building Culture Studies – at Department 5 under Professor Tage Lyneborg. Finally there is the option of a post-graduate Masters, entitled *Nordisk Master i Arkitektonisk Kulturarv* – Nordic Postgraduate Masters in Architectural Heritage, established as a joint venture with the Schools of Architecture in Århus, Denmark; Gothenburg, Sweden; Oslo, Norway and Helsinki, Finland.

Bachelor Level

During the 3-year Bachelor-course the foundations are laid for a basic architectural understanding of architecture and its history. The first year features exercises aimed at documentation and interpretation of a given site, area or building. This includes analysis of material, design and construction and a development of the ability to observe architectural space. The next year brings project-based studies focusing on additions to, or transformations of, a given building or area. The final degree project always involves a building-historical study, a programme and a project for an addition to an existing building or a building complex. Instruction is mostly provided on an individual basis at the drawing-board, supplemented by courses and quarterly presentations.

Masters Level

At the Masters level, the basic skills from the previous level enable the student to begin specialization. The students put together their own two-year course using a personal study plan based on a theme defined by their department. The first semester this may include analyses of building-historical conditions or perhaps study at a level more advanced than that of the Bachelor programme. The department offers assistance on a consultancy-basis in the fields of conservation theory, building archaeology, analytic documentation and archival studies in connection with the projects selected by each individual student. The second semester is intended for practical experience, where those students who display the greatest interest and talent are encouraged to seek work in architects' offices that work with historic building culture. To this end, the department has begun building a network which currently includes a number of the most prominent studios working in the field. It is the experience of the department

that work-experience is the best introduction possible to both the field as a whole and its practice. The following semesters will often deal with more complicated projects including projects of a higher level of complexity, including a more thorough analysis of a particular historical building or area, or of a particular problematic that the students have encountered during their work experience.

Nordic Postgraduate Masters in Architectural Heritage

The Postgraduate Masters constitutes the third part of the training in the field of conservation. It aims to provide commercially oriented further education for graduates with 5 years of experience. 6 experienced participants from each Nordic country: Denmark, Sweden, Finland, and Norway work with current issues gleaned from the participants' own practice and are juxtapose them with new, specifically situated research from the field of conservation brought to the programme by lecturers. In this way the Postgraduate Masters seeks to develop practical competencies providing participants with an insight into the delicate balance between the procurement of specialist skills and process-oriented leadership required to practice in this field.

Research in Transformation and Restoration

Research work in this field is the responsibility of the *Department of Building Culture* (Head of Institute Professor Carsten Juul-Christiansen) under the heading of *Transformation and Conservation*. The department also covers the research fields of *Theory and History of Architecture and Theory and Design*. The three fields are part of a joint framework with departmental research constituting the basis for an overall training programme which naturally also involves the consultancy work at Department 5.

Research in this field is described in 4 overall themes:

Building Culture and Architectural Transformation

Building Culture: Ideological Conservation Perspectives

Building Culture and Building-Archaeological Documentation

Building Culture: Materials, Construction, and Conservation

Furthermore, there are PhD-stipends affiliated with this field of research. Each year a nationwide conservation seminar is held in cooperation with the other Danish School of Architecture in Aarhus and the Danish Ministry for Culture attracting 2-300 people from throughout the field. Finally, the Institute hosted a Nordic Conference from April 13-15 entitled *Building Archaeology Past, Present and Future*, with 170 participants from throughout Scandinavia.

At this point the initiatives described are open perspectives to be concretized by specific teaching and research in the coming years.

1. What and Why?

Building Culture Studies aims to reinterpret cultural values as signifying potentials in a future-oriented architectural perspective; simultaneously conserving and renewing

building culture. This applies to all 3 levels of scale: town, area and building. Studies focus on the historical expressions and interpretations of architectural expressions and their locally situated significances, in order to form the base of a contemporary future-oriented architectural articulation.

80% of all future building activity in Europe will take place within existing built environments. At the same time environmental demands on construction and habitation are creating an increasing focus on maintenance, conservation and civic involvement, both when it comes to monumental architecture and the more ordinary. Historical building culture is of essential significance in this perspective.

2. How?

Based on specific analysis of the regional articulations of building culture and their interference with the global integration of architectural disciplines, studies create a historical, constructive, and aesthetic platform for architectural formulations of local construction, remodelling and conservation. This aim develops student projects in a double twist through concrete studies of architectural theory and history on one hand and practical appropriation of urban- and building cultural characteristics in specific locations. This interplay between scientific analysis and architectural insight into localities is key. Architectural student projects are also situated abroad in cooperation with local institutions, expanding students' knowledge of local building culture with the appropriation of understanding of economic, political and social aspects through interdisciplinary cooperation.

3. Who?

The architectural teaching staff is made up of equal numbers of practicing architects and researchers. Specific interdisciplinary skills are procured through specialized courses and lectures. Specialists are involved based on the central theme underlying the coursework: possible foci include specific levels of scale or their interrelation, like town, area or building, and/or historical or industrial building culture.

4. When and to What Extent?

During the first 3 years students focus on gaining a fundamental understanding of building culture and its history. This level is obligatory for the entire school. Afterwards, during the 2-year Masters-level period, students may focus on more specific topics, including built heritage. Coursework is project-based, with students drafting individual projects and receiving the most significant part of instruction through individual discussions with their teacher. Lectures – obligatory at Bachelor-level and optional at Masters-level – supplement individual instruction. The last two years may include a period of studio work-experience. Quarterly project-presentations are held viva-voce, and after five years the students select their own degree project to complete their education.

Silo-conversion in Nordhavn Harbour, Copenhagen

Church, Hotel and Second-hand Bookshop.

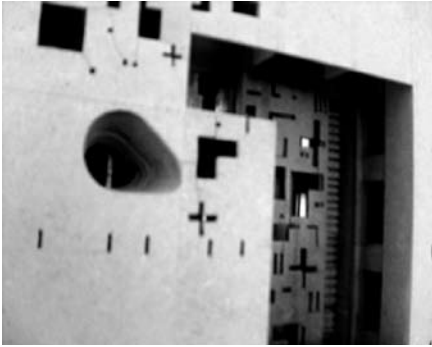
*4th-year Student Peter Rasmussen,
Royal Danish Academy of Fine Arts, School of Architecture,
Department 5*

The starting point for this assignment was the notion of the silo as – in every sense – an empty vessel; empty of its contents, of specific meaning, of daily life: Abandoned at the edge of the city in an area with a low degree of organisation that is echoed in the durable concrete structure with extremely limited interchange with the surrounding world.

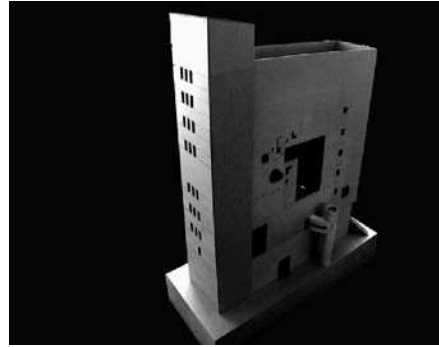
This was the background for a multi-programme intervention featuring three different parts indicating different possible developments for the silo and the harbour area, outlining new times, new potentialities in this continuously changing post-industrial space.



Photo-collage

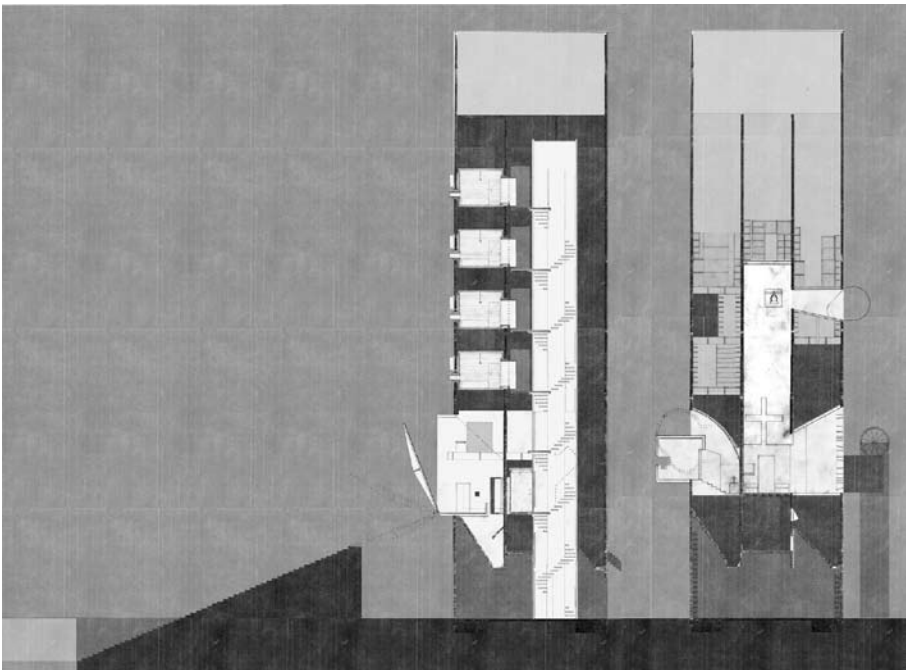


Detail, Facade.



Model

The three different co-existing programmes address different potential levels of organisation of the now-empty space: the used – bookshop utilizes the building at a lower organisational level than the existing one, the hotel creates a higher level while the church slots into the existing organizational level of the monumental concrete structure:



Two Sections (showing clockwise from top left: hotel, bookshop, church).

Jo Coenen

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The Netherlands

The Art of Blending

Introduction

This lecture is based on my varied experience of thirty years as a practicing architect, as a lecturer or professor at many different universities in Western Europe, as a supervisor and master planner in various cities, as the *Rijksbouwmeester* – the Chief Government Architect – and last but not least, on the basis of my most recent experience in Dutch building practice and as Professor of Restoration in the Faculty of Architecture at Delft University of Technology.

The word 'restoration' probably calls to mind old churches, castles or monumental buildings from the beginning of the twentieth century (fig. 1, 2). In my opinion, however, the academic field of Restoration should not simply cover individual architectural objects, but also urban construction and landscape development in general. The primary objective is no longer to build the new but rather to add to the existing structures. This requires analysis, identification and the study of the existing object, city or landscape silhouette and the adoption of a position. As we travel through Western Europe, we see all too clearly that the efforts devoted to individual objects are just pin-pricks compared with the rapid, irreversible advance of the rash of new buildings that has spread over our old European cultural landscape since 1950, like a juggernaut destroying everything in its path. While we work, painstakingly and in meticulous detail, on the restoration of countless historic monuments, huge fires rage uncontrollably beyond our horizons.

It is to be wished that the same close attention we pay to individual objects in an attempt to preserve their historical value would also be devoted to the numerous interventions involving all our historical inner cities and to the almost unnoticed transformations of historical vistas and silhouettes of landscapes, cities and villages which come under daily fire (fig. 3). The academic world is the last and very appropriate bastion facing these problems squarely, analysing them thoroughly and coming up with adequate solutions. To talk of art, of the art of blending, in this bulwark of rationalism may seem like an act of naive foolhardiness; nevertheless, I regard this as the necessary starting point for my task of preserving this precious discipline and transforming it here and there.

Observations and considerations

Our discipline is at a crossroads, and this means that a fundamental expansion of its boundaries is urgently required. I estimate two-thirds of all forthcoming building tasks will consist of transformation at various scale levels. They are part of the far-reaching changes occurring in the practice of the profession as a whole. These changes result from such factors as increases in scale, foreign competition, globalisation and specialisation, including the rise of architectural recruitment agencies.

Furthermore we need to bridge an alleged gap in the field of architecture and town planning, namely the distinction between the architect responsible for new building work and the architect responsible for restoration: traditionally, the former is considered superior to the latter. This distinction does not accord with reality. Think of recent examples of the reuse of old buildings such as *Tate Modern* in London, designed by the architects Herzog and De Meuron, or the *Meelfabriek* (Flour Mill) in Leiden by Peter Zumthor (fig. 4).



Fig. 1
Our Lady's Church, Breda, Netherlands, (15th century).



Fig. 2
Zonnestraal, Hilversum, Netherlands, (architect Jan Duiker, 1925), restoration architects Hubert-Jan Henket and Wessel de Jonge, 1994-2002.



Fig. 3
Recent transformations of the Dutch landscape by the construction of 'Vinex' suburbs.



Fig. 4
Flour Mill, Leiden, Netherlands, restoration architect Peter Zumthor.

The discipline of Restoration needs a new, comprehensive research initiative embracing all levels: from the mortar used in bricklaying and its salt content to the changing landscape and the historical growth of the silhouettes of towns and villages. I think that there is no better place in which to work on the 'development of the art of architecture,' on one's sensitivity to architecture, than in the field of restoration understood in its widest sense. Close observation and analysis of monuments – including cities and landscapes¹ – reveal essential architectonic facts that are still valid. We have to ensure that the historical aspect will become a more fully-fledged part of the planning process.

We need to preserve architecture from the strong erosion by which it is currently threatened. The nearly soulless buildings that disfigure our landscape and our cities are due, among other things, to the economy, the high rate of construction and the associated building techniques for which craftsmanship is no longer necessary, and to the current building regulations and standardisation (fig. 5). Consequently new buildings are less elegant than old ones. Even architects are slowly forgetting some of the basic elements of their discipline. Decorative details that are now considered out of date such as pilasters, pediments and cornices, compositional handwork, symmetry and asymmetry, playing with materials and roof silhouettes, the segmentation of facades, proportion and scale are not just signs of craftsmanship but also add to the elegance of a building. Modern and above all present-day architecture has difficulty dealing with these attributes. Architects like Bedaux or Peutz, still possess this sensitivity that is based on their intensive study of the past (fig. 6).

In other words, there is a big gap in the field of architecture that can logically and effectively be filled by contributions from the discipline of Restoration. This will ultimately allow architecture to rediscover its position as an independent discipline with a key role to play in society and at the same time will increase the aesthetic content of architecture and town planning – two highly necessary issues.



Fig. 5
Standardization in current
architecture.



Fig. 6
Town Hall, Heerlen, Netherlands,
architect Frits P.J. Peutz, 1936-1942.

The art of blending

Some insights take a long time to develop. For architects one such insight is the understanding that ideas and things are seldom created *ex nihilo* – the understanding that you yourself and the things you make are part of a larger whole in space and time. Although a search for novelty is of great importance in the development of a discipline, too much concentration on novelty tends to lead to concepts that either ultimately prove not to be new at all, that date very quickly or that turn out to be misconceptions. It is a strange paradox: the newest things seem to age fastest.

Perhaps we must stop to think in terms of a dichotomy between old and new. According to the Argentine author Jorge Luis Borges, this distinction is illusory: 'They therefore claim that the preservation of this world is a continuous creation and that the words "preserve" and "create", which are contradictions here below, are synonyms in heaven.'² This way of thinking leads to the art of blending.

By this we reach an important, liberating insight. Instead of seeing past, present and future as separate entities, in our discipline it makes much more sense to relate them continually to one another. This opens up a new, open way of looking at space and time, creates new possibilities and implies new working methods. The insight of connection and continuity demands a scientific attitude involving constant alternation between design and research at all scale levels, of the building, of the city and of the landscape. The resulting designs then become the product of a questioning attitude. All phenomena that present themselves are worthy of study: what is required is not exclusion but inclusion. By way of example, look at the impressive oeuvre of Robert Venturi and Denise Scott Brown. Their in-depth studies of apparently unimportant spatial phenomena, such as Las Vegas, have enriched the vocabulary of modern architecture and substantially extended our thinking about such matters.³

Taking this idea one stage further, we know that buildings, urban neighbourhoods and towns can be more easily understood as structures that are stratified in time rather than as static objects. The development of this concept has its own lineage. John Ruskin (1819-1900) introduced the idea of the continuous history of the built environment with the same means. In his analysis for instance of the Via Appia, he showed how the same stones from the old road were used to create a series of new human histories without leading to the complete disappearance of the road. This English viewpoint on restoration starts from an awareness of the simultaneous presence of change and permanence. The studies of urban transformations performed by the Venetian school (e.g. Muratori, Rossi and Aymonino) starting in the 1970s, but also by Gregotti and Tafuri and currently by Ilaria Valente⁴, have had a major influence on thinking in this field – including my own thinking. Attention to typology, the morphology of the site and social developments makes the growth of cities much easier to understand.⁵ In Fortier's atlas of Paris⁶, it is shown with reference to Rue Réamur, Rue du Faubourg and Montmartre how one layer was skilfully superimposed on another in a tailor-made pattern.

While any new edifice has an existence of its own, it must at the same time fit in with existing structures. (fig. 7) Even the most revolutionary of architects cannot disregard appropriateness. The search for 'fit' is a central preoccupation of our profession. It requires a sensitivity that has to be developed by designing, asking questions, studying and returning to the design. The concept of appropriateness is best expressed by the words of Charles Eames: '[...] but in addition they must provide the trainee with a questioning approach and a nose for appropriateness; a concern for quality which



Fig. 7
Napels, Italy: continual meta-
morphosis of the existing [p.
36].

will help him through the immeasurable relationships [which he will have to resolve in order to arrive at the design].⁷

Analysis and remedy

The necessary scientific frame of reference compels me to a rearrangement of the content of the discipline into three main domains: Modification, at scale levels extending from material to building, Intervention from the level of the single building to the building complex and Transformation extending from the level of the building complex to the silhouette of the town or village as a whole and to the entire landscape.⁸

Modification

The discipline of Modification is of technical origin and builds on classical restoration work. It concerns the study of the 'bricks and mortar' of the building – or today, of the concrete and steel structures at the core of a building. The authenticity of the building, depending largely on the choice of materials and colours, the method of construction and the detailing, is at stake here. This discipline gives students an invaluable introduction to the architectonic effect of materials and colours, and – another important issue – their aging. Research in the archives is important to determine which template needs to be used for the restoration: is the oldest look always the most authentic, or do the most recent additions also have an independent right to existence within the structure as a whole?

New questions are also arising at the level of modification of historic buildings in connection with climate-control systems, which on their implementation are often found to have far-reaching consequences for other structural components. Comparable questions are being raised in connection with interventions in monumental public buildings in the interests of protection in relation to terrorist threats and art theft.

I sometimes think that some of our historic buildings are surrounded with too much attention. Some churches are completely repointed, for example. In the Netherlands for instance the need for such an approach is steadily diminishing since the entire country has already been entirely restored: the remaining work consists of just a pin-prick here and there.(fig. 8) Moreover, this is an illustration of our incapacity to accept an aging world: our profession too is not immune to that all-pervasive 'fore-



Fig. 8
Golden imperial crown on Westertoren [1638], Amsterdam, Netherlands.



Fig. 9
Teylers Museum, Haarlem, Netherlands, renovation architect Hubert-Jan Henket, 1993-2002.

er young' feeling. Of course, the attention must stay, but I do not believe that we can make this task the core of our profession: Modification gains much of its significance from structural interventions involving an overlap with higher scale levels. In other words, we are in the process of overstepping the boundaries between modification and intervention, a blending of these two sub-disciplines.

Intervention

The core task in the field of Intervention is the exploration of the possibilities of making old buildings fit for new uses. An architect may see unsuspected possibilities for new use of space in old buildings, which can lead to stratification of buildings very similar to the stratification of cities. This more imaginative approach can sometimes conflict with the more evaluative attitude of the heritage specialist, whose main concern is with determining the value of a building from a cultural-history perspective. This is where the domain of [®]MIT has an interface with ethics: how far can we allow ourselves to go with intervention, or must there be more emphasis on maintenance or reconstruction?

There is no better way of learning how to understand architecture than by studying old buildings. In the process, you will come across familiar facts like the division of buildings into a constant part (the support) and a variable part (the infill), which we recognise in the theories of John Habraken⁹, the work of Louis Kahn and more recently in the master plan for the redevelopment of the industrial monument the *Meelfabriek* (the Flour Mill) in Leiden by Peter Zumthor. Inventive clients also support this principle by commissioning the development of 'solids' where a distinction is made between the permanent part of a building and the changeable part. (fig. 9)

Serious architectonic knowledge of the facade, the surface that intermediates between the interior and the city, can be developed very effectively by a study of old buildings. This is an excellent way of learning about such things as proportions, window openings, the effect of depth, detailing, facade coping, the silhouette of a building, the possible methods of supporting it and so on.

Intervention also needs innovative expert systems based on research into the reuse of buildings that extends beyond the limits of the individual project. Systematic study of the conversion of offices is required and also of related topics like the redevelopment of churches and industrial premises, and the possibilities of adapting old residential complexes such as gallery flats to meet modern requirements of accessibility, comfort and, last but not least, architectonic allure.

A method that lends itself very specifically in the field of intervention is that of 'learning by design'. Despite the opportunities currently offered by photos, computer-aided graphics and rendering, the importance of drawing by hand must not be underestimated. In the first place it is known that drawing and colouring an object or space makes it possible to remember it much more intensely than a single visit. I believe that repetition and '*imitation*' are still essential in learning a profession. Secondly it has been found that new associations can arise while one is sketching and colouring, thus allowing the design process to progress in unexpected ways. The sketches produced by Le Corbusier provide a fantastic illustration of this. Moreover, the sketch is a very effective means of determining the colour and materials mix of a building – one of the architect's most exacting tasks. While the colours in the sketch may not seem an exact representation of reality, they do give the architect precisely the right feel for the atmosphere, colours, texture and degree of plasticity of the design. For example, the drawings of Mario Ridolfi¹⁰, a post-War Italian architect, reveal an almost obsessive attempt to capture the materials and texture of the building on paper. Finally, the sketch gives a picture of the search for and the complexity of the design process and hence of the architecture. The sketch can be used as a basis for discussion with others, including the principal of the various steps in the design process. Computer graphics or a rendering can naturally be useful at the end of the design process, but serve no function during that process; indeed, they can even be counterproductive. These modern presentation modes suggest that no problems arise during the process of creation, and that is far from the case. While architecture aims at synthesis, this does not generally occur, either in space, time or mentally, at the wave of a wand. (fig. 10)



Fig. 10
Sketch Bonnefantenmuseum,
Maastricht, Netherlands, Aldo
Rossi, 1989.

Transformation

When I speak of transformation in this context, I think in the first place of the enormous changes that take place in the silhouettes of towns and villages of the Netherlands. Right next to the farms with their characteristic roofs, villages and church spires are high-rise buildings put up in the 1960s and brand new industrial estates with their little white boxes. The landscape has lost its balance. Does that actually matter? After all, everything is subject to change. I have already made a plea for a stratified approach to urban planning. Cannot the events I have just been describing be regarded as a slightly different form of stratification? If we look at pictures of Paris before, during and after Haussmann's interventions, we can hardly believe our eyes.¹¹ Of course the mixture of building excavations and old-world village charm that the Dutch painter Jongkind encountered when he arrived in Paris in 1846 had to make way for the grandeur of a modern metropolis.¹² Is the negative judgement about the changes currently taking place in the Netherlands just sentimentality, or have I got hold of something that really bothers people? Is the constant harping on the unique tradition of the seventeenth-century Dutch landscape painters as an argument for maintaining the *status quo* not a bit hypocritical, showing a lack of sense for modern reality? I don't think so. We are overwhelmed by the changes winding their way throughout the Netherlands. No one can control these changes – and no one (apart from a few smart land speculators) is particularly happy about them in the long run. No one has really examined the issue of how the old and the new can co-exist. All parties concerned, from the national and local authorities to the various interest groups, take a sectoral view of physical planning; there is no overall direction. The result is a disjointed public space without direction. And because the Netherlands is so small, so flat and so vulnerable, we cannot allow this state of affairs to continue. Making people aware of this problem is the first step towards solving it.

The solutions will be largely found in structural planning, based on an in-depth vision of this part of Europe and developed by interdisciplinary investigation. The concept of the Delta Metropolis offers a great many starting points; it demands physical-planning proposals.¹³ In any plan of this kind, a balance needs to be found between making clear choices and leaving options open. The complexity of this interplay between decision-making and flexibility means that various alternative plans will have to be tried out. What we need is plans in which the alleged tension between idealism and realism is resolved. Do not forget that realism needs a touch of idealism, just as idealism is no good without a healthy dose of realism. The history of the development of the Netherlands is an excellent example of what I am talking about. For example, it has been claimed that the concentric system of canals built in Amsterdam in the seventeenth century was based on Plato's description of the ideal state of Atlantis.¹⁴ Be this as it may, this plan has led to one of the most beautiful cities in the world. To turn idealism into realism is something for the long view. For example, the current work of Rem Koolhaas can be seen as a continuation of the exceptionally idealistic plans for a New Babylon drawn up by Constant Nieuwenhuis in the 1960s. (fig. 11 and 12) And is the present large-scale development of the South Axis in Amsterdam with the new Amsterdam South/WTC main-line station not simply a continuation of Berlage's Plan South from 1917?

A number of topics in the field of Transformation demand a systematic multidisciplinary approach within the previously mentioned expert system. In any case one of

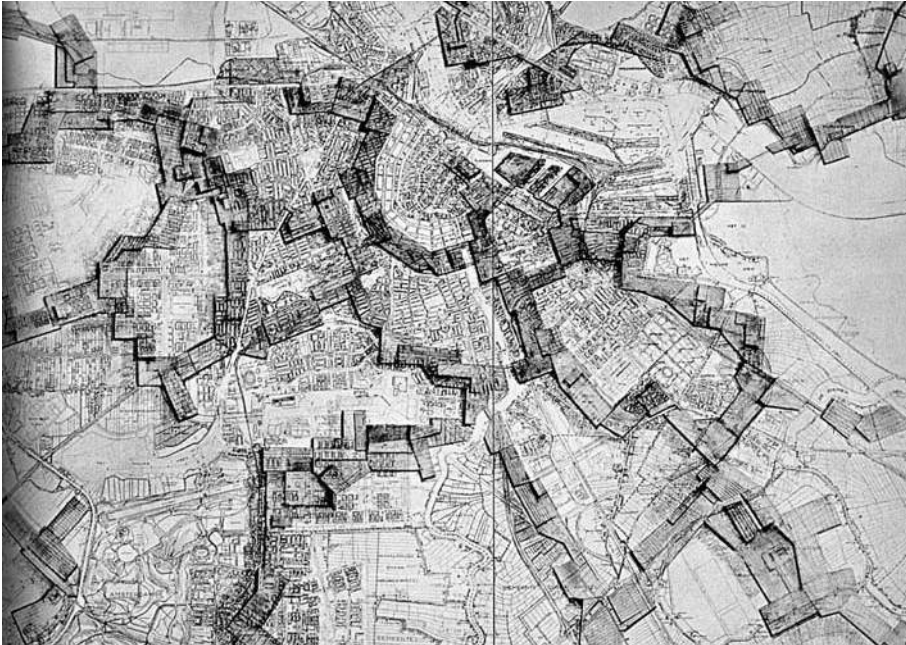


Fig. 11
New Babylon, Constant Nieuwenhuis.



Fig. 12
Delta metropolis, Rem Koolhaas.

these is the filling in of the content of the Delta Metropolis concept. A great deal of in-depth analysis is needed to develop a vision that will allow us to put into place the various pieces of this jigsaw puzzle such as plans for infrastructure, nature and water, industry parks and office locations, residential areas and possibly big new shopping complexes situated outside the towns, leisure and entertainment areas and multi-purpose facilities. While such a large-scale plan naturally involves a lot of conflicting claims, so that many choices will have to be made before the overall concept can be translated into an open set of land-use plan proposals, if successful this undertaking could inject a great deal of cohesion and synergy.

Conclusion

In our built environment there are two forces that exert a major influence on the way we perceive the existing urban fabric and buildings. One is appreciation of our heritage and the feeling of security we get from the past, and the other is the force of change that generates feelings of expectation, astonishment and hope. Especially during the past few decades, we have been subjected to an unprecedented dynamic process of social and cultural change due to such factors as digitalisation, globalisation, commercialisation, individualisation, mass migration and the like. This is associated with an enormous need for novelty and at the same time with a strong need for security and the growth of organisations dedicated to the preservation of our heritage. I see countless cases where these two trends of dynamic change and conservation, collide violently with one another, while if they worked together they could produce magnificent results. It is important to think in terms of both transformation and continuity, to think about our existing building stock, and of how new strains can be successfully grafted on to this. Love of good style is to be found in all generations, and we certainly have an enormous need for it in the architecture of today. Where do we stand now? Why do we get a sinking feeling when people ask us about the city of the future? This was a topic we could discuss with such confidence in the first half of the previous century. New technologies were seen as an enormous challenge, an enormous opportunity then. Now we are ashamed of them and for that purpose we look beyond the confines of the Netherlands. Our own self-confidence in what we make has evaporated, and by way of overreaction we want to preserve everything by spraying a thin film of plastic over it. The tendency to restore monuments to perfection is almost compulsive nowadays though we know that this attempted escape from time will never succeed in the long run. We can achieve a better, more relaxed attitude by enlarging the assignment. What we really need is not conservation at any cost, but vital reuse, like that of the stones of the *Via Appia* that have been reused in countless configurations but through which the entire history of the road continues to resound.

Notes

1. Wouter Reh & Clemens Steenberg, *Sea of land*, Amsterdam 2005.
2. Jorge Luis Borges, *The history of eternity*, 1953.
3. Robert Venturi & Denise Scott Brown, *Learning from Las Vegas. The forgotten symbolism of architectural form*, Cambridge 1972.
4. Ilaria Valente wrote about the genealogy of the tradition of urban analysis in Italy in the following publications: 'Per una critica degli studi sulla morfologia urbana in Italia', *Quaderni del Dipartimento di Progettazione dell'Architettura*, nr. 4, 1987, Milan, p. 63-64; 'Morfologia urbana. Una nota bibliografica', *Urbanistica*, nr. 82, February 1986, p. 96-97 and 'Continuité et crise: les études sur la morphologie urbaine en Italie (1959-1975)', Pierre Merlin et al. (ed.) in: *AA.VV., Morphologie urbaine et parcellaire*, Presses Universitaires de Vincennes, Saint-Denis 1988, p. 75-80.
5. 'The Grounds of typologie', *Casabella* (1985) nr. 509/510.
6. Bruno Fortier, *La métropole imaginaire; un atlas de Paris*, Paris 1989.
7. Charles Eames, 'Designing a Lota', *Architectural Design*, London, September 1966.

8. These three, MIT, form the body of the discipline of Restoration[®] for which the[®]MIT Research Centre of the Faculty of Architecture of Delft Technical University was established at the beginning of 2006 and of which Jo Coenen is the scientific director.
9. Koos Bosma, Dorine van Hoogstraten & Martijn Vos, *Housing for the Millions, John Habraken and the SAR (1960-2000)*, Rotterdam 2000; Stichting Fonds voor beeldende kunsten vormgeving en bouwkunst, *John Habraken Oeuvreprijs 1996 Architectuur*, Amsterdam 1996.
10. Jo Coenen, 'Een kwestie van stijl', *Forum voor Architectuur en daarmee verbonden kunsten*, 1984-1985, nr. 2.
11. Pierre Pinon, *Atlas du Paris haussmannien: la ville en héritage du Second Empire à nos jours*, Paris 2002.
12. John Sillevius et al, *Johan Barthold Jongkind*, Zwolle 2003.
13. See e.g.: *Tracés 14, Deltametropool, un manifeste*, Lausanne 2003. This includes explanations of the plans of Luigi Snozzi and Rem Koolhaas for the Delta Metropolis, as organized by the then Chief Architect of the Dutch government, Jo Coenen.
14. Boudewijn Bakker, 'Het geometrisch ideaal en de Amsterdamse grachtengordel', *Raster* 81 (1998).

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**Project-centered,
Construction-centered Design
in the Training of Architecture Students**

The architect designs and builds architecture and this is what his education supposedly prepares him to do. It indicates the instruments and methods, teaches him the history; it explains the reasons and illustrates the relationships between intention and practice; it trains him with repeated exercises. As a rule, it does all this with the "project" at the center of the training program, as it is undoubtedly the central focus of his activity as an architect, the means whereby he can best express his skills, and in the best of cases, even communicate his "feelings".

All too often, however, this concentration on the project is not followed by an equal concentration on "construction". On the one hand, the "project" only goes as far as the themes of composition, problems linked to figurative aspects, spatial articulation and functional organization. On the other, the direct experience of building as observation, study and analysis of architecture, carried out first hand, does not seem to be taken into serious consideration by the educational exercises. In many cases, the schools have gone so far as to exclude even the initial experiences of contact with the building site like those provided by architectural "surveying" and "drawing from life".

This induces the student to view this part of his instruction and experience with undue detachment, whereas it marks the transition from concept to the reality, from an imagined building to a concrete one, and thus he will fail to fully understand that the project is only the "instrument", albeit indispensable, to achieve what is, or should be, his true goal: construction.

The art of composition obfuscates the "art of building" and leads the student to think that the aspects of the project having to do with technology, the science and techniques of construction, installation and calculation, are merely instrumental, merely "practical" problems that can be solved by technical means. Almost as if their contribution served "only" to secure the *firmitas* or other "collateral" aspects, while the primary goal is the "significance" of the architectural work.

Not to mention his disinterest for the construction site, that leads him to underrate the importance of the actual construction work in erecting the building and which, in turn, leads to other areas of neglect: towards the world of production, even only in terms of materials and products; towards the role of the enterprise, in terms of equipment, instruments and organization of the work; towards the role and value of the artisan, in relation to potential and practices.

Then there is, inevitably, an indifference in the project exercise, to the entire body of legislative requirements.

The result is an unjustifiable separation between related areas of knowledge, all of which are proper to the activity of the architect, that should instead be integrated, even as they are presented in the course programs, because they are essential for the application of a method as elements in every project design that has construction as its goal.

There is another important gap in the student's training: analysis of the construction project report. Yet it is just on this aspect that the students concentrate most of their expectations, almost immediately transformed into disappointments and then into criticisms as, from the study to the profession, they are forced to measure their lack of preparation when it comes to knowing how to build, as opposed to knowing how to draw up a project. They lack the indispensable knowledge of how to take those first steps at a construction site and turn their education into practical experience.

In the schools, in short, we see a widespread inattention towards architecture as real buildings, perhaps capable of lasting centuries just thanks to the principles that have governed the project design and guided the succeeding stages of construction. It is as if the schools had become indifferent to the outcome of the project and, what is worse, no longer care about the destiny of the architectures, once they have been built, aside from the effect they may have on the clients, users and public for which they were built, or whether they correspond to the needs and expectations they had expressed in one way or another. What starts as neglect of the themes of construction and maintenance, soon leads to neglect of the ways in which a building can face and withstand the test of time.

In this way, the school encourages the wholly unrealistic belief that the passage of the project through the worksite, to become a building, is a linear, one-way process. As if the project could deal with and resolve every question and already contained in itself all the answers and the solutions to all the questions and problems that the worksite always poses. As if the worksite "time" could not add a depth capable of prompting changes with respect to the project choices made, revealing itself in this way to be an "ally of the architect". In short, the development of this entire step is left out and the student has no way of knowing how much it is based on the interpretation of the project documents, an interpretation in which the architect, the client and the construction company all participate. No one ever seems to remember that the worksite is where important decisions are made, with respect to the timing, order, methods and procedures of construction, that must be measured against the often unruly pace of the works and affect the outcome in substantial as much as in formal terms. Affecting the consistency and thus the "durability" of the work.

Anyone who practices the architect's profession knows very well, however, that this is a path riddled with obstacles, with a tremendous flow of traffic both ways, where spot decisions often have to be made in response to unforeseen situations, requiring reconsideration and changes that may have major effects on the forecasts, causing the architects, designers and project managers any number of problems.

Neglecting or even only underrating the role of the worksite gives the student the mistaken impression that once the project has been completed it can, indeed must, remain immune to change and alteration, crystallized in the "form" that the architect has given it, as if it were only the brilliant expression of an idea.

On the other hand, there are many who believe that the originality of a building does not reside in its concrete realization, but in the project drawn up by its architect. From this it follows that "old", for a building, is that which perpetuates "its design" through the continuous destruction and renewal of the perishable parts. In this way it should be possible to "repair and reconstruct" a building without losing its uniqueness, and to "complete or rebuild" it would be "theoretically" the only possible response capable of doing justice to all the commonplaces connected with the subject of restoration. On the practical plane "the only way", indicated to us by the history of architecture.

By attributing the originality of a work of architecture to the project designed by "its" architect, we have begun to cultivate the idea of "originality" targeted on the "norm", recognizable through the evidence provided by instruments tested in the "interpretation of a city": the values of permanence and immutability of the ancient city have become concrete, leading to the definition of a type model that has then

induced us to list “exactly what is unalterable, what is alterable and what is new to introduce in the ancient organism”. We have gone so far as to believe that the realization could be repeated more or less faithfully; to replace masonry, woodwork, finishing, up to the limit of being able to “reconstruct entire lost buildings”, as if it were enough to repeat “one more time” a model already repeated in the past and known with “sufficient” accuracy.

The distraction towards architecture as constructed reality, legacy also of the opposition to that domination of the constructive aspects over the principles of composition that widely ruled architectural culture in the 19th century, has caused a number of shortcomings that affect the overall training of the architect.

It is, indeed, only the direct experience of building that enables the architect to fully perceive the spatial qualities of a building, its relationship with the light, how it fits into the environment. This is what educates us to recognize materials, and the different methods of use, and enables us to understand how a structure “works”, the techniques used to build it and the reasoning behind its calculations. This is what enables us to grasp the effects in real life of the principles that, at the time, guided our project choices, and allows us to evaluate them. Moving between motivation and outcome, ideas and material responses, knowing and doing, we grasp how time is “the soul of architecture”, because it is indispensable to perceive and “experience” it in its spatial articulation. The work lives in time and carries its indelible signs: over all else, that experience reminds us that it is the physical presence of a building, its being *here and now*, that is the foundation of architecture. That makes it, among other things, the primary and irreplaceable source to study history and with respect to which every other source becomes “hearsay”. It is the given, precisely, that “distinguishes” the History of Architecture.

No representation is sufficient, nothing can replace direct experience. We have to go ourselves, we have to be included, become and feel part and measure of the architectural organism, we must ourselves “move inside it”, all the rest is “instructive, necessary in practice to our intellectual stimulation”, but is a mere allusion and preparation to the time in which, we ourselves will “live the spaces” with our entirety and full understanding.

The lack of familiarity with the actual act of building creates gaps in all the disciplines, but it is more obvious and more apparent during restoration, and thus when it is effectively put into practice.

When it comes to restoration, direct building experience, and everything that goes with it, is indispensable. The direction of study is reversed: it does not go from the drawing to the product, from back from the study of the existing building. The first aspect and center of attention is the building, with all the richness of its spatial and figurative articulation (elements of the “architectural composition”), the materials chosen, the techniques applied, the practices followed to build it, its signs, its contradictions. These, taken together, are the expressions of the project, the outcome of the worksite, and the testimony of the time that has passed; as a whole, they characterize the building and make it unique, personal. The study of buildings is always an extraordinary, unique intellectual adventure, and it is the basis of the work to be done, to understand the architecture on which we must intervene and to evaluate the effects of time on its structure.

We could go so far as to say, as a matter of fact, that the “subject of restoration” comes just from that set of changes that have occurred in time and that the building has experienced, or undergone, changes that pose serious problems, whether they are additions or removals, because all change affects the architectural sphere. Architecture, construction, time.

When the student begins to study restoration, he will be forced to come face to face with the many gaps in his education accumulated in the area of direct contact with the building, and it cannot be done hastily, even for the short time devoted to this particular discipline in the course of studies.

Though guided, he will refer the need of direct experience with the building, of profound, analytic study of it to the need to restore it, the desire to “preserve” it. But he is unable to see how that experience is, indeed, an indispensable aspect of his training as an architect. And so he devotes himself to the analysis of materials, the study of processes of deterioration and damaging events, judging this passage an indispensable step to understanding what is simply the best therapy. In this way he confuses, or is led to confuse the fundamental disciplinary meaning of Restoration; he does not have the time to understand the project horizon and perceives it as a structure, perhaps even a well-organized one, of merely technical information. And he is unlikely to go beyond this point.

There is still a widespread conviction in the field that the questions posed by restoration are essentially technical in nature, and that one can therefore say, with a “clear conscience” that they are not “architectural problems”. Considering, at the same time that if, however, the restoration should be presented in the first place as a problem of architecture, “there is no doubt” that it would be one of “architectural design”.

We are unable, perhaps unwilling, to understand that the restoration of a building with the goal of preserving it is, however, a task that does not end with the identification of suitable materials and effective, compatible products with respect to the existing ones; with the identification of the actions necessary to halt the process of deterioration in progress; with the decision of the best ways to return the “structure” to functional conditions. Restoring a building in order to preserve it means preparing a detailed, complex project at the center of which are a thorough knowledge of its historical content and an interpretation of the architecture involved. The problem is to define the themes and references on which to base our interpretation as well as the content and method “of” the study and “for” the study of its history, that implies possession of an “ideal motive” and our awareness of it.

Interpretation and history are the goal of judgments that influence our choices and lead us to distinguish “what”, and explain “why” and define “how” to preserve, change and eliminate. They guide the architect in dealing with the basic contradictions with which restoration must come to terms: to ensure the permanence of changes stratified in time and at the same time maintain the expressive intentions left by the architects, from the first configuration to the later alterations.

All of this presumes familiarity with the act of construction, in view of the fact that the study of materials, deterioration and damage provide precious and indispensable information for the definition of the “cure”, but also respect for the quality of a building and its history, knowing that choosing the materials for a work is one of the most “exciting” activities of an architect, knowing that the processes of deterioration testify, among other things, to the attention devoted to the subject of conservation at the

time of designing and building the construction. The forms of deterioration are one of the expressions whereby the interaction between a building and its surrounding environment is revealed, and it is also true that damage can be the result of changes experienced in time by a building: at the time of a change of ownership, a change in its use and so on.

On the other hand, there is a need to consider the signs that reveal the processes of deterioration and damage, also from the figurative viewpoint, for the effect that they have on the image and historical value of a building. This means determining whether and when the signs of deterioration that we observe in the materials can be considered an integral and essential part of its "image", elements of its stratification that, characterizing the form and significance, contribute to its identity and qualify its authenticity.

These signs reflect the ages in the life of a building: the fame it has enjoyed, the indifference in which it has been left. Both admiration and disinterest leave traces on architecture, permanent signs of care or neglect, paced throughout its history, reflecting the fortunes of its owners and their heirs. In this sense, they are important, perhaps even more than many essays rich in historic interpretations and appraisals of value.

With regard to history, also, the most delicate aspect with which restoration must concern itself, the first and most important observation to make is that the "history of architecture" is a subject that does not enter at all into the training program at any point. Architects are thus totally unprepared to deal with the study of the historical background of a building – which is, of course, a fundamental aspect for the preparation of a plan of restoration – not only because of their lack of familiarity with the study of architectural construction, but also because of their lack of preparation with regard to the method.

The historical tradition often valorizes only the aspects linked to figurative aspects or elements of composition, almost in spite of the profound changes that now characterize the horizon, where new views and perspectives force those who occupy themselves with architecture to return their attention to the technical "act of building", not seen as an "intermediate stage" with respect to a "transcending aim", but as the "profound dimension of man's aperture to the world".

There are very few, though excellent, studies that examine the relationship between "principles and construction", as between "form and construction".

Moreover, the widespread and recurring didactic materials normally used to teach history – photographs, drawings and descriptions – bear witness to "a" time in the life of the building, without allowing us to grasp their changes, to see them as they effectively are: palimpsests that do not testify to "a" time, but to time itself. To acquire this understanding, which is fundamental for restoration, it is necessary to reflect on another aspect of great importance and greater interest: the relationship between the architect and the work, the before and after of construction. Which means focusing on the attention to give to the subject of durability, to reflect on the effect that the project – as the expression of a creative tension, the revelation of a hope – and the finished building – with respect to the materials chosen and the construction techniques employed – will have on its ability/possibility to last through time, despite the aging of its meaning and the strength of its consistency.

In other words, defining the "measure" of aging and its relationship with stratification. In other words, verifying how the architectures of the past have managed to

resist so long just on the strength of those principles and those choices that inspired their design and construction.

Which also means questioning the value of time, of fate on the signs of history, reflecting on the parallelism that it is appropriate to establish between consistency and authenticity.

And also, to question the relationship between the designer and the finished building means asking ourselves also to what extent the building “belongs” to its architect, where “belonging” is viewed more with reference to the aspects relative to the “copyright”, than to the effective recognition of the architect in the construction that comes out of the worksite.

Thus it happens that when the student-architect, first, and the architect, later, find themselves before a building with the task of restoring it, they are disarmed. First of all they discover that the principles, the history, the techniques that they have learned so well, though indispensable in their way, are insufficient. Because they discover that the building in front of them is not only the work of the architect who built it long ago. Or of the architects who, during the course of its more or less long life, have altered it. They discover that the building has had a life, has lived in an epoch, has experienced a history of its own, independent of that of its architect. It has lived another history than that which, in the same period of time, the history of architecture has lived. They discover that the building consists of the stratification of signs of which they know nothing, or almost nothing. And they do not know how to read them, what to make of them. Above all they do not know where to focus their judgment or how to appraise them on the basis of the choices to be made in the project they are asked to design.

What happens then is that the student and the architect overcome the difficulties they have in reading and interpreting the architectures in front of them, in their effective consistency – which means in the multiform, intricate reality of elements that characterize them – by taking refuge in what they know best, what the school has insistently prepared them for. And so the first, often the only study they make is to identify in the buildings the signs that are the expression of the project that led to its construction, i.e. the work of the architect who designed it and possibly also of those architects who, at various times in its history, have altered it. They soon come up against the obstacles inherent to this method, however, for it is difficult, if not impossible, for a project to pass unchanged through the construction stage. There is not one measurement of a building that coincides in every point with the project drawn to build it.

Besides, that building, like any other, once built, has experienced a rich life full of events and meetings that have changed its configuration and consistency. A life, as we have said, during which natural phenomena, and the more or less voluntary actions of men, have produced additions, adjustments, removals that are added together in its material body, producing layer after layer that give the measure of its continuous evolution. These are necessary passages in its existence that testify to its nature as a living organism, in continuous change, like anything that belongs to this world.

Not to speak of the many “architectures without architects” that have acquired fame and importance for reasons having nothing to do with the world of Architecture.

The first spontaneous and natural discovery leads him to judge those signs that time has etched and that in time have become stratified in the architecture for which he has to prepare his restoration project, as entirely extraneous to the history he has

studied and that he thinks he knows. And indeed, those signs are not only extraneous to the "History of Architecture", quite often they are actually distracting from the "best" perception of the traces of Architecture still recognizable and present in the building.

At times they can even be embarrassing because they reveal "possible" oversights, nothing less than errors by the architects who have put their hand to it since it was first built. Sometimes they reveal the fracture – due to the passage of time, changes of ownership or other reasons – that divides the project from its realization, producing very obvious changes.

The urge to correct them is strong. The desire to rebuild the building, that building, perhaps not within the rigid guidelines of a type but at least within the great groove of intelligent design, intelligent building, that was proper to its time, is very great. The desire to restore even that building to the perfection of its disciplinary principles, is irresistible.

The situation becomes even more complex when, in addition to the urge to respect the disciplinary principles, we encounter questions of a historic and critical order. When the signs conflict, in other words, with those drawn by the original author. Or when they are proper to an epoch, later than the period in which it was built and not (or not yet) fully appreciated by the critics, as we see above all in the case of epochs closer to our own.

The perceptive architect, studying a building, is able to observe how any historical evidence is always richer and subtler than what we make of it. That every history is made up of many histories. At the same time he must admit that often the signs from the past are very weak and the means at our disposal to recover their meaning are still extremely imperfect. And this causes a situation of danger for their survival. At times it is not enough to venture out of our own "field", to call on others to help us read, decode, decide.

It is difficult for the architect to adjust his thinking to the fact that with respect to the traces of the past our task is not to discover the truth, because there is no single story, but images from the past that are offered to us from different viewpoints. The contribution that the architect can make, then, is to facilitate the discovery of the many "shapes of time", to stimulate the awareness of a multitude of meanings in every work, to create a dialogue with the work that, without evading the task of making choices, aims to increase our understanding, to enable us to grasp what has been done and to carry it on. He can preserve the vitality that every building expresses, allowing it to change without losing what has been accumulated thus far, enriching the scenario and inviting everyone to take responsibility for "living in time".

At the most, today and not unwaveringly, the student and the architect exhibit a certain tendency towards "cataloguing", emphasizing typical features and all those references that might have been able to influence the choices of the original project architect, and then trusting them to indicate the choices for restoration. Once again, he focuses on project-centered architecture and tries to use it to resolve the complexity of the building.

On the other hand, the "History of Architecture" he studied at school is rich in biographies, attracting his attention to the subjects rather than to the objects. This leads him to see the latter in function of the former, the building as an expression of intentions expressed in the project, linking the value of the architectures to this relationship. Often it is the only value to which he can refer.

However, while it is certainly true that without architects “architecture” could hardly exist, it is equally true that constructions have a life of their own, during which they acquire an identity that may exceed, without denying it, that with which “its” architect endowed it.

It is only by coming into physical contact with construction that the student-architect can learn that a building is not what is built: a building becomes, in time, it acquires a character and that continuous change is the nature of its existence. To deny this would be a little like denying the very essence of their being in the world. It would be a little like denying their history and the very reasons that led to their construction.

It is only by frequent contact with architecture, by careful examination, that we can understand how the primary goal of restoration should be to preserve the vitality of every building, accepting the credits as much as the debits inherited. Otherwise, the lack of familiarity with construction will lead to strange forms of conservation and the paradox of a technical vacuum that estranges the building from the flow of time, impoverishing its past, penalizing its present, cutting off all hope of a future. It is the exercise of a form of “despotism of the present” that results in condemning the building to be only the expression of “a” time, imposing a sort of “eternal youth” on them. While the arduous duty of the architect towards the past consists of “controlling change”.

In place of the classical contrast between “truth/falsehood” we should, perhaps, use the dichotomy “inside/outside” with reference to time, to mean that we are an integral part of the history of our planet or we are outside it. It is only in this context that we are able to perceive the distinction between “conservation” and “restoration”: the former has the goal of preserving the largest possible number of signs and related meanings; the latter, the illusion of being able to re-establish a lost image by selecting signs and meanings.

Acknowledging the fact that architecture, in the form of buildings, which we encounter every day, whether monumental or of lesser importance, is not only the work of architects; it is fundamental for us to be able to understand the different scenarios - in terms of instruments and methods - with which the architect has to measure himself when facing the task of constructing a new building or restoring an existing one. But in this respect the school is deficient.

The special instruments of the architect’s profession, exhaustive for the construction of new buildings, become utterly indispensable when intervening on existing buildings: in restoration, and this merely confirms that restoration is an operating branch that, while entirely within the “realm” of architecture, does not end there.

The mastery of techniques, historical knowledge and critical awareness that traditionally combine to make up the architect’s background, guiding the procedural orientation of his structural commitment before the problems posed by restoration, confirm their importance but at the same time reveal their insufficiency. Additional knowledge is essential, and a different mastery of history starting from its methodological aspects, with the ability to navigate a broader, more open critical horizon, are necessary to plan a restoration.

Not another type of knowledge, different or independent from the traditional knowledge of the architect, but a wider range of knowledge, capable of communicating with it, without denying it, yet able to widen the frame to encompass a new equilibrium.

It is time for the schools to go beyond the architect/project bond and reflect on the bond of architect/architecture. And it is also time for the schools to pose the problem of “time” to their students, of “time as consumer of things”. Perhaps moving away from the problem of “durability”, in any case to arrive at the two basic questions: “time and the architect”, “time and architecture”, which means preparing to perceive the continuity and the fractures that exist between them and work to amplify, from the subjects to the objects, the horizon of teaching: in history, technology, project design. What this means, in the long run, is to ensure the centrality of both project and construction in the student-architect’s training program.

With respect to restoration, this means offering the students new instruments and greater awareness to enable them to find their way between the two “paths” that, in this sector, run through the history of architecture in the *modern era* with great emphasis. From Bramante and Raffaello, to Ruskin and Viollet-le-Duc, and up to the present time.

On the one hand we have those who consider the “project” the expression of the identity of a building – that means placing the architect at the center, with his mode of interpreting and bringing to life, every time, in every work, the principles of architecture – and, on the other, there are those who insist on the *hic et nunc*, concentrating their attention on the “building” – that means recognizing the independence of the real structure from its designer, based on the value that the signs of time can give it.

We think it is important to prompt a reflection on the themes that characterize the specific sector of restoration, on the background it demands, on its relationships with the other disciplines, on the sense and measure of its relative independence, on the ways with which it not only belongs to but even characterizes the field of Architecture and the architect’s profession. It is the central and qualifying sphere that identifies the peculiarity of the preparation and exercise of the architect’s profession since the foundation of the Architecture Faculty, and it does so today even more clearly and forcefully.

It is important to do this in order to offer the students the opportunity to develop their own point of view on matters that concern architectural restoration.

It is essential to invite them to measure these themes in the field, to see how they stand up by entering into the contradictions of the work, from the project to the construction, to have the opportunity to examine the process that links them. Through this, they can undertake a reflection on the “reasons of time” in which care, interpretation, use of technique, history and memory are the key words.

At this point, they will be able to reflect on the meaning to give to restoration today, particularly architectural restoration, with the awareness that meanings change and that it is necessary to reflect on those changes, knowing that the question “what is restoration?” is and always will be one for which a final answer is impossible.

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Les Savoirs de la Sauvegarde

Le mot "restauration" est à mon avis assez mal adapté pour définir ce que j'enseigne dans une Faculté d'Architecture. J'aime parler plutôt de sauvegarde: elle se réalise aussi, là où il le faut, et quand il le faut, par des solutions constructives cohérentes.

Leur qualité dépend soit d'une richesse de références culturelles et de motivations sociales qui s'enracinent la plupart hors du domaine de l'architecture, soit d'un horizon de compétences très élargi, qui portent bien au-delà du projet d'architecture, projet qui est pourtant nécessaire.

Projeter dans l'existant, ce n'est pas adapter un bâtiment à des fonctions ou à des normes nouvelles: il s'agit plutôt d'envisager une synthèse difficile parmi d'exigences même antithétiques. Lorsque les problèmes sont simples, il suffit d'ajouter ce qui manque, à une échelle plus mince, plus rapprochée, subordonnée à l'existant, on retombe dans la pratique - légitimée par les siècles - de superposer une nouvelle couche.

La forme et la consistance de cet incontournable nouveau ont toujours suscité un débat très animé. L'échelle du détail laisse d'amples marges d'autonomie, sans ni épater ni choquer. Distinguer les rajouts ne comporte donc pas nécessairement les accentuer jusqu'au contraste.. Celui-ci devrait se produire entre la matière contemporaine, intacte et polie, et celle du passé signée plus ou moins profondément par le temps. Ainsi l'avait envisagé Alois Riegl. A rebours, la version courante du contraste oppose d'un côté la forme ancienne exaspérée par les marques de l'abandon, ou au choix par le neuf étincelant des reconstructions à l'identique, et de l'autre côté des éléments nouveaux débordants et grossiers, gadgets technologiques ou répertoires désabusés d'une modernité vieillie de l'autre...

Même Carlo Scarpa a très rarement touché à un véritable bâtiment ancien: Castelvecchio et Palazzo Abbatellis sortaient d'affreuses (et récentes) restaurations. Il était censé enrichir ce qui venait d'être épouvantablement appauvri, remplacer l'histoire qui venait d'être effacé par une autre histoire ...

Contre ces idées reçues Bruno Reichlin a postulé la «renonce», la «Entsagung» du vieux Goethe¹. *«A tous ceux qui voient dans la sauvegarde une somme de devoirs, d'entraves et de limitations, j'ai envie de dire qu'ils ne sont pas contemporains parce qu'ils n'ont pas compris combien d'imagination il faut déployer et quel plaisir procure la Entsagung, qui est le propre de la conservation et de la sauvegarde».*

Les adjonctions signent les limites du domaine: elles rentrent dans un projet de restauration, mais l'enseignement s'arrête avant, à la compatibilité.

On peut, bien sûr, juger si la solution du cas concret réussit à garder suffisamment de traces matérielles, si elle est respectueuse du rôle de source et de ressource d'un bâtiment, on arrive même suggérer des ruses, ou souligner les fautes technologiques, les choix grossiers qui accablent même des chantiers célèbres. Des bons détails jouissent toujours de l'approbation du public, favorisent son adhésion aux stratégies de la sauvegarde.

Néanmoins, on n'est pas dans l'atelier du maître qui propose ses démarches et son langage. On n'enseigne pas tout ce qu'on fait, même s'il est arrivé - quelquefois, et par hasard peut être, - qu'il était bien. Pour enseigner, il faut un surplus de réflexion et le projet d'architecture a son autonomie et ses itinéraires culturels.

De plus, si on réduit le projet de sauvegarde à sa pure dimension architecturale, on risque d'en oublier l'essentiel. La sauvegarde a une dimension régionale et urbaine. Au niveau des bâtiments, le projet se dégage de la complexité des stratégies préalables de connaissance, de la compréhension des échelles concernées. Il se concrétise dans

la mise en évidence des nœuds techniques et des problèmes d'usage, et dans la définition des critères pour les résoudre, il évalue et souvent cherche à amoindrir l'empiètement sur l'existant, pour ainsi dire, des adjonctions, des endroits où les réaliser.

Le projet de sauvegarde est plus proche de ces démarches que, dans la gestion de la ville, on appelle «politiques»; d'autant plus que la sauvegarde s'exerce aussi, et devrait de plus en plus s'exercer, par l'entretien et la maintenance, même si ces deux pratiques elles aussi ne remplissent qu'une partie limitée de tâches de la sauvegarde et finissent là où tout élément nouveau est ajouté.

Sauvegarde est donc d'abord reconnaissance, et après gestion futée mais prudente d'un patrimoine bâti qu'on ne peut pas remplacer dans sa totalité à chaque génération.

Sauvegarde et environnement

Sauvegarde signifie aussi, dans la société postindustrielle, économie des ressources énergétiques et respect de l'environnement. Il ne s'agit point d'un hommage à une vogue récente: dans la culture anglophone ou germanophone cette tendance est déjà mûre à la fin du XIX^{ème} siècle. La dégradation du paysage, en Allemagne, n'est pas seulement la dégradation du cadre visuel mais aussi de l'existence et de la santé, même si cette sensibilité finira par se replier sur le compromis, empiéter sur le terrain ambigu de l'*Heimatschutz*.

Lorsqu'on retrouve ces thèmes teintés de vert, présentés comme s'ils étaient tout neufs, on a de la peine à cacher un sourire: c'est de la marchandise fin de siècle qu'on débite. Surtout lorsque les repêchages sont naïfs, on entend retentir des accents Belle Epoque.

On se fâche même un peu lorsqu'une technique, ou une exigence spécifique, ou encore une certaine façon d'épargner l'énergie devient le seul critère selon lequel on juge le monde entier, selon les bonnes règles d'un réductionnisme digne du XIX^{ème} siècle positiviste.

L'extension du concept de patrimoine

L'idée de ressource, liée à la matérialité concrète du bâti existant, engendre aussi une étendue du patrimoine à sauvegarder qui dépasse les seuils temporels et les contraintes typologiques, et comprend théoriquement les quartiers des Trente glorieuses et les friches industrielles, l'architecture rurale et les réseaux urbains.

Cette extension du concept avait été proposée par Aloïs Riegl au début du XX^{ème} siècle. Le *Kunstwollen* qu'on peut saisir dans les objets les plus modestes, n'est pas un principe de sélection, la dimension artistique ne sert point au tri.

Les conséquences dépassaient l'enclos de l'histoire de l'art, même si l'art paléochrétien et le baroque sortaient de la disgrâce. La redécouverte du dix-septième et du dix-huitième siècle entamée depuis 1880 dans l'aire germanophone s'accomplit dans l'Empire des Habsbourgs: Riegl et ses successeurs réussirent les premiers à imposer la conservation du décor baroque même là où il se superposait au Moyen Age.

La vision de Riegl empiétait sur un environnement quotidien beaucoup plus élargi: Georg Vasold l'a souligné à juste titre², on risquait de ne rien comprendre, oubliant le pamphlet *Volkskunst, Hausfleiß und Hausindustrie*³, et l'intérêt du premier Generalkon-

servator pour les thèmes de l'ethnographie, très actuels à son âge, dans son contexte, l'Empire habsbourgeois, délicats, dont les objets d'étude à l'époque formaient ce qu'on appellerait aujourd'hui le domaine patrimonial élargi.

Le patrimoine ethnographique ne représentait pour Riegl ni une fontaine de jouvence pour les arts appliqués, ni non plus un gage de fidélité à la tradition, Il ne partageait pas ces opinion conservatrices, il y voyait un espace d'expression extraordinaire, pas nécessairement spontanée, souvent, à rebours, une imitation plus ou moins consciente des modèles cultivés, où la dimension locale et l'essor universel s'entrelaçaient.

Pour mieux s'expliquer, sans vouloir établir des parallèles hasardeux, de nos jours Carlo Ginzburg a peint lui aussi un monde paysan du XVIème siècle avec sa religion où se superposent croyances ancestrales, thèmes de la propagande protestante, visions élitaires issues des milieux intellectuels⁴. Riegl – et les intellectuels de *Kakanien* – arrivaient à saisir ces richesses seulement d'un regard au même temps désenchanté, curieux et tolérant, respectueux des diversités. Le fidèle fonctionnaire d'un empire multiethnique venait ainsi de couper la dangereuse progression culture populaire – nation –état, détruisait tout enracinement dans le passé de l'identité nationale, la repoussant dans son présent bourgeois.

Dans le domaine des arts et des techniques, Riegl ne reconnaissait aux répertoires régionaux aucun rôle de source où puiser des modèles, par lesquels Académie et arts appliqués auraient dépassé les détours et les excès de l'éclectisme et de la reproduction mécanique des décors du passé. Il n'octroyait non plus aucun ouverture de crédit à cette idée de continuité entre passé et présent, entre terroir et modernité, à cette rationalité déshabillée de l'architecture et des intérieurs ruraux ou bourgeois avant la révolution industrielle, une aspiration partagée de la France régionaliste⁵ à Hans Poelzig⁶ jusqu'au Taut de la maison du Cottbusserdamm, pour se borner à quelques exemples bien connus. A rebours, ce patrimoine local n'était plus reproductible: les conditions sociales et la structure productive dans lesquelles il était fabriqué et exploité étaient à jamais révolues, il appartenait désormais au domaine de la sauvegarde. Le nouveau devait instaurer avec le passé un rapport complexe et changeable selon les circonstances. Miroir de son temps, ce rapport réfléchissait aussi la façon d'une époque et d'une société de regarder son propre passé, et à leur tour les intérêts pour une période ou l'autre de l'histoire définissaient la culture d'une époque.

Les images des Mittheilungen étoffent l'idée d'un patrimoine qui s'étend à l'ensemble du bâti: villes et villages, fermes, hameaux et constructions rurales, églises en bois et maison de rapport Biedermaier. Cette dernière période était réhabilitée et considéré digne de protection légale même si elle n'était à l'époque plus révolue que ne le sont aujourd'hui les Années Cinquante.

Ce patrimoine figure dans les superbes photos réutilisées astucieusement par Dvorak dans le *Kathechismus der Denkmalpflege* pour monter sa série des *Beispiele und Gegenbeispiele*, la réponse, le contrecœur habsbourgeois des *Kulturarbeiten* de Paul Schultze Naumburg⁷.

Il semblait déjà à l'époque sans aucune signification de chercher un fondement scientifique pour délimiter le domaine de la sauvegarde, établir une hiérarchie de valeurs fondée sur une *Kunstwissenschaft*, que Riegl, qui en est pourtant considéré un représentant majeur, jugeait impuissante juste à son apogée. Les ressources limitées, la rareté de tel ou tel témoignage, les coûts remarquables de reproduction d'un objet

ou d'un bâtiment, son attitude à l'usage, sa durée potentielle, les événements historiques auxquels il est lié, étoffent le choix de conserver, mais ne servent pas à exclure du bénéfice de la survivance aucun objet tout humble qu'il soit. Sans doute, ces arguments peuvent être raisonnables, mais ils sont consciemment relatifs, étalent ou cachent une vision de la société, sans aucune hypothèque pour le lendemain.

Si la pénurie des Années Vingt réduisait dramatiquement les ressources qu'on pouvait destiner aux «monuments» la proposition de Hans Tietze⁸ d'investir seulement sur les objets qu'on sentait proches de la vision contemporaine de l'art, montrait comment la *Kunstwissenschaft* – la science et non de l'histoire de l'art – les dérives néoidealistes, peuvent empiéter sur l'arbitraire le plus total, sur la subjectivité la plus désenchaînée.

Les «sciences auxiliaires» de la sauvegarde

Riegl définissait ainsi un patrimoine à multiples facettes, nuances, durées, qu'on peut reconnaître seulement par l'ensemble des savoirs historiques, ou, encore mieux, des sciences humaines, par une optique transdisciplinaire.

La sauvegarde s'offre ainsi dans l'ensemble des enseignements de l'architecture comme l'une des issues pour sortir d'un univers autoréférentiel.

Il ne sert donc à rien apprendre à exclure, il faut plutôt enseigner à reconnaître. Les sciences auxiliaires de l'histoire, essentielles pour l'archéologie ou la connaissance des arts appliqués ne sont pas moins précieuses pour les bâtiments. Toute sélection rigide et préalable s'avère problématique, parce qu'on ne peut pas deviner d'avance toutes les situations, où certains instruments montrent une utilité inattendue *a priori*.

Il m'est arrivé, il y a quelque mois, non loin de Gênes, dans ces tristes circonstances où on est témoin forcé et involontairement impuissant, de me retrouver dans les mains, à cause de l'habitude d'observer tout ce que d'autres mettent de côté ou jetteraient, deux gros couverts à servir, noirs et poussiéreux. On cernait à peine l'ombre des poinçon, qui se dévoilèrent sur la cuillère comme un le «Coq» en usage depuis 1809 dans l'Empire Français, et sur l'autre comme la Croix mauritienne, introduite dans le Royaume de Sardaigne depuis 1825⁹. Les deux poignées, en apparence semblables, étaient différentes. L'un des couvert avait voulu imiter l'autre, et les deux représentaient l'histoire d'une existence et d'un lieu. Avec la chute du gouvernement patricien, après la parenthèse incertaine de la République de Ligurie, celui qui autrefois était un Etat s'était réduit à deux Départements aux marges d'un Empire. Les objets de la vie quotidienne, où un poinçon identifiait un pays, avaient été jetés, avec ceux qui les employaient, dans un espace immense, où ils paraissaient perdre de poids et d'identité, et – on le lisait dans le symbole savoyard – ne les auraient jamais regagnés. Au même temps, celui qui aujourd'hui est un métal presque précieux, un arcaïsme qui marque par son inactualité un statut social ou une occasion de fête, était, avec un minimum de moyens, la solution quotidienne pour se passer des oxydes nuisibles. Garder un couvert à côté de l'autre – conserver autant que possible objets et contexte – signifie sauvegarder la mémoire historique dans sa complexité, telle qu'on peut la lire dans des objets les plus humbles.

L'archéologie – c'est-à-dire l'ensemble toujours croissant des pratiques qui apprennent à lire les traces matérielles comme documents de l'histoire du quotidien, du travail, du chantier- enfin pour mieux dire, l'archéologie stratigraphique dans toutes ses

implications, est devenue un repère essentiel pour la sauvegarde, l'expertise préalable à tout projet sur le bâti existant.

Cette synergie entre sauvegarde et archéologies postclassiques est un des acquis les plus originaux et les plus féconds que la culture italienne ait su élaborer dans les derniers vingt ans. On se doit de le rappeler à Gênes, où l'archéologie est devenue d'une façon si efficace et profonde archéologie du bâti en achevant le renouveau substantiel des ses méthodes de travail et de ses perspectives entamé dans les années cinquante. Les milieux les plus avancés arrivent à remettre en cause les principes destructifs de la fouille, à en redessiner l'application. Ils recentrent plutôt le travail de l'archéologue sur la connaissance par les données matérielles, et le degré de détail, de profondeur, d'étendue qu'elle assure. Cette réflexion a porté à rediscuter radicalement le recours à la dépose, devenue procédure extrême. Garder la stratification permet de revenir sur son interprétation au moment où, par exemple, d'autres connaissances seront acquises: la dépose tarit à jamais la source.

Dans une autre perspective, de moins longue haleine, l'intérêt répandu pour les méthodes archéolo-

giques, et notamment pour la stratigraphie en élévation est la dernière tentative d'une approche objective, scientifique à l'existant: on revendique d'instruments spécifiques, spécialisées, qui légitimeraient une sorte de préséance à l'intervention sur le bâti ancien. L'effort de fonder les décisions sur des bases objectives, est la réaction aussi à une saison de la restauration, celle du néo-idéalisme, de la réintégration de l'image d'art et de son opiniâtre. Devant l'engouement un peu fantasque du néogothique qui l'avait précédé, le positivisme tardif avait réagi de la même façon: son érudition était avant tout une revendication de scientificité.

A la recherche d'une autonomie disciplinaire inatteignable: le débat allemand

A une autre époque et dans d'autres manières, dans la culture germanophone, ce retour à la rigueur, dont les méthodes archéologiques sont un garantie facilement reconnaissable, se prêtait bien à fixer de bornes aux pratiques très «créatives»de la reconstruction après 1945.

Ce qu'on reprochait dans les années Quatre Vingt à cette Denkmalpflege c'était de s'être enfermée dans ses techniques, dans ses catégories, dans ses pratiques rigoureuses, dans sa philologie. Elle n'aurait pas su rendre populaires et partagés ses arguments; elle avait renoncé à soutenir une bataille pour la sauvegarde qui était aussi politique, qui visait à la société de la consommation et à ses idoles, et quand la crise du mouvement moderne et les penchant postmodernes qui en étaient conséquence auraient offert l'occasion de se rapprocher de l'actualité architecturale, elle s'était refusée (méritoirement, on dirait) d'exploiter une renaissance ambiguë des tendances identitaires qui rappelaient en cause les formes du passé ...

Il est ici hors de lieu de discuter le bien fondé de ces polémiques opposées l'une à l'autre, il faut plutôt remarquer le retour à une sensibilité au patrimoine élargi et aux aspects matériels qui s'était perdue depuis le début du siècle, devant la crise économique de l'entre deux guerres et les effets des bombardements, qui avaient éveillé d'autres attentions.

En 1988, sous le titre *Conserver, ne pas restaurer*¹⁰ Dehio et Riegl ont été heureusement couplés même si le grand viennois se dut de souligner avec acharnement¹¹, dans les derniers mois de sa vie, que ses idées n'avaient rien à partager avec le nationalisme de son collègue strasbourgeois¹². Dehio s'était battu contre la reconstruction de l'Ottoheinrichbau du Château de Heidelberg – dans une querelle parmi les plus célèbres de l'histoire de la restauration – essentiellement puisque les traces matérielles survécues étaient trop minces et les sources documentaires trop réticentes. Les décisions sur le sort du bâti ancien devaient être strictement techniques, étaient du ressort des spécialistes du passé, des *Gelehrten*, les érudits et les historiens de l'art. Lorsque leurs instruments ne suffisaient plus, on ne pouvait pas les remplacer par le projet architectural, avec sa vision subjective, son optique contemporaine. Une autre histoire, le mythe de la Nation, à Heidelberg, reprenait ses droits: toute architecture aurait été hors lieu devant la grande tragédie nationale que témoignait la ruine. Si jamais, on pouvait livrer aux architectes des restes moins illustres, d'un passé plus caché dans l'ombre, comme ce château de Hohkönigsburg en Alsace, un Moyen Age confortable où Guillaume II montait dans sa voiture «automobile» comme on disait à l'époque. La grotesque vanité d'Albert Naef en a laissé un récit d'un comique aussi involontaire que puissant¹³.

Le passé – la continuité de la nation – restait pour Dehio le modèle et la mesure du présent: il faisait semblant de ne pas voir – au contraire de Riegl – que les transformations sociales avaient rendu certains objets à jamais révolus, et partant les avaient livrés, pour ainsi dire, à la sauvegarde, l'unique forme désormais possible d'attention de la société et des ses multiples instances.

Les arguments qu'on a ici évoqué ont été soulevés – bien sûr – depuis longtemps dans la culture allemande. Ce rapprochement un peu risqué entre Riegl et Dehio essayait, encore une fois, de revendiquer l'autonomie de la sauvegarde et de ses buts, et surtout du domaine monumental et de ses pratiques contre toute demande plus ou moins légitime, d'ouverture à des thèmes de frontière (le débat architectural, les enjeux de l'urbanisme...), autour d'un noyau irréductible, la conservation – un mot tout à gloser – de la *Denkmalsubstanz*. Au delà de leurs approches différentes, de la *praktische Flexibilität* de Dehio, on essayait d'y situer l'héritage commun des deux savants germanophones. Mais Riegl, ayant bien compris les enjeux sociaux de la sauvegarde, n'a voulu – par l'idée de *Alterswert* – qu'esquisser une démarche raisonnable parmi les différentes instances de la société, et c'est bien la conscience de cette complexité qui fonde – au-delà des crédo personnels – l'actualité de la pensée du *Generalkonservator* de François Joseph.

A la recherche d'une autonomie disciplinaire inatteignable: une perspective italienne

Dans l'Italie des Années Soixante et Soixante-dix la sauvegarde, à l'échelle urbaine, avait été de plus en plus ressentie comme instrument pour contrecarrer un modèle de développement urbain, l'abandon de la ville ancienne et la construction des banlieues, le gaspillages du territoire, l'expulsion des catégories sociales les plus faibles des quartiers centraux. L'extension du concept de monument, la notion de «centre historique» comportait la redécouverte – pas toujours déclarée et souvent hors contexte – du débat viennois du début du XXème siècle. Des propositions courageuses au point de vue de l'urbanisme, donnaient lieu à des normes et à des choix opérationnels ar-

riérés et sommaires, souvent antithétiques face aux objectifs déclarés. Bien sûr, l'échec de ces politiques ne s'explique pas par les carences techniques. Néanmoins, la persistance depuis trente ans de pratiques et de choix arriérés déjà à l'époque, devrait pousser à la recherche patiente et sereine de ce qu'on pourrait faire, dans l'enseignement, pour contribuer à leur abandon définitif.

La pratique institutionnelle, le savoir codifié de la restauration paraissent, il y a trente ans, et quelquefois non sans raison, offrir de faibles appuis: beaucoup d'argent était encore jeté pour effacer le XVII^{ème} et le XVIII^{ème} siècle et revenir à un Moyen Age inexistant. Le cœur du projet de restauration était situé dans la reconnaissance des valeurs architecturales d'un projet d'origine, d'une relation de volumes et d'espaces qui formeraient les traits essentiels de l'image d'art d'un bâtiment: on devait exalter tout ce qui contribuait à les mettre en exergue, et enlever tout élément qui pouvait engendrer des contradictions. La «lecture», l'approche correcte du public au monument serait ramenée à son essence, on empêcherait de coupables détours. Les haillons du néohegelisme déguisaient encore une fois une *administration de l'histoire* surannée. Proust avait sévi depuis longtemps sur les prétentions de Viollet-le-Duc de présenter des monuments exemplaires, des histoires simplifiées qui saisissaient le grand public: si Odette de Crécy faillit perdre à jamais Swann, ce n'est pas parce qu'elle est allée avec Forcheville pour le jalouser,, mais parce qu'elle est allée à Pierrefonds...

Le fréquent rappel aux élaborations de Cesare Brandi montre qu'on a de la peine à renoncer à ces illusions. Sa «Théorie de la restauration»¹⁴ peut satisfaire le besoin d'une règle de comportement spécifique du domaine de la sauvegarde, la demande de critères de sélection «neutres» suffisamment souples pour voiler les compromis des institutions nationales ou internationales, pousse à chercher un soutien dans la pensée d'un homme du métier, d'un fonctionnaire très doué. Riegl lui-même l'était, mais les compromis qu'on lui demandait étaient de tout autre envergure, se fondaient sur toute autre idée d'Etat, le contexte dont il pouvait jouir était beaucoup plus riche et périlleux. Il serait risqué même d'en rapprocher les noms si ce n'est que pour délimiter une époque¹⁵: *ne sutor...*

Riegl n'a pas élaboré une théorie «interne» à la sauvegarde, il a juste démontré que ses raisons se situent ailleurs, qu'il ne faut pas couvrir les manques et les fautes d'une société, mais au contraire puiser le plus largement possible de la culture contemporaine dans tous ses aspects. La sauvegarde se mesure elle aussi sur l'ampleur de cette ouverture. Il s'agit d'un itinéraire trop complexe, trop varié, même trop personnel: le *Moderne Denkmalkultus* ne donne que des instructions élémentaires. On ne cache pas les médiations avec la société, on s'ancre à des évidences minimales, forcément partagées, et à l'unicité de la *Denkmalsubstanz*.

Sauvegarde et sciences appliquées

Le rappel à la dimension matérielle des bâtiments, à la conservation de leur consistance physique a ramené au centre de l'enseignement les nœuds techniques décisifs, la consolidation, la conservation des matériaux et la réparation des éléments constructifs.

Plus récemment, il a été question enfin du microclimat des bâtiments et leur équilibre hydrique et thermique, dans l'effort d'effacer une manque de la culture italienne, où le projet des installations est chassée gardée de l'ingénieur mécanique, qui

se concentre naturellement plus sur ses machines que sur les ressources qu'offre le bâtiment.

Autrement dit, on a cherché de rendre à l'architecte l'organisation et le contrôle du projet sur le bâti existant: c'est à lui qui appartient de gouverner l'instruction. Il ne doit pas seulement déléguer aux différentes compétences spécifiques, il doit aussi formuler avec les spécialistes les questions, et évaluer avec eux les résultats, vérifiant leur validité dans le cadre général, à l'échelle dont il a seul la compétence. Le rapport avec les sciences appliquées est tout à réinventer: il faut construire de nouvelles figures, avec des connaissances transversales.

Sur le chantier, les prémisses ne sont pas flatteuses. On entame désormais courageusement une restauration des surfaces par l'enlèvement des traitements effectués il y a vingt ou trente ans, si les produits, après avoir été payés, n'ont pas eu l'obligance de disparaître par eux-mêmes. On ne parle pas non plus de dispositifs contre les séismes dont les conséquences se sont quelquefois avérées tragiques.

La *gaie* «science de la conservation» s'est éclipsée elle aussi: pendant plus que cent cinquante ans on a étalé en son nom sur les pierres et sur les enduits pratiquement tout, des purges aux fards¹⁶. Les architectes lui confiaient la tâche d'appliquer aux monuments les trucs les plus récents et les plus minables issus de n'importe quel domaine technique, dans l'espoir d'éviter, plus que les remplacements, les polémiques.

Les restaurateurs se sentaient rassurés par le halo de certitudes et de progrès qu'un positivisme immortel dessine autour du mot «science»: il suffisait pour eux d'indiquer des buts à atteindre, des critères à respecter, énoncer une «théorie», au fond, de décider ce qu'il fallait garder à tout prix, et ce dont on pouvait se passer. Si on se tenait à la conservation, au visage digne vieilli par l'histoire, les savants avec leurs laboratoires et leurs analyses étaient aussi un superbe écusson soit pour se parer des attaques d'un monde bariolé qui est encore prisonnier – en entier ou en partie - du mythe de l'état d'origine, de la *valeur artistique* telle que la dépeint le *Denkmalkultus*, soit pour se soustraire au terrain du projet architectural, quand on n'y possède que de faibles talents. Les sciences ne seraient pas figuratives; de plus, au nom de l'autonomie des savoirs, on n'a ni le devoir, ni le droit de trop connaître du métier de l'autre. Maintenant, dans un tourbillon d'échecs, face à des pétrographes ou des chimistes qui, vus de l'extérieur, lorsqu'ils ne sont pas dangereux dans leurs entêtements, ont changé d'avis et de produit avec une vitesse digne d'un médecin qui tranche sur les régimes, quelqu'un se souvient assez tardivement de Karl Popper: n'assurerait-il pas l'absolution pour avoir cru à des propositions qui ont été ensuite démontrées fausses?

Les analyses chimico-physiques servent donc beaucoup plus à comprendre les objets et à essayer de découvrir les causes des dégâts et des altérations, enfin, si jamais, à proposer des remèdes: la contribution des sciences de la nature à la connaissance du chantier historique commence à donner des résultats, mais il reste énormément de terrain à défricher.

Les «restaurateurs» peuvent contribuer: d'abord, ils doivent délaisser entièrement tout relevé de la dégradation séparé du relevé des traces historiques: bien sûr, il ne s'agit pas d'unifier des dessins, mais d'enregistrer les durées et l'évolution des phénomènes. La représentation des fissures et des lézardes, par exemple, pourrait suggérer des interprétations mécaniques, mais seulement si on connaît le contexte temporel et d'usage où les fissures se sont formées, et, autant que possible, quand le mouvement

s'était produit et s'est arrêté, ou s'il est encore actif, on peut choisir parmi les différentes interprétations.

Il est légitime de se questionner sur ce colloque parmi des savoirs différents: il ne s'agit pas seulement de buts (la «théorie») mais aussi de connaissances partagées. Dans la formation des architectes les notions de base de chimie et physique se sont assez amoindries. Il serait raisonnable qu'on s'approche au domaine par le biais «archéologique», la connaissance des matériaux et des procédés du chantier historique vus par les lunettes des sciences. Il est plus difficile d'introduire aux mécanismes d'altération, et leur déclinaison dans les cas concrets, sans risquer une reconnaissance très superficielle des dégâts, isolée d'une vision globale de l'histoire matérielle du bâtiment.

Au niveau le plus élevé de la formation, le futur de la sauvegarde ne peut qu'envisager aussi des profils assez différenciés, caractérisés par la prévalence des notions d'histoire de la construction et des sciences, selon des itinéraires de recherche nécessairement personnels. On peut se poser la question si ces profils ne puissent pas être déjà ébauchés au niveau du diplôme.

Ces connaissances sont beaucoup plus opérationnelles qu'on ne le soupçonne. On a souvent des doutes sur la réalisation des finitions anciennes: les analyses n'arrivent même pas toujours, surtout pour les produits organiques, à détecter les composants d'origine. Traités et documents, qui laissaient sous-entendus, liées à l'habitude, toute une série d'indications, ne sont qu'un canevas. Néanmoins, certains procédés qu'on peut déduire des textes ou reconstruire par les analyses, paraissent encore des solutions simples et efficaces même face au niveau contemporain des connaissances. L'architecte doit acquérir ces notions et les apprendre à son tour aux exécuteurs. Aujourd'hui l'expérience et le chantier n'accroissent plus un savoir empirique, et beaucoup de pratiques se perdraient sans cet enseignement de deuxième instance, sans cette médiation cultivée.

Personne ne s'illusionne plus que la science puisse fixer pour toujours la matière dans son état actuel: même un nettoyage peut modifier radicalement l'apparence d'un bâtiment, mais surtout sa dimension de source, effaçant les traces de ses états successifs et de toute une culture matérielle, si on ne reconnaît pas ni les traitements anciens pour protéger et colorier la pierre, ni non plus les restes de l'usage.

L'effort de conserver au possible cette succession de couches comporte un projet: ses instruments autres que ceux du projet d'architecture et son échelle rapprochée en forment la spécificité.

Histoire et sauvegarde

Parmi les instruments de ce projet, l'histoire a paru inutile pendant que la conservation effective, totale, paraissait atteignable, au fur et à mesure où l'on s'illusionnait que le «récit du temps passé» demeurerait inaltérable dans la matière intouchée. Il s'agissait, bien sûr, d'une vision cavalière, simpliste. On feignait une histoire bornée à la tâche de garder le souvenir de ce qui allait disparaître, de remplacer le bâti par les mots, et au même temps et au contraire, de puiser aux sources, à l'origine au à l'apogée du bâtiment, les lignes d'un projet architectural.

L'ambition asynthotique à ne rien disperser de l'héritage du passé postule à rebours pour l'histoire un rôle essentiel. D'abord, les vicissitudes de l'usage et les temps

de la dégradation font partie de l'anamnèse préalable à toute tentative de «conservation», essaient de reconstruire – on l'a vu - les causes des altérations. Faute de ce diagnostic, il est problématique de les maîtriser, de les ralentir, voire de le bloquer. Et plus encore, l'histoire est le moment essentiel de la sauvegarde, c'est-à-dire la reconnaissance: si on ne sait pas voir les traces souvent minces du passé, on risque de les détruire même sans s'en apercevoir: *«on ne perd même pas ce qu'on ne sait, ou qu'on ne veut pas posséder.»*¹⁷

L'histoire de l'architecture au sens habituel du mot n'est plus en cause. En tant que critique opératoire elle racontait un passé largement imaginaire pour exposer son idée du présent, et ses excès, peut être, en ont détruit l'agrément même en tant que genre littéraire: Biagio Rossetti n'était point un professionnel d'avant-garde¹⁸, mais un entrepreneur rusé, enraciné dans son temps dans et ses affaires. La nouvelle Ferrare d'Ercole I est issue de la tête du duc et des compromis avec les tracés ruraux. Loin de préconiser une ville nouvelle, l'Addition ne dessinait aucune perspective pour la société de son époque et s'avéra une catastrophe politique¹⁹.

L'art de bâtir a ses procédés et ses durées, la notion d'«auteur» et son rôle excluent tout parallèle avec les arts figuratifs: l'architecte n'est pas nécessairement l'auteur des dessins, et encore moins l'exécuteur des travaux.

On peut emprunter de l'histoire de l'art l'observation minutieuse de l'ensemble au détail le plus mince, même figuratif, résultat d'une répétition rapide, presque automatique, mais on n'est point légitimé à en emprunter les mêmes paradigmes déductifs: ces courts circuits on les reprochait déjà à bon droit aux historiens de l'art des Années Trente lorsqu'ils empiétaient sur l'architecture. Les recueils, le répertoire de détails, de chiffres stylistiques, que produisent de ces observations peuvent néanmoins se traduire en aide précieux à la cronotypologie.

D'un autre angle visuel, l'histoire matérielle du bâti regarde les édifices comme résultat des pratiques du chantier et de leur évolution, les dénombre en éléments constructifs, exploite les connaissances opérationnelles, le métier de l'architecte.

Le cœur de la question a été abordé depuis des décennies par Carlo Ginzburg à l'égard de l'histoire de l'art²⁰, et ses réflexions sont valables aussi pour l'architecture: on ne peut pas se passer de l'histoire des institutions, de la société qui a élevé et habité les bâtiments et les villes, de ses documents et de ses méthodes de lecture. A côté des outils de l'archéologie, elles peuvent déceler la logique des superpositions qui forment la consistance actuelle d'un bâtiment ou d'un quartier.

Il ne se donne pas par contre, et on ne doit non plus enseigner une histoire de la sauvegarde et de la restauration comme histoire d'une discipline autonome qui se raffermirait, qui progresse et précise ses instruments. Ce fil rouge n'existe pas, il existe à rebours soit le rapport toujours problématique d'une société avec la présence physique de son propre passé, soit le poids qu'on doit reconnaître à l'administration de l'histoire, et à ceux qui la revendiquent ou en sont chargés. Les livres les plus intéressants des dernières décennies dans le domaine – je pense aux écrits de Jean Michel Leniaud et de Winfried Speitkamp – ont été écrits par des historiens des institutions, ne sont pas l'œuvre de professionnels de la restauration. La reconstruction de ces vicissitudes n'indique pas des démarches, des codes de comportement, mais fait réfléchir, forme une conscience.

Ce n'est pas donc au hasard qu'en France on retrouve les jeunes chartistes parmi les contestateurs les plus acharnés des vieux architectes en chef de monuments historiques et de leurs grotesques reconstructions.

Un petit mot de congé

On ne doit pas s'émerveiller de ces dettes vers le monde d'Aloïs Riegl, bien qu'elles ne soient pas les seules. Elles sont peut être incontournables, lorsqu'on donne ses cours dans une salle à cinq cent mètres du palais qui porte encore le nom du dernier Oberkämmerer, dont la famille eut comme précepteur Joseph Helfert, père de Joseph Alexander, futur président à vie de la Commission Centrale pour la Sauvegarde: grands juristes les deux²¹, Robert Musil les choisit comme modèles pour ébaucher le portrait du père de *l'Homme sans Qualités*.

Dans le lycée qui autrefois se nommait *I.R. Ginnasio di Brera*, il n'y avait pas de professeurs de philosophie, même enivrés de néoidealisme, qui pussent susciter l'attention pour tout ce qui n'était ni gnoséologie ni éthique pratique. *Hic locus, hic salta*.

Le contenu de vérité d'une proposition ne dépend pas de la forme dans laquelle elle est rédigée, avait théorisé Bernard Bolzano, et notamment, avait glosé Robert Zimmermann²², le maître de Riegl à l'Université de Vienne, ne dépend pas non plus de la langue dans laquelle elle est rédigée.

L'extension du concept de monument était donc une figure dans laquelle cherchait à survivre le cosmopolitisme des Lumières. Si l'on lira en tout ceci une senteur de suffisance, involontaire mais pourtant non moins lamentable, il faudra en accuser l'inconscient d'un vieux pays disparu, où, *comme il arrive ailleurs, on échangeait toujours un génie pour un dadais, mais on n'échangeait jamais, comme il arrive ailleurs, un dadais pour un génie*²³.

Notes

- 1 Bruno Reichlin: Sauvegarde du moderne: questions et enjeux en Faces 42\43 automne hiver 1997/98 pp. 3-5 «cette constante opposition entre création et conservation me semble déplacée et de mauvais augure pour la sauvegarde.»
- 2 G. Vasold, *Alois Riegl und die Kunstgeschichte als Kulturgeschichte. Überlegungen zum Frühwerk des Wiener Gelehrten*, Freiburg im Breisgau, Rombach Verlag, 2004
- 3 il riferimento è a Hans Tietze *Das Verhältnis der Denkmalpflege zum geistigen Leben der Gegenwart* in Tagung für Denkmalpflege, Wien, 1894
- 4 Carlo Ginzburg "Il formaggio e i vermi. Il cosmo di un mugnaio del Cinquecento" Turin Einaudi, 1976, avec l'avertissement que ce livre traduit en plusieurs langues ne dispense pas, pour mieux comprendre, de la lecture des autres textes dédiés par l'auteur aux aspects religieux de l'Italie du XVIème siècle.
- 5 Au tableau d'essor européen *Le régionalisme: architecture et identité* / sous la dir. de François Loyer et Bernard Toulhier; Paris, Ed. du patrimoine, 2001 on doit ajouter le point de départ national, Claude Vigato *L'architecture régionaliste: France, 1890-1950*, Paris, Norma 1994.
- 6 Gzregorz Grajewski *Die Kontinuität der Tradition. Denkmalpflege und Heimatschutz im Werk Hans Poelzigs* et Beate Störckuhl, *Reform und Innovation: Hans Poelzigs Ausstellungsbauten in Breslau (1904) und Posen (1911) en Hans Poelzig in Breslau – Architektur und Kunst 1900-1916*. hg. von Jerzy Illkosz und Beate Störckuhl, Delmenhorst, Aschenbeck und Holstein, 2000, pp.191-223 et 353 -389.

- 7 Pour une vision d'ensemble Norbert Bormann, «*Paul Schultze Naumburg 1869\1949- Maler, Publizist, Architekt- Vom Kulturreformer der Jahrhundertwende zum Kulturpolitiker im Dritten Reich*», Richard Bacht, Essen 1989.
- 8 Hans Tietze *Das Verhältnis der Denkmalpflege zum geistigen Leben der Gegenwart* in Tagung für Denkmalpflege, Münster 1921 p.55 suiv. cité en Christoff Friedrich Hellbrügge "Konservieren, nicht restaurieren. Bedeutungswandel und Anwendung eines Prinzips der Denkmalpflege im 20 Jahrhundert in Deutschland, Dissertation, Bonn 1991 p. 138.
- 9 Pour les deux, J. Divis Poinçons d'argent, Prag Artia 1976, Paris, Ed. de l'Amateur 1989, p 158.
- 10 Georg Dehio – Alois Riegl *Konservieren, nicht restaurieren –Streitschriften zur Denkmalpflege um 1900 mit einem Kommentar von Marion Wohlleben und einem Nachwort von Georg Mörsch FriedrichVieweg &Sohn Braunschweig- Wiesbaden,1988. Naturellement, Marion Wohlleben a parlé de „Gemeinsamkeiten und Gegensätze bei Dehio und Riegl (p.11)*
- 11 Neue Strömungen in der Denkmalpflege en Mitteilungen der k.k. Zentralkommission für Erforschung und Erhaltung der Kunst und historischen Denkmale, Wien 1905, Dritte Folge, IV Band, S.85-104.
- 12 *Denkmalschutz und Denkmalpflege in neunzehnten Jahrhundert* publié à Strasbourg, J.H.Ed Heitz 1905, comme tiré à part et compris après dans Georg Dehio, *Kunsthistorische Aufsätze München- Berlin 1914.*
- 13 *Souvenirs de 1912: Rome, Hohkönigsburg Zürich et Berne, Rome et Naples* Lausanne, Hoirs d'Ad. Bourgeon, 1913.
- 14 "Rome, Edizioni di storia e letteratura, 1963; Einaudi, Turin 1977.
- 15 Maria Andalaro, ed. "La teoria del restauro nel Novecento da Riegl a Brandi, atti del convegno internazionale (Viterbo, 12 - 15 novembre 2003), Università degli Studi della Tuscia, Florence, Nardini, 2006
- 16 La référence est, évidemment, à Camillo Boito "I nostri vecchi monumenti. Sui marmi di San Marco» en *La Nuova Antologia* vol.XXX p.57 et "Questioni Pratiche di Belle Arti" Hoepli, Milan, 1893 p.18.
- 17 Giorgio Politi *Aristocrazia e potere politico nella Cremona di Filippo II* Milan, Sugarco, 1976 p.453.
- 18 Bruno Zevi "Saper vedere l'urbanistica" Turin, Einaudi, 1971, réédition simplifiée – on le sait -de "Biagio Rossetti,architetto ferrarese..." Turin, Einaudi 1960.
- 19 Marco Folin, „*Un ampliamento urbano della prima Età moderna: l'Addizione erculea di Ferrara, pp. 51-174;en Sistole/Diastole. Episodi di trasformazione urbana nell'Italia delle città*, a cura di M. Folin, Vénise, Istituto Veneto di Scienze, Lettere e Arti, 2006; et aussi Marco Folin *Rinascimento Estense. Politica, cultura, istituzioni di un antico stato italiano* Rome, Bari Laterza 2001, dont les bibliographie font état des études précédentes qui avaient déjà remis en question un quinzième siècle imaginaire.
- 20 Il suffit d'indiquer „Indagini su Piero“ dans ses deux éditions de 1981 et 1994 (Turin, Einaudi) mais il faudrait ajouter les autres essais des dernières années, qui témoignent d'une attention continue.
- 21 Walter Frodl, *Idee und Verwirklichung. Das Werden der staatlichen Denkmalpflege in Österreich* Böhlau, Wien Köln Graz 1988 pp.54-55 et Constantin Wurzbach von Tanneberg, *Biographisches Lexikon des Kaisertums Österreichs*. S.v. J.Helfert
- 22 Peter Stachel „*Philosophie in multietnischen Milieu. Die „offizielle“ Schulphilosophie der österreichisch-ungarischen Monarchie als ein Weg in die Moderne*“ en Ákos Moravánszky (hg) „*Das entfernte Dorf – Moderne Kunst und ethnischer Artefakt*“, Böhlau, Wien-Köln-Weimar, 2002 pp. 137-169.
- 23 Robert Musil "Der Mann ohne Eigenschaften" Rowohlt, Berlin 1930, 1933, et 1962., Bd.I, I,8.

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**Cultural Heritage Process Charted:
Defining Competences
to Decide Educational Programs**

In my limited experience, conservation is taught as a set of components of the architect's skills. No doubt, it is correct that an architect has to be skilled in conservation, even only to give him/her some attitudes (sense of history, sense of diversity, attention to materiality...) which will be useful anyway. But, perhaps, this setting is a legacy of former times, when restoration came out from the mainstream of 19th century research for an "historical", meaningful architectural style. And to that same setting belongs the idea of designing/drawing as the absolute tool or expression mean of architects. But perhaps if an architect is sure that Project is the best and unique tool, he will hardly be educated enough to perform preservation as needed.

As I suppose that this Workshop in Genoa is held because we all are aware that Conservation is facing a lot of challenges in a becoming world, I think that the old settings have to be questioned. That is, we have to discuss the pivotal role of the main tool of an architect: the Project.

I think that, in a conservationist perspective, it would be a mistake to keep focusing Conservation Education only on the specialization of the architectural project. We can enrich education by means of analytical attitudes, attention to details (where one can meet God), awareness of new history, archaeology... in one word, culture. But project keeps being related to a linear process of production, similar to the process of building something new. The complex reality of heritage policies is still beyond, with its activities impossible to chart as a linear production process.

Not surprisingly, the medical metaphor (anamnesis, diagnosis, therapy...) is still very popular in our field, even if the leading scholars now are oriented to "prevention better than treating" and conservation as "care"¹, but architectural project is not a tool for "care": you can perform a restoration with care, but the instruments of restoration are designed for the "cure" of some "disease".

If we insist on a holistic vision of the architect, we are avoiding the challenge of analysing the process and recognizing which skills are needed, when, why, and who holds the related stakes. Doing so, we are ignoring the multiplicity and complexity of historic preservation process, and conservation is reduced to a merely antagonistic role: conservationist is the Jimmy Cricket who announces the collateral damages of strategies which are decided elsewhere.

Therefore, as it is currently done for defining the educational profile of any profession, the problem of Conservation Education has to restart from the analysis of the process and of the skills required in order to obtain better results. From this analysis it will be easy to understand that architectural project is only one of the tools, perhaps the mightiest, surely the most dangerous to handle.

In the context of a recently accomplished research², we tried to chart the actions concerning heritage in a diagram (Fig. 1) made up of seven spheres. Each sector is represented by a sphere because it is a recognised field of activity or interest, which in turn is charted: the process of regulation, of conservation, of enhancement, of management, of fruition, of promotion (education and communication), of fruition, of research.

Some of the hypotheses underlying the diagram are perhaps not endorsed by the whole scholarship. When we define a sphere of regulation including both the preservation activities performed by State offices and the territorial government performed by local Authorities, we mean that no preservation is effective without getting local

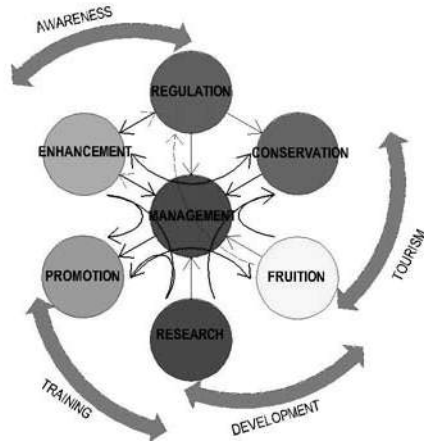


Fig. 1
The diagram representing the process of preservation/enhancement of cultural heritage.

systems involved. Therefore the Regulation diagram describes a number of possible cooperative interactions between authorities, although there is, at least in Italy, a strong position whose vision is for a State preservation performed independently of local powers, and when needed even against the driving forces of the territorial transformation. In the matter of fact, I think that it is more interesting to chart the dialectic of this problem, whatever could be the level of sharing objectives and values between developers and preservationists.

Each process can be thought alone, and actually each process is often performed as if its sphere had no relationship with other ones. But what is interesting are the relationships, and the pivotal role of management.

Let us take, for example, Conservation and Enhancement. You can think of conservation without enhancement, or of enhancement without any stress on conservation's aims. Therefore it is possible and useful to have both diagrams charted. But the reality is not so simple. The noblest intents of preservation face the problem of fundraising, and when restoration goes on, a building will surely be enhanced. On the other hand, the target of increasing attractive assets for tourists could require restorations, which could probably be popularizing over-restorations, where too many stones are new, like at Pierrefonds. Therefore it is probably a mistake to part conservation and enhancement, but the choice of describing the two spheres separately enables to point out the responsibilities of doing one way or another. It is not so useful to judge what is better, or what fits with the best deontology: it is useful to underscore that, although architects are very important players in the territorial transformation, and restoration is the climax of the conservation process, in a restoration there are a lot of decisions which are taken before, deciding what will be restored and when, how much it will be funded, which will be the goals, who will be the architect in charge for the project, and so on. These are decisions of management. At this level it is possible to state whether a popularizing restoration is desired, or the target is to boost a conservation process involving skilled people, scientific means, open-minded studies...

I hope that the Reader will easily understand which is my favourite option, but I think that it is not a successful way that of preaching Conservation as if it could be the Way and the Truth. I think we have the duty to show why and how heritage manage-

ment could be a driving force for a sustainable development, while the misuse of heritage leads to unsatisfactory long-term results. And the first step is to show the tasks, the responsibilities, and therefore the skills needed to improve and to reach the goals.

If the paradigm of conservation has to change from cure to care, a new process has to be implemented, in which prevention and maintenance are not understood as lesser degrees of intervention³, but as different phases of a unique process. Italian legislation has made an important step in this direction, with the Code 42/2004: art. 29 says that "Conservation is obtained through a coherent, coordinated and planned activity of investigation, prevention, maintenance and restoration".

The aims of Conservation Education are then changing in turn, so that the main items could be:

- it will be necessary to form and train different kind of professionals, not only architects;
- planners (and decision makers) must be trained keeping in mind the relevance of heritage as a development factor, and must be given competences in detecting conservation problems;
- all architects (all technicians of building sector) must be aware of what is conservation nowadays;
- all professionals must learn to cooperate, avoiding absurd conflicts like that which opposed architects and restorers in Italy in the last decade;
- architects have to be aware of the role of their projecting in the non-linear chain of the process; this is not the old argument against architects you can find in the first documents of SPAB⁴, or in the well known editorial of Burlington Magazine against restorations in Tuscany⁵, but it is a shy memorandum that an evolving discipline calls professionals to continuing education;
- maintenance and prevention must gain a new role and a recognition both at scientific and professional level, sharing best practices⁶;
- all professional, technicians and workers have to be aware of the centrality of knowledge: not only gathering data, but enjoying the flavour of investigation and interpretation;
- all people involved in the process must become acquainted with information technologies.

The most relevant need is for a deep understanding of the connection between conservation and other disciplines, to avoid keeping conservation bound to the good old paradigms of 100 years ago. It is well known that concerns for environment arose already in 19th century, but if the words are the same, perhaps the conceptual background changed⁷. Ecology as "a science and an ethic of diversity and imperfection" is based on Darwin's theory, but also on decades of elaboration. And in this direction new alliances are needed to skip from conservation as pure defence to the vision of a world in co-evolution, where heritage could be the pivot of a new understanding and a new development process: that is, commuting from "limits to development" to "development of limits"⁸.

Notes

1. For example, I could quote the sound work of L. Scheueremans, K. Van Balen, K. Brosens, D. Van Gemert, P. Smars, *The Church of Saint James at Leuven: Structural Assessment and Consolidation Measures*, in "International Journal of Architectural Heritage", 1, 1, 2007, pp. 82-107, organised in Anamnesis, Gathering Data, Analysis, Diagnosis, Therapy, Control. A discussion of the medical metaphor is in G.P. Treccani, *In principio era la cura. Medico e restauratore: un paragone da rivisitare*, in "Tema", 1996/3-4, pp. 133-138.
2. The title of the research (still unpublished) is *Analisi dei bisogni del mercato del lavoro e individuazione delle competenze innovative nel comparto Beni culturali*, in the framework of the *Polo Formativo per la valorizzazione dei beni culturali*, financed in 2006 by Lombardy Regional Government on the FSE platform. I wish to thank the leader partner Fondazione ENAIP Lombardia, the Fondazione Politecnico di Milano and all the partners in the project for all the support and the inspiring collaboration. I wish to thank Stefania Bossi and M. Paola Borgarino for their assistance.
3. Even B. Feilden, *Conservation of Historic Buildings*, third edition, Architectural Press (Elsevier), 2003, pp. 7-12, speaks of "Degrees of intervention" as if they were different tools to choice in a project.
4. C. Miele, "A Small Knot of Cultivated People": *William Morris and Ideologies of Protection*, in "Art Journal", Vol. 54, No. 2, 1995, p. 75.
5. *Restoration of Monuments in Tuscany*, in "The Burlington Magazine", Vol. 112, No. 813. (Dec., 1970), p. 789.
6. L. Verpoest, A. Stulens, *Monumentenwacht. A Monitoring and Maintenance System for the Cultural (Built) Heritage in the Flemish Region (Belgium)*, in T. Patricio, K. Van Balen, K. De Jonge (ed.), *Conservation in Changing Societies. Heritage and Development*, Proceedings of the international conference on the occasion of the 30th anniversary of the Raymond Lemaire International Centre for Conservation (1976-2006), Leuven, May 22-25 2006, Leuven 2006, pp. 191-198.
7. C. Gustafsson, J. Rosvall, *Integrated and sustainable conservation*, paper presented to *Changing Role and Relevance of Urban Conservation Charters*, 5th International Seminar on Urban Conservation, Recife, Brazil, 23 – 25 November 2007.
8. M. Ceruti, *Un'ecologia umanista*, in M. Callari Galli, ed., *Pensare la diversità*, Roma, Meltemi, 1998, p. 31.

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**Teaching Conservation/ Restoration
in the Architectural Field:
A Challenge for Public Institutions
Protecting the Heritage**

This paper intends to treat in a related manner the possible answers to the first, second and third questions proposed in the workshop - what (and why), how to teach, and who teaches/should teach architectural conservation - with the aim of understanding to what extent teaching objectives and programmes in this sector respond effectively to the challenges set today for the conservation of our built heritage and how figures that are different from the permanent university teaching staff may contribute to the education of future generations of architects and other professionals involved with heritage conservation and stewardship.

Changes in cultural heritage conservation goals

Over the decades, the scope and the object of the safeguard of architectural heritage (and consequently those of conservation) have enlarged, moving their focus from individual artefacts to towns, territories landscapes, systems of objects and their relationships up until the processes that have made them up. Besides, we have become more and more conscious of the role played by cultural heritage, in its wide acception, in nurturing the sense of identity and integrity of individuals, groups, 'communities' and contributing to build the future of human societies.

While in the past times, heritage protection concerns – and subsequently conservation - were confined to individual and isolated objects, which were deemed to possess a special, higher value that justified the investment of additional resources in order to guarantee their retention over time, today the notion of heritage has acquired a territorial dimension. From rural landscapes, to urban residential sectors or outdated industrial districts, we are well aware that retaining the qualities of a 'cultural landscape' or reclaiming in a durable manner a suburban area for mixed use, requires different strategies and instruments, elaborated at a different level, than those adoptable for the conservation/restoration of isolated buildings, whatever these two terms may mean - and the meaning of these two words is not an irrelevant question in discussing objectives and strategies of education in conservation.

The pressure of economic development and the energetic crisis of the 1970s have brought to the fore issues such as the need for balancing development with resources consumption, social and intergenerational equity, ecological fragility... and contributed to address architectural conservation towards a long-term, processual perspective. Architectural conservation came therefore to integrate (economical, ecological, social, financial...) sustainability and inclusiveness concerns, with energy efficiency, easy maintenance and adaptability objectives.

The shifting in the perception of what should be considered heritage, and therefore safeguarded, has brought conservation to face new challenges that we do not seem to be prepared to tackle with our current conceptual instruments, which often appear being no longer able to serve our goals. In fact, they were developed for different objectives than those we need today, or, if you will, for objectives that have proved to be inadequate to answer the question we have been keeping on asking to our heritage.

Nevertheless, new motivations to support the conservation/restoration our built heritage do not imply necessarily that 'old' issues have been solved or have lost their relevance. Questions about why and how to intervene on existing buildings maintain their actuality, as debates and outcomes of several conservation/ restoration works

clearly demonstrate. Finding good architectural solutions to the problems of re-use, rehabilitation and upgrading of ancient buildings or architectural complexes is still a central issue that cannot be solved at the policy level of the conservation process, but requires high skilled professionals in the traditional construction's technique, as well as structural behaviour, building material technology, heating and conditioning system, piping, electric supply in ancient buildings, among other disciplines.

New stakeholders and professional profiles in the conservation arena

In parallel, the sensitivity towards our built heritage has increased and spread among society at large, also becoming one of the main points of the political agenda within the wider theme of sustainable development. In Italy, the recent reform of the Constitution has given a more relevant role in several areas, included heritage matters, to Regions, Provinces and Municipalities. Therefore, we have assisted to a flourishing of policies and programmes for the integrated conservation/ appraisal/ 'mise-en-valeur' of our heritage assets, carried on by a variety of public and private agencies. The integration of architectural conservation with territorial planning and economic development has modified the 'traditional' profile of heritage experts. New professionals and stakeholders, such as planners, geographers, and more recently economists, developers, on one side, and construction, insurance or energy companies, on the other, have entered the field of conservation, traditionally occupied by historians, archaeologists, architects and public institutions. Today, even bank foundations or other private stakeholders make their heritage policy and develop educational programmes in conservation, allocating funds according to their own agenda. This complex pattern of programmes, the reduction of public state funding, together with the strengthening of the regional and municipal institutional autonomy, have also modified and partly reduced the traditional role of the public and state level institutions in charge of heritage stewardship and protection.

Besides, today, heritage conservation activities are carried out within wider programmes, whose primary objectives are economic development, pursued through urban or territorial regeneration/ appraisal, and where heritage safeguard is only a 'side' goal, subordinated to the main ones.

It is in this multifaceted and 'fluid' panorama that professionals with competences in architectural conservation will find themselves to work in, and to succeed in ensuring the effective safeguard of our historic built environment, they need to possess capabilities that go beyond technical skills, however useful these may be.

Are current objectives and educators in conservation/ restoration adequate to face this new situation?

Answering to this question requires that we first ask ourselves what we do need to hold in order to tackle these changes: what kind of professionals and which competences would be useful for the present and future day in order to achieve the improvement and not the impoverishment of our built environment?

Another level of questions regards which should be the competences possessed by educators, in general, and specifically by those who teach architectural conservation, to ensure effective educational and teaching results.

The changes in scope, objectives, and actors in heritage conservation practice do and should influence education in conservation, yet, educational/ teaching objectives cannot strictly follow those of conservation, at least, because the latter are subject to change, but, more importantly, because, to be successful, teaching should help students understanding how to deal with conservation (shifting) issues (objectives, ambiguities, hidden contradictions, practice...) and not only conservation disciplines/ methodologies/ techniques.

In my opinion, there are at least two levels to which we may try to answer to these questions. The first one is more general and concerns 'generic' competences that should be the objective of any form of education:

- Being aware of the complexity of the world
- Being able to manage such complexity
- Being able to govern multiple objectives
- Being able to make decisions in uncertain conditions
- Being able to take responsibility and justify, any decision made

The second level concerns the specific goals that conservation's teaching should pursue, the subjects that – and the way in which they – should be taught in programmes for conservation education to achieve such goals.

In the light of the above mentioned changes, education in conservation should first be able to help students to develop their ability to conjugate planning with the executive level, theory with practice, strategic vision with day-to-day actions. Besides, new, specific competences that may be attained through teaching additional subjects, such as heritage economics, planning and management or even legal framework for heritage protection and stewardship are needed, as well as more technical disciplines, i.e. installations technology for heritage buildings, design for accessible architecture, eco-architecture, etc.

As a matter of fact, the changes in architectural conservation vision and practice are only partly reflected by teaching schedules and educator profiles in the field of conservation/ restoration, at least in Italy.

In fact, only in few cases and generally within non academic initiatives, which have been flourishing in recent years, we may find treated subjects that are not part of the traditional curricula of conservation education.

However, the introduction of new subjects in conservation teaching will make a real difference only if these will be taught in relation to the other, more 'traditional', ones (i.e. history of architecture, archaeology, technology of architecture or conservation related scientific disciplines). The educational dare does not lie in providing additional information on matters that may be related to heritage safeguard/ conservation but in building bridges among the various subjects and disciplines that intervene in the conservation process, maintaining the focus on its primary objectives.

Similarly, in the academic realm the background profile of those involved in teaching conservation/ restoration is still prevalently referred to 'traditional' conservation-related disciplines, while planners, economists, managers, lawyers, real estate operators or developers... are today involved in professionalizing Master programmes or short-term training courses carried out outside university.

The enlargement of the teachers' background spectrum may be greeted as a positive element which offers students and teachers belonging to the academic realm the possibility to get in touch – as outsiders with the help of insiders – with the logics, mechanisms and future prospects of the contemporary actual world of heritage conservation planning and practice. The knowledge of how 'things really work' may be a significant contribution to shift objectives, where and when necessary, to select and to provide further needed competences that can be absorbed by the heritage conservation market, and to help students and young professionals develop strategies to achieve their goals.

The possible educational role and challenges of the technical staff of the Ministry of Culture

We find professionals of the peripheral offices of the Ministry of Culture among the few figures who are commonly involved in teaching conservation both within bachelor, masters and postgraduate programmes and, at the same time, having their own job apart from the University activities.

This frequent occurrence is due to a double circumstance: 1) the conviction that the natural professional outlet for those attending Schools of Specialization and postgraduate 'masters' will be entering the Ministry of Culture or other public institutions as members of permanent staff (even if, actually, only few of them will have this opportunity - also due to the ministerial budget restrictions - while all others will have to find out their own space in the professional world); and 2) the close relationship between the academics and the technical staff of the Ministry of Culture, due to their complementary, and sometimes competing, cultural and institutional role.

The presence of technical officers of the Ministry of Culture (MiBAC) among the teaching staff of undergraduate and post-graduate educational programmes in the field of conservation may bring reciprocal advantages, which are often underestimated by both sides.

On one hand, the experience matured by ministerial officers in heritage conservation and stewardship, which often involves the interaction of different public institutions and private subjects, may help students to build a realistic picture of the conditions in which today conservation and safeguard activity are carried out - from the feasibility phase to the realization - and of the main stakeholders involved in these processes.

Besides, ministerial officers are called to deal with the daily implementation of legal provisions and administrative procedures for heritage protection and, therefore, they are in the best position to explain the hidden implications and the side effects of the application of the norms and their influence on heritage safeguard and conservation. They also have a general vision of the complex and multifaceted world of conservation practice and may help outline which competences would be necessary to the future professionals for succeeding in the field and bringing their own contribution to the advancement of architectural conservation goals and results.

Furthermore, technical officers of the Ministry are themselves conservation professionals: they project and conduct conservation works and may share their own technical experience with students. They can offer a variety of examples of problems and adopted solutions, both successful and unsuccessful, that can enrich and articulate

the academic knowledge of students: the critical analysis of case studies contributes to develop the students' ability to prioritize problems and assess costs and benefits of each choice.

Finally, the possible involvement of graduates in real programmes or projects carried out by the Ministry – as it has happened for the Genoa's School of Specialization thanks to on-purpose agreements between the School and the peripheral offices of the MiBAC - would allow young professionals to experiment directly and in a real situation their methodological and technical skills.

On the other hand, the technical staff of the Ministry may use this opportunity of a didactic experience as a stage for thinking at a general level the sense of their work (why and for whom do we try to conserve our heritage? How can we achieve effectiveness? What should be re-addressed in our daily practice? Which may be our task in educating the future generations of 'heritage professionals?') in a phase in which their role, responsibilities and work are undergoing profound changes and the ministry finds itself to be no longer the only or the main actor of conservation policies and projects due to the legal and institutional reforms that have been occurring in our country over the last 15 years.

Note

The present document has been stimulated by a number of discussions that the author had with Rita Vecchiattini (DSA- University of Genoa), during the preparation of the workshop.



Session 2

How?

Keynote Lecture by

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How Do we Teach?

Introduction

The contributions within this Section 2 “How do we teach conservation and restoration of built heritage ?” explain the existing ‘offer’ at different Universities and Institutions. Based on the available texts and the supplementary information explained during the workshop, the answer on the question ‘How do we teach ?’ has two aspects :

- a. a quantitative aspect, i.e. the number and ‘weight’ of hours dedicated by students and/or professors, and the possible integration or combination within other educational programs;
- b. a qualitative aspect, i.e. the content and type of treated subjects and/or exercises, the administrative structure of courses and the overall concept of the curriculum, the methods of teaching and the quality of teachers.

Different type of courses are offered in the field of ‘conservation’ and it is quite difficult to compare each of them as, of course, evaluation and comparison depends on the aims of each course and the kind of final output or ‘competences’ that one guarantees the student. Especially in Italy today, there are different kind of ‘built heritage conservation’- educations, some of them already having a long tradition, others are more recently created, driven by the present need for highly qualified professionals in the field and/or the recent reformations according to the Sorbonne-Bologna Directives.

B. Types of teaching architectural conservation.

Within the field of Architectural Education, one can consider at many possible types of teaching conservation, each of them aiming at different professional competences. One also has to consider that the terminology of academic or professional titles do not always cover the same content, as many countries might have different backgrounds and traditions. Finally, one must also realise that the very large range of vocational training courses in traditional building crafts and their applications in the conservation praxis are NOT taken in consideration in this EAAE-ENHSA workshop.

Based on our limited documentation, I distinguish following SIX types of conservation teaching:

1. General ‘(Professional ?) Bachelors in Conservation of Cultural Heritage’ (including ‘architectural heritage’ as a sub-discipline in heritage conservation). This is the Italian ‘Bachelor (or ‘laurea breve’) in ‘Beni Culturali’, i.e. a three year full time education aiming at good professional competences in the field, but without important civil responsibilities.
2. Introductory courses about architectural and urban conservation, integrated in the regular Master course in Architecture and/or Interior Architecture, in order to give the students a basic acquaintance with some principles of conservation (theoretic as well as technical).
 - in most cases this is limited to a ‘ex cathedra’ compulsory introduction of 1 semester 1 hour/week (= 3 ECTS) course, combining some basic data on “Theory and History of Conservation” and some ‘Technical aspects on degradation and diagnosis of traditional materials’. Some other programs offer a supplementary 1 semester 1 hour/week (= 3 ECTS) elective course on ‘Technical aspects of in building conservation’.

- in some faculties, the master students do also have occasional contact in the architectural design studio's by working on existing buildings (mostly NOT listed monuments)

The present profession as an 'architect', of course, must contain such 'introduction', and the weight of +/- 6 ECTS in a total master package of 120 ECTS can be an acceptable number.

3. "Master in architecture with specialisation in conservation" or "Conservation Architect" i.e. a 'normal' architectural education consisting of a 5 years program (3 year bachelor followed by 2 year appropriate master), leading to the academic title of "architect" but with a integrated 'colouring' or 'accent' in 'conservation' (by choosing appropriate elective courses). Such early specialisation within the basic education to become 'architect' might be inspired by similar existing 4 or 5 year courses in 'conservation of movable cultural heritage' leading to the academic title of "conservator of movable heritage" (in most cases related to heritage made of specific materials such as paintings, stone or wooden sculpture, paper, photos, polychromic)
4. ('Initial' academic) Master Program of 60 ECTS = 1 year or 120 ECTS = 2 years (with or without specific conditions concerning the type of Bachelor diploma) finalised as "Master in conservation and restoration of Monuments and Sites". Such 'Initial Master' diploma might be different from the 'Master in Architecture' as the study program does not necessarily follow the E.U. established curriculum leading to the protected title of 'architect'. Consequently, in that case, such 'Initial Masters in Conservation' can NOT be recognised equivalent to 'Master in architecture', and the alumni are NOT allowed to take the civil responsibilities of a architect in architectural conservation projects. Such initial 'master in conservation' program is mostly open to all academic bachelors. Sometimes, supplementary 'preparative or propaedeutic courses' with a maximum of 60 ECTS are organised to accept also 'professional bachelors', or 'academic bachelors' from a not appropriate or not-building related field. This type of Master Programs (with entrance of students from very diverse fields) have the advantage of offering a widely inter- and multidisciplinary approach in the study program.
5. (Postgraduate academic) Master Program, or 'Master after Master' program. This are multidisciplinary specialisation or 'perfezionamento' from 60 up to 120 ECTS organised for architects, engineers or master from human sciences to get specialised in architectural and urban conservation of monuments (= listed historic buildings). The condition to start such postgraduate master is obviously the need for a first master diploma related to conservation of built heritage and/or specific motivation from academic or professional kind.
The study program of this courses is by definition inter- and multidisciplinary, and the students following this program can have very different backgrounds, but in most cases, they belong to one of the following groups:
 - students with design or technical backgrounds (architects, engineers, planners, chemists)
 - students with human sciences background (historians, art historians, archaeologists)
 - students from applied management, financial or administrative sciences.

6. Doctoral program (PhD) in architectural conservation. According to the Sorbonne-Bologna Directives, and depending on specific conditions put by each Universities, PhD studies in architectural conservation are the highest academic level in this field. Such studies can start after a appropriate Academic Master Degree and always consist of authentic and original scientific research, complemented with some selected courses related to the research topic.

Different kind of professional activities

The content and methodology of each of those teaching levels mostly depend on the future professional activity at which the education program is aiming at. This professional activities can be quite variable:

- Conservation - architect or urban conservationist
- (project concept and design, urban planner,...)
- Building historians (compulsory for all listed buildings !)
- Preliminary analysis and diagnosis of materials and/or structures
- Engineering applications (structures / HVAC/ Electricity/ Fire protection /...)
- Inventarisation and protection procedures
- Financing and (cultural) economics
- Public awareness, guidance and/or social aspects of involved people, project participation processes
- Project realisation (contractor, site organisation)
- Maintenance and management (tourism !)
- ...

Case example: Teaching architectural conservation at the University College of Design Sciences 'Henry vande Velde' – ANTWERPEN (Belgium)

The following slides of a Powerpoint Presentation illustrate the specific situation of the 'Antwerp – Case'. They inform about following aspects:

- 1.1. The Preliminaries of the present program 'Master in Conservation and Restoration of Monuments and Sites' (Ma CRMS)
- 2.2. Mission statement of the Ma CRMS
- 3.3. Type of program (multidisciplinary & interdisciplinary)
- 4.4. Admission policy for starting Ma CRMS
- 5.5. Organisation of the educational program
- 6.6. Curriculum of the lectures, exercises and project work (in general)
- 7.7. Curriculum of lectures, exercises and project works (in detail)
- 8.8. Major topics (study themes) and modular structure of the program
- 9.9. Examples of projects and studio work by the students
- 10.10. Research activities and relation of the research of staff members within the masterprogram
- 11.11. International contacts and activities by staff and students
- 12.12. Professional activities of alumni.

The Master Program "Conservation of Monuments and Sites" at the Antwerp College



1. PRELIMINARY

- **1976** : Start of an interdisciplinary *postgraduate* program "Conservation of Monuments and Sites", with
 - Regular courses concentrated on two days / week (18 lecture hours / week, = +/- part time !) during two academic years, and
 - Average number of 30 students / year
- **2004** : CHANGES and restructuring of program because of integration within BaMa structure
 - a. the program becomes a 'initial' MASTER i.e. : one can start after each (academic) BACHELOR diploma
 - b. the program has been structured the same way as the other Master programs at the College to facilitate possible 'bridges' and 'exchanges' by students and professors.
 - c. Full time program of 120 ECTS points (= 4 semesters of +/- 2 to 3 days / week)

2. MISSION Statement of the Ma CMS program

1. Prepare students for taking different type of RESPONSABILITIES regarding conservation and restoration of historic buildings and sites. (NOT necessarily as a architect, cfr. professional activities of alumni)
2. Educating towards a critical and scientific based ATTITUDE of respect and willingness for active integration of monuments and sites within modern society.
3. Making them aware about different kind of VALUES of built heritage and learn METHODS and TECHNIQUES for intervention and best practices.

3. Type of program

Main characteristics :

- Multidisciplinary program with interdisciplinary activities :
multidisciplinary = contributions from different scientific disciplines
interdisciplinary = participants and professors with different background working together on the same topic
AIM : all parties involved in the conservation process need to understand and respect each other's view and concern in order to realise the best possible compromise on the site!
- Courses and study objects have to be completely imbedded within the regional specificity of the heritage and feel intensively for the real local problems
- Good balance of courses :
23 % (= 27 ECTS) theory of CMS and study of the regional heritage
27 % (= 33 ECTS) methodologies and techniques
5 % (= 6 ECTS) elective course out of all offered at University
45 % (= 54 ECTS) project studies and field trips

4. ADMISSION POLICY

One condition : diploma **academic BACHELOR**
within a field related to built heritage
e.g. architecture / engineering / archaeology /
art history / sciences /

This gives **DIRECT** entrance !

Other BACHELORS can enter after succesful
supplementary **Propaedeutic course** (15 to 30
ECTS) e.g.

- all professional bachelors
- those academic bachelors from a discipline
with poor or no relation to built heritage
(program to be decided by the CRMS Staf)

SITUATION during last 10 years :
35 % from Design and/or Technical Sciences
45 % from Historic or Human Sciences
20 % other (e.g. cultural management, law,
geography, ...)

Admission rules of the Master of Conservation of Historic Heritage, Architecture, 2004



5. PROGRAM ORGANISATION

The Warehouse (1720) in Alton Wood, 2004



Full program = 120 ECTS points = 4 semesters of each 30 ECTS points
1 semester = 18 weeks of lectures, seminars, exercises + 2 weeks for
examinations / all activities concentrated on 2 à 3 days/week
1 week = 36 hours work -> Full time occupation = 1450 hours / year

MODULAR curriculum, built up according to **TWO OPTIONS A & B** :
- option A : 'Technical' Section -> ("Technical Bachelors")
- option B : 'Historical' Section -> ("Historical Bachelors")

Selection depending on previous education of students and/or their future
activity

6. CURRICULUM CONTENT :

1Ma – sem.1 = 3 mod. 'Theory' of each 6 ects = 18 |
 + 1 mod. 'Project' of 12 ects = 12 | total = 30 ects
 sem. 2 = 4 mod. 'Theory' of total = 18 ects |
 + 1 mod. 'Project' of 12 ects = 12 | total = 30 ects

2Ma – sem.1 = 5 mod 'Theory' of total = 24 ects |
 + 1 mod. 'project' of 6 ects | total = 30 ects
 sem. 2 = 2 mod. 'Theory' of 6 ects |
 + 1 mod. 'Master thesis' of 24 ects | total = 30 ects
OVERALL TOTAL = 120 ECTS



Administrative calculation method of the curriculum :

Basic idea : 'student' is a (privileged) worker -> activity similar to other workers =
 +/- 40 hours a week !
 Introduction of the concept 'study load' or 'study content'

1 (academic) year = 52 weeks / inactivity = +/- 12 weeks / real working period = 40 weeks

25 h < 1 ECTS < 30 h study-load of which 1/3 'contact' time and 2/3 'self study'
 e.g. (Antwerp calculation) :

	lectures ex cathedra	exercises & studio work	Total 'contact'	Self study	Total 'load'	ECTS
1st Master = 1 full year (2 sem.):	360	79	439	1121	1560	60
2d Master idem	244	66	310	1250	1560	60

study activity by student = 1560 / 40 weeks = 39 h/week
 1 ECTS = 26 hours activity

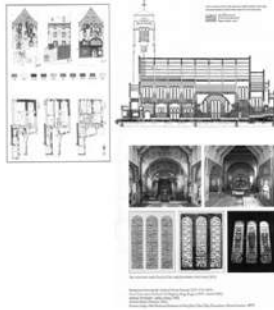
7. CURRICULUM CONTENT / detailed

8. MAJOR TOPICS / Modular structure of the program

- 1. Theory and history of conservation of M&S (1) 2 x 3 = 6 ects
- 2. Typology of architectural heritage in Flanders (1+2+3) 3 x 6 = 18 ects
- 3. Methodologies for analysis and research (1+2+3) (2x3)+5 = 11 ects
 Partly SEPARATE for Option A and Option B !
- 4. Techniques for conservation and restoration (1+2+3) 3+(2x6)= 15 ects
- 5. Public Space , Town and Historic City centres (1) 3 ects
- 6. Professional Practice ^{Restoration Architect / Building Historian} (1) 4 ects
 Both have to be followed by Option A AND Option B !
- 7. Managerial and Organisational Aspects (1) 3 ects
- 8. Elective courses 6 ects
- 9. Project working & Study visits (1+2+3) 12+ 12 + 6 = 30 ects
- 10. MASTER CRMS Thesis (1) 24 ects

OVERALL TOTAL = 120 ECTS

9. CMS PROJECT AND STUDIO WORK



Project work = largest package in the curriculum !

-> Selection of sufficiently representative object on which 2 up to 4 students with different background work together

PROJECT WORK # DESIGN WORK !!

Sem. 1 (12 ects) : measured drawing of historic detail (Opt. A = Opt. B)

Sem. 2 (12 ects) :

- Opt. A analysis & conservation study of small historic house
- Opt. B : archival research / historic evolution

Sem. 3 (6 ects): identification of theme for Master thesis

Sem. 4 (24 ects) : Master thesis

10. RESEARCH

TWO LEVELS :

- **BASIC scientific research**
(evaluation and assessment techniques, archive and collection procedures,....)
- **Research by design and project work**
(application of techniques and implementation in real existing cases, alternative projects, strategies for realisation, ...)

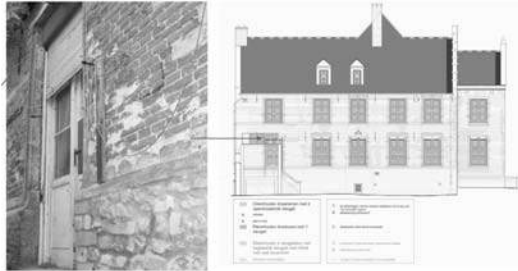


FOUR AREAS :

- Theory an history of CRMS
- Historic Houses Analysis
- Registration and assessment
- Functional and environmental aspects



•SCHRIJNWERK – toegangsdeur zuidgevel



•BAKSTEENMETSELWERK/VOEGEN - noordgevel



11. INTERNATIONALISATION



- Intense contacts with international organisations such as ICOMOS, Council of Europe, Eur.Union, ...
- Exchange of students (Erasmus) starting end 2006
- Integration in ADSL week
- Occasional visiting professors and guest lectures
- Annual study trip by students
- Cooperation within international E. U. Programs (e.g. Culture 2000)
-

12. Professional activities of alumni

1. Restoration site practice

- * as a private architect or engineer (study / design / site direction / project management / ...)
- *archival preliminary studies to help and complete design decisions
- * wall archaeology and identification + stratification of materials
- * building contractors

2. Administration (public and private)

- * Different levels of public administrations responsible for CRMS (cities, provinces, region, federal ministries, official commissions,) regarding "listed buildings" and sites (+/-30.000 items for Belgium !)
- = inventarisatie, control of restorations, maintenance, policy making, ...
- * Private organisations and societies (local & national), foundations, ...

3. Management of built heritage sites (use, tourism, ...)

4. Academic professions : teaching and research

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**Teaching in Diagnosis
and Consolidation courses**

Introduction

The main part of the European territory is characterized by the presence of ancient urban sites and monumental centres, together with a complex built environment made of simple architectures forming an important part of the cultural heritage. A dialogue with this existing heritage cannot be disregarded by most of the new production architectural design. Its conservation gains an increasing relevance toward the safeguard of the memory and the complex relationship that the architectural culture has to carry out with its past, in view of a responsible and sustainable future.

The role of the University is crucial for the formation of a critical attitude that should combine awareness of the complexity of the Architectural Conservation with specific competences in its different fields: history, engineering, topography, archaeology, material sciences, diagnostic techniques...

Within this frame, one of the most important ideas, emerged in the past and got increasingly stronger in the last decades after failures of monumental buildings and earthquakes, is the role of knowledge as a fundamental basis of any repair and strengthening intervention. As much an intervention is required to be structurally effective, compatible with the existing, respectful of its constructive, historical, material characters, as much an articulated, deepen and inter disciplinary survey has to be carried out. The complexity of the subject requires a constant confrontation between the building and the sources of data, the interdependency between design of the investigation and choice of the repair techniques, and continuity between prevision, execution and control of the intervention.

The research group created by L. Binda at the Department of Structural Engineering of Politecnico di Milano has been carrying out a teaching activity deeply connected to on-site and laboratory experimental research. An investigation methodology well calibrated on historic masonry buildings in the Umbria region after the earthquake of 1997^{1,2} has been applied in different architectural complexes. As a first step to provide a design for repair and preservation of damaged buildings a preliminary in-situ survey is generally performed to obtain details on the geometry of the structure, identifying irregularities (vertical deviations, rotations, etc.) and to single out the parts where more accurate investigations are needed. Buildings may have been subjected to the addition of several volumes in different times, and the possible discontinuities between the different volumes could affect their overall static and seismic behaviour. Therefore, for a reliable interpretation of the signs of damage, the geometrical survey has to be integrated by information on the historical evolution of the structure in its complexity.

Teaching Activity

In the first eighties a unique course denominated Consolidation and Adaptation of Buildings (L. Binda) was activated at the Faculty of Architecture, focussed on different themes covering the deterioration of the masonry materials (bricks, stone, mortar and timber), the mechanical behaviour of masonry, the structural analysis of timber and masonry structures, the diagnostic techniques. Subsequently a second course was added on Deterioration and Diagnosis of Materials of Ancient Buildings (G. Baronio). For many years, before the reforms of the academic curricula, these were the only pos-

sibilities for students to deal with chemical, physical and mechanical behaviour of ancient masonry.

Then, the Second Faculty of Architecture was born in Milano and different rules governing the studies succeeded that involved the splitting of the five years course of study into two courses of three (First level degree) and two years (Specialisation degree), new disciplinary combinations and the reorganization of previous long courses into more shorter ones.

Temporarily, Final Year Synthesis Laboratories were activated that were aimed to lead students to their final year thesis. During the Laboratories directed by L. Binda, on site investigations were carried out by the students in Umbria after the 1997 earthquake, originating examination papers and final thesis. Direct survey of the damage, collection of historical information and interpretation of the failure mechanisms of complex buildings were performed (figure 1).

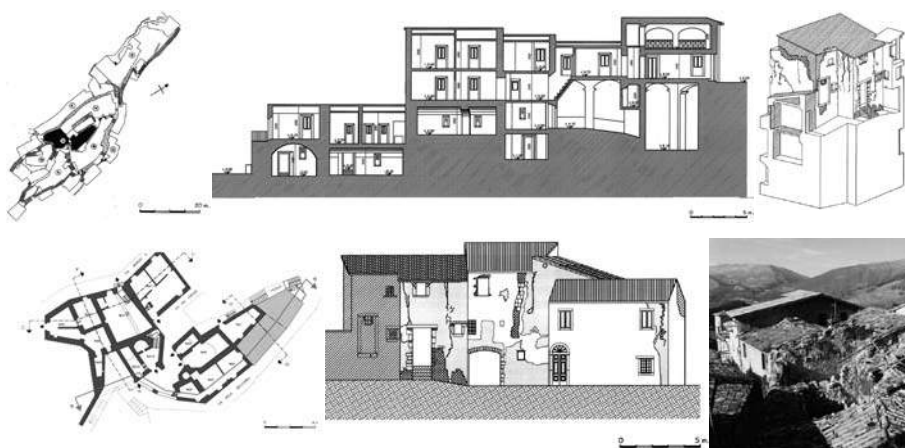


Figure 1

Roccanolfi, Palazzo Adriani damaged by the earthquake in 1997.

At present, partly different organizations characterize the Faculty of Architecture and Society, Leonardo (Milano, Mantova) and the Faculty of Civil Architecture, Bovisa (Milano) of Politecnico di Milano, as described in other presentations of the present Conference.

Considering the two years Specialisation degree of both Faculties, various optional courses are carried out by members of staff within the disciplinary area of Consolidation and Diagnosis. The course denominated Decay and Diagnosis of Historical Buildings focuses on the application of destructive and ND diagnostic techniques to the investigation of structural damage of masonry buildings (laboratory tests, flat jack, sonic and radar test) and on the interpretation of failures and crack patterns. The course denominated Decay and Diagnosis of Materials, deals with the technology and damage processes of historical masonry materials (bricks, stone, mortar and timber) and studies their behaviour in time and in different environmental conditions. Suitable parameters and diagnostic techniques for their chemical, physical and mechanical evaluation are described together with criteria for the choice of compatible repair materials. Both courses include ex-cathedra lectures the presentation of research case histories

and involve students in visits to the Laboratories of the Structural Engineering Department, described in the paper by Augelli et al. presented at this Conference. The course denominated Consolidation of Historical Buildings treats some aspects of soil mechanics and the mechanical behaviour of masonry elements subjected to compression stress (in the short and in the long term) and to shear stress; the experimental procedures for studying these behaviour in the laboratory; simple methods for structural analysis and a graphical method for studying masonry arches and vaults. The course denominated Diagnosis and Consolidation is part of a compulsory Integrated course in Methodologies and Techniques for Conservation and deals with analysis and interpretation of masonry damage, destructive and non-destructive diagnostic techniques and includes ex-cathedra lectures, the presentation of research case histories and the visit to building yards where these techniques are applied.

Laboratories of Restoration and Integrations to Laboratories are carried out at the First Level Degree and involve students in complete indirect and in situ direct survey of parts of the urban fabric.

Examples Of Student's Works

A number of students attending the above courses demand to take part to the research activity carried out at the Structural Engineering Department and to be supervised during their final year and PhD thesis on Conservation themes. Their study is carried out on various architectural complexes or buildings and generally includes: (i) geometrical survey of the buildings and survey of the crack patterns, (ii) interpretation of the crack patterns and definition of the damage or collapse mechanisms affecting each building, (iii) survey of the masonry texture and of the morphology of the wall sections, (iv) recognition of the connections wall to wall and roof and vaults to walls, (v) sampling of mortars, plasters and stones and characterisation in laboratory through chemical, physical and mechanical tests, (vi) on site characterisation of the masonry walls through sonic and flat-jack tests, (vii) detection of the tension values for steel tie rods. Fig. 2 -4 illustrates an investigation carried out on historical centres of Western Liguria, hit by an earthquake in 1887, and still showing signs of damage to which more recent decay processes overlapped^{3,4}.



Figure 2
Process of transformation
of the ancient nucleus of
Baiardo.

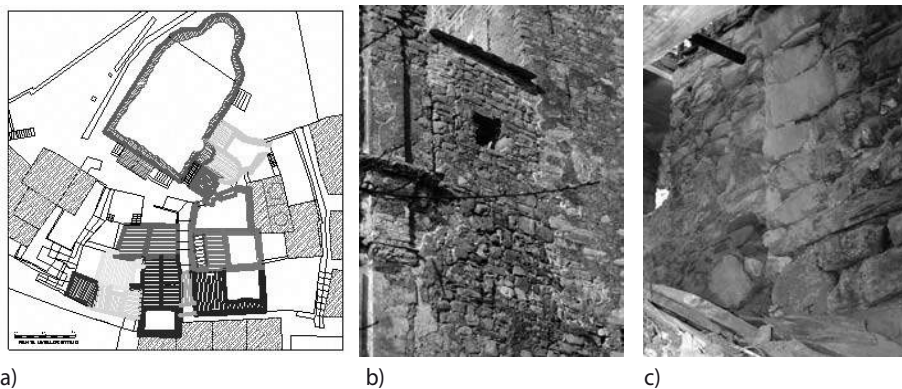


Figure 3

Baiardo: a) reconstruction of the historical evolution through a volume stratigraphical analysis; b) c) masonry discontinuities.

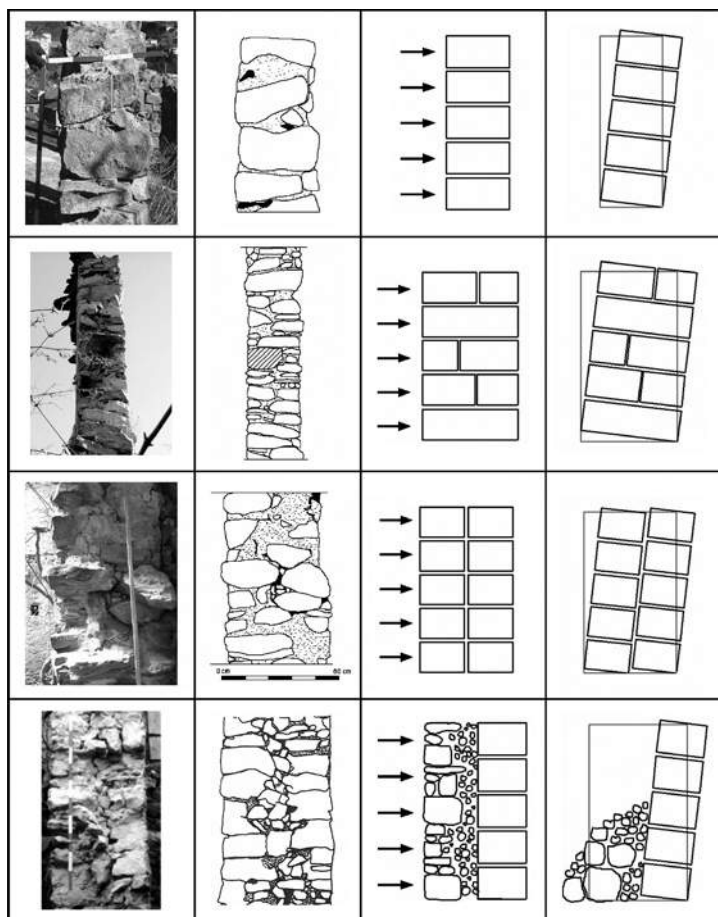


Figure 4

Baiardo: study of masonry section typologies.

Different building typologies were investigated starting from the stratigraphical survey and a survey of the crack patterns and of the wall sections, collecting data through in-situ non destructive or low destructive testing and performing a macro-element evaluation of the seismic vulnerability. Figure 5 – 9 display the results of a preliminary after earthquake investigation on 10 Churches and 2 rectories hit by an earthquake (5.2 Richter scale) that, at the end of 2004, stroke the eastern part of the Lombardy Region in Northern Italy. A research was carried out to assess the state of damage of the structures and the properties of the materials as a base for the preservation and repair projects⁵.

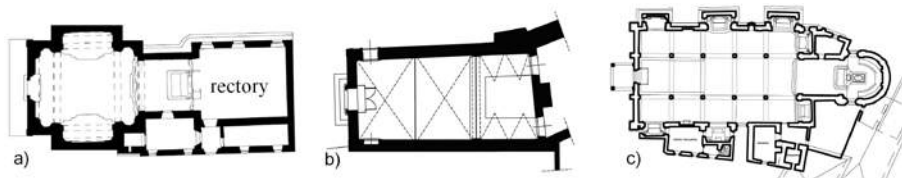


Figure 5

Different typologies of churches hit by the earthquake in 2004: a) S.S. Crocifisso at Bogliaco di Gargnano: central nave; b) Immacolata at Toscolano Maderno: one nave and no chapels; c) S. Pier d' Agrino at Bogliaco di Gargnano: three naves and chapels.

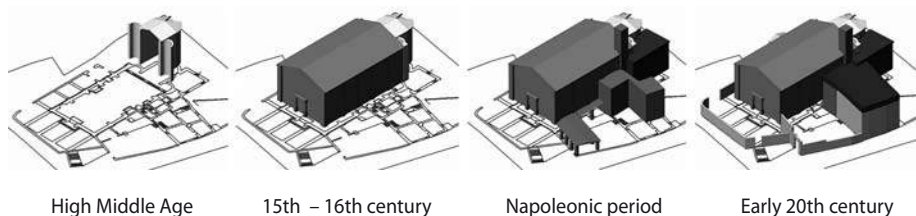


Figure 6

Construction phases of S. Michele Arcangelo at Sabbio Chiese hit by the earthquake in 2004.

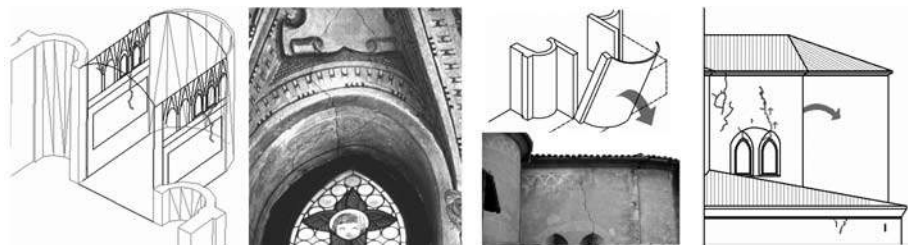


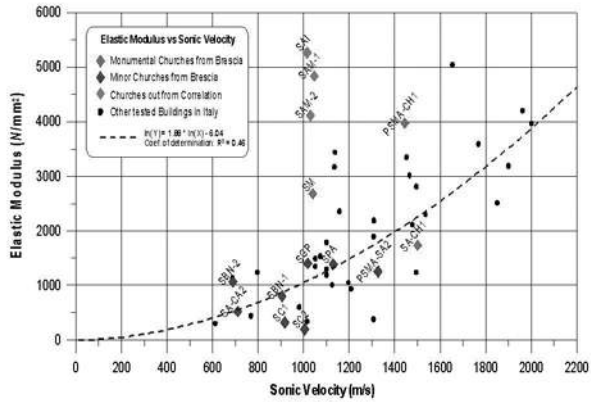
Figure 7

S. Michele Arcangelo at Sabbio Chiese: mechanism of apse rotation.

Figure 8
Study of the masonry morphology on a Church in Brescia province.



Figure 9
E vs. sonic velocity obtained on the Churches hit by 2004 earthquake and other buildings.



Figures 10 and 11 show a research on durability and effectiveness of surface treatments carried out on real scale prototypes built in brick and stone masonry. The constructions are exposed to urban environment and subjected to accelerated salt crystallization; their damage is measured in situ through laser profilometer^{6,7}.

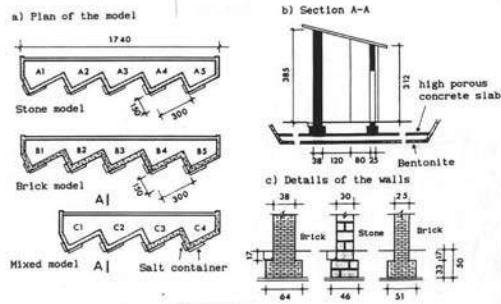


Figure 10
Masonry prototypes subjected to natural and accelerated damage.



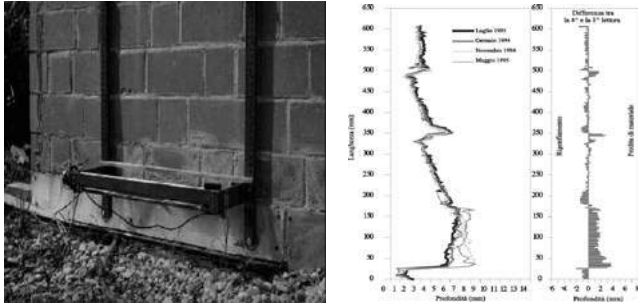


Figure 11
Use of laser profilometer to measure crystallization damage on prototype buildings.

Figures 12 – 15 illustrates a study carried out on the basilica of S. Lorenzo in Cremona, affected by different kinds of damage including cracking of the vaults, rotation of one of the timber trusses constituting the roof and tilting of the pillars. An articulated investigation was carried out, aimed to understand the historical evolution of the church, its constructive techniques, the crack pattern in its spatial development and to assess the masonry quality. After starting a strengthening intervention in the main nave only, monitoring of the cracks in the presbytery has been initiated, in view of an extension of the strengthening intervention to the apse too⁸.

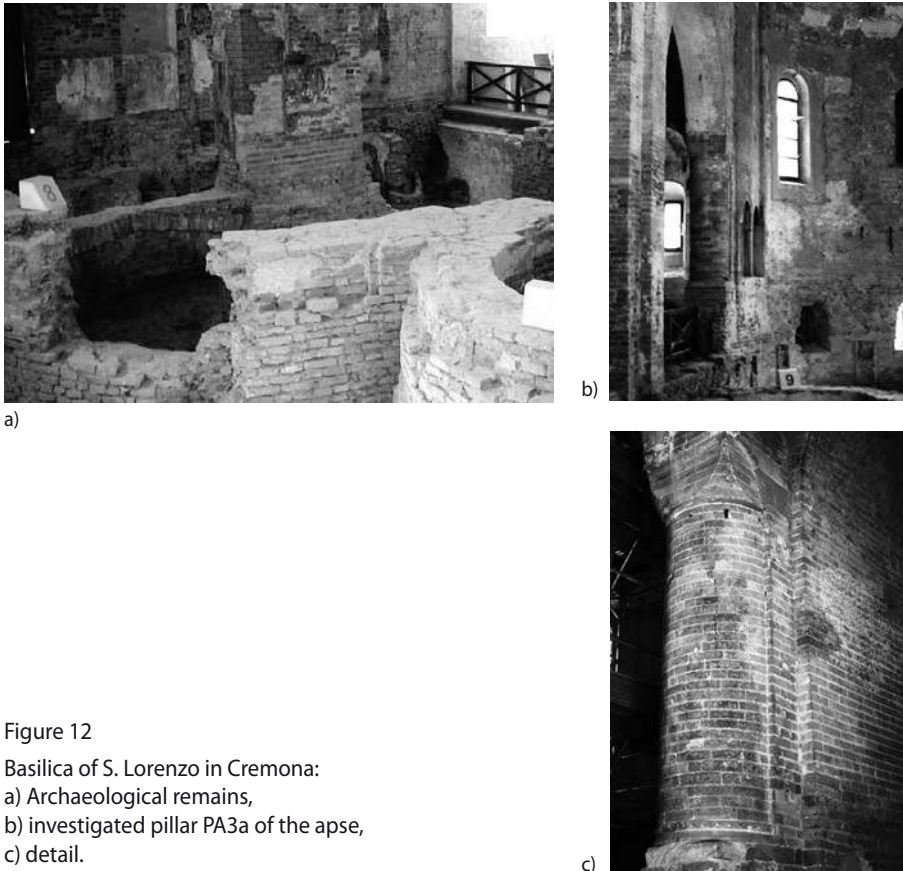


Figure 12
Basilica of S. Lorenzo in Cremona:
a) Archaeological remains,
b) investigated pillar PA3a of the apse,
c) detail.

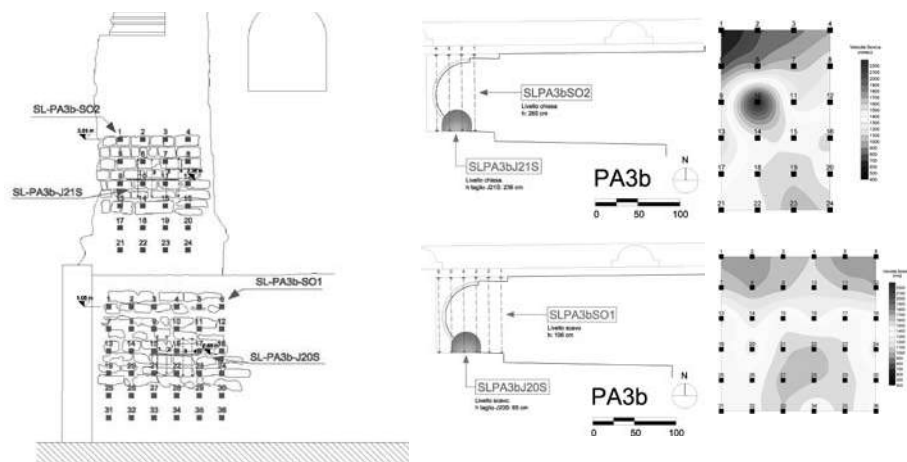


Figure 13
Basilica of S. Lorenzo in Cremona: sonic tests on pillar PA3b.

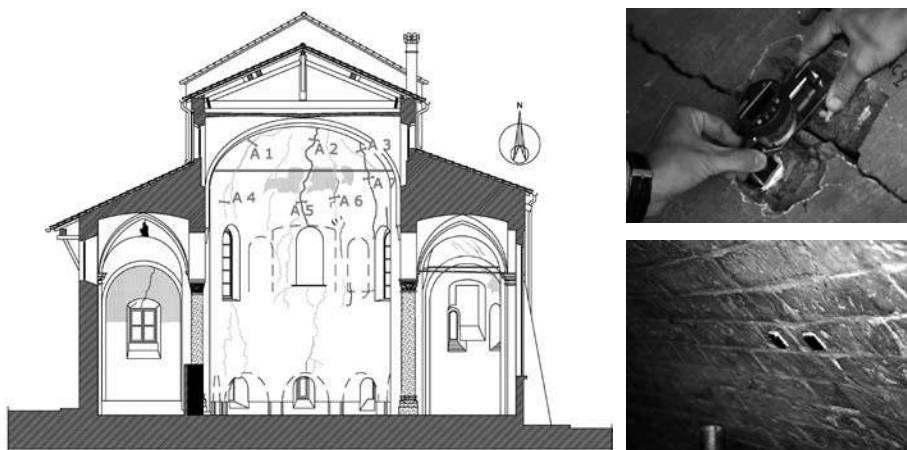


Figure 14
Basilica of S. Lorenzo in Cremona: crack monitoring in the apse zone.

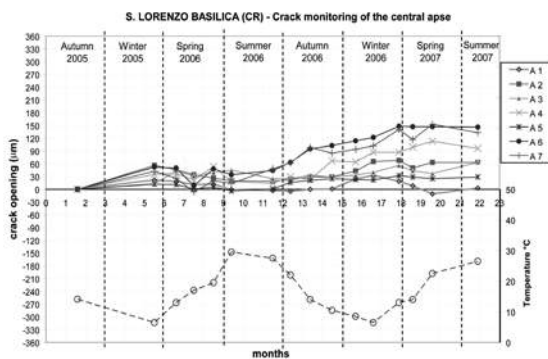


Figure 15
Basilica of S. Lorenzo in Cremona:
results of crack monitoring.

Figures 16 -20 displays an intense study carried out on the Cathedral of Syracuse in order to evaluate the structural state of preservation of the pillars. The Cathedral results from the evolution of a 5th century BC Greek temple of Athena, transformed into a Catholic Church in the 6th century AD, and subsequently become the Cathedral of the city. Being Syracuse in a seismic area, the Cathedral was damaged, repaired or partially rebuilt several times. In 1542 a strong earthquake struck the city and caused serious damage to the lateral walls, including the still visible shift of the column drum. The pillars are of a peculiar interest: they were obtained by cutting out the stonework walls of the internal cell of the Greek temple. Presently they show a serious crack pattern, frequently given by compressive stresses probably due to flexural problems and increased by the earthquake effects. In order to evaluate the differential movement, the most serious cracks have been monitored since July 2005.

Georadar, Thermo vision, Sonic pulse velocity and Ultrasonic tests were applied to investigate the masonry morphology beyond the covering, to control the presence of internal defects of the pillars and to estimate the depth of all the important observed cracks⁹.

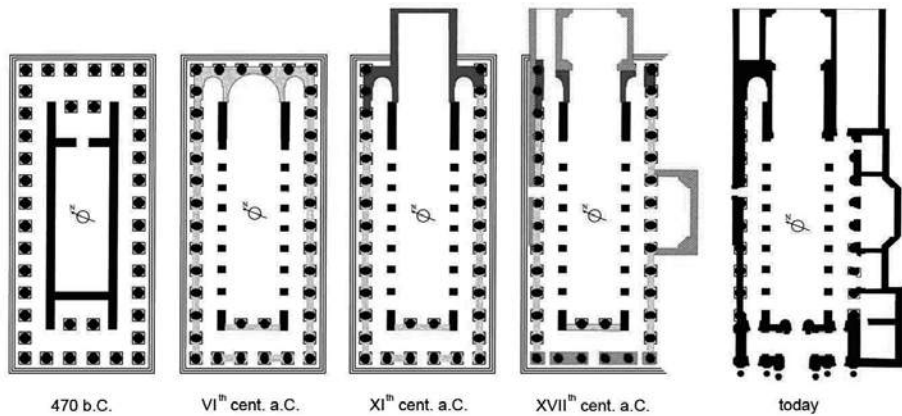


Figure 16

Cathedral of Syracuse: evolution of the 5th century BC Greek temple of Athena into the present Cathedral of the city.

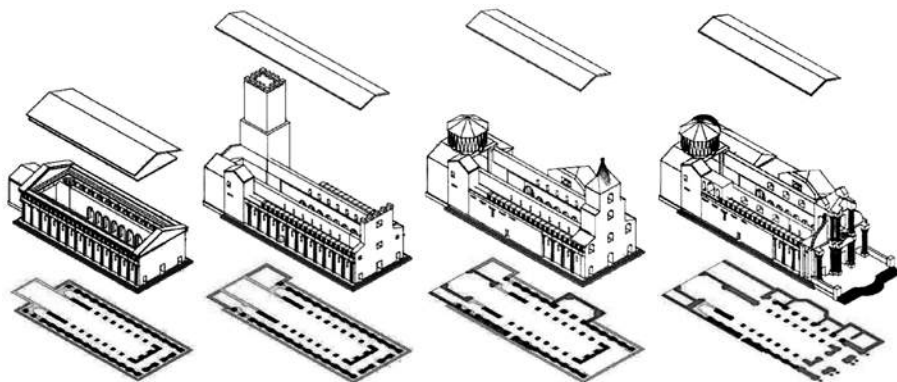


Figure 17

Cathedral of Syracuse: axonometric projection of the Cathedral evolution.

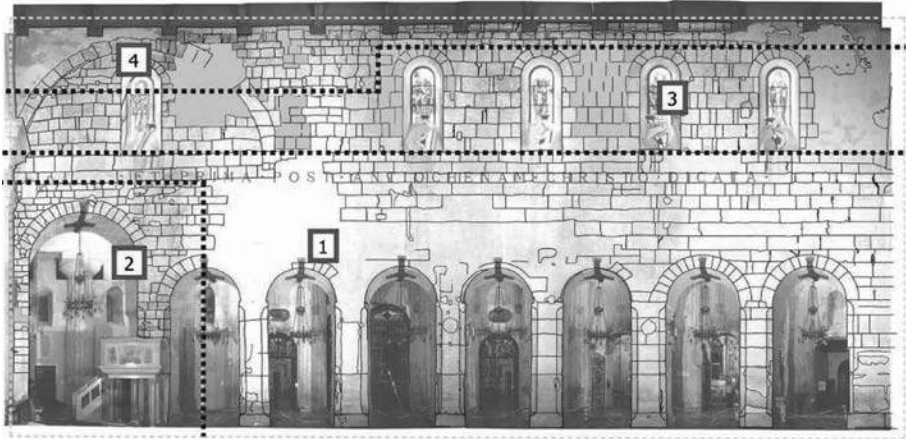


Figure 18
Cathedral of Syracuse: stratigraphical survey.

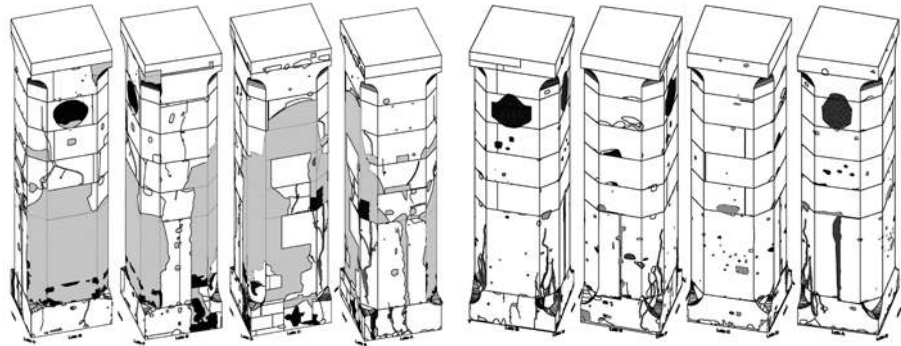


Figure 19
Cathedral of Syracuse, crack pattern of the pillars.

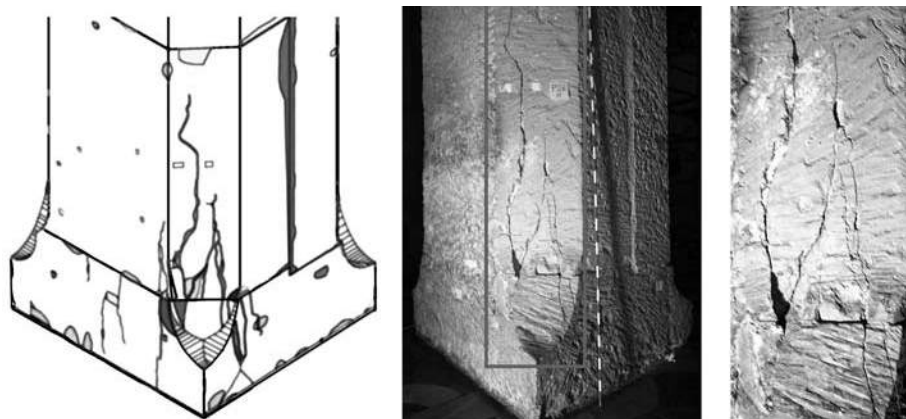


Figure 20
Cathedral of Syracuse, details of the vertical cracks.

Acknowledgments

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**An Architectural Heritage
Graduate Studies Program:
A Portuguese Experience**

More than twenty years ago, the Author under the Fulbright-Hays Fellowship program was able to experience a high US education program as a graduate student (Master of Science program (1980-83) and Ph.D. program (1983-87)), at The University of Texas at Austin. Fifteen years ago The Technical University of Lisbon – School of Architecture started several master degree programs where the Master of Architectural and Urban Nuclei Rehabilitation is one of the favourite ones. The purpose of this work is to compare different world approaches towards the same goal, i.e., the preservation of the constructed heritage.

Introduction

The current trends of the higher education university world require that an extensive transformation within the European Union (EU) cosmos must take place in order to unite all the different countries into a common project – the construction of a modern mind. Many current EU leaders have university degrees that were obtained at their home schools and, probably some of them, had fostered their knowledge through an exchange student program with overseas degrees.

The existing EU university exchange programs, e.g. SOCRATES, ERASMUS, allow students and faculty to establish new ties and “knowledge bridges” between neighbouring European schools. An older cooperation example was implemented after WWII when the US Senators Fulbright and Hays created through a US Congress Bill a worldwide exchange program between the US and the overseas countries for students and faculty, through their embassies and cultural offices, with excellent results. One of the most important goals of the Fulbright-Hays exchange program is “to avoid major world conflicts through mutual understanding”.

The natural trend in a fast growing technological society is to improve its ties with the help of the communications network. Therefore, it is understandable that after some years of “mutual understanding” in the EU, between the initial member countries and the newcomers, an Atlantic “knowledge bridge” between the EU and the North American world would be a reality. In this global age era, the Author’s purpose is to present, within the Architectural Preservation domain, the concepts / guidelines that exist in an American University master program (a former student experience) vis-à-vis a Portuguese University (EU) with a similar graduate program (a current teacher / researcher experience).

The University High-level Education

The European Concept

A few decades ago, the reading of a remarkable text written by the Spanish Philosopher D. José de Ortega y Gasset – “Mision de la Universidad” [Ortega y Gasset (1), (2)] triggered important questions in the Author’s mind concerning the University and the higher-level learning process. In the early XX-th. century, Germany was one of the leading world countries, both in the humanities and the technological areas. The Ortega y Gasset graduate student vision of the German universities (Marburg, Leipzig, Berlin) where he attended classes in broad areas of knowledge (philosophy, pedagogy, linguistic sciences) was unique [RE (3)]. In a certain sense he was an attentive graduate student observer in close contact with other experiences and cultures. His reflections,

which are still actual, may us wonder how much has been done during the past one hundred years to expand human knowledge and understanding.

The relationship between *action* and *contemplation* generated in Ortega y Gasset's mind the postulate that *culture* rules over *specialization*, i.e., the current contemporary specialist/professional is a "new barbarian", because it is required the need to cultivate a special aptitude to synthesize throughout the learning process. On the other hand, the University, to respond to current human and society needs, must address correctly the problems of scientific research and the teacher's pedagogical skills.

The second postulate stated by Ortega y Gasset [(1), (2)] is that the teacher's attitude and pedagogical activities should not start in the knowledge theme areas nor in the professor's own research interests but with the young apprentice, i.e., the student. The University has to be the institutional projection of the student's image, with all the different variables, including historical limitations. Another unique postulate proposed by Ortega y Gasset [RE(3)] is that the ideal European university world must combine the best of two cultures: the 5,000 year old Mediterranean basin culture and the emotional "joie de vivre" needs to be adequately blended with the northern Europe reflective attitude and technological knowledge.

The US Approach

The lengthy experience (1980-86) as a Fulbright scholar in one of the top ten North American universities – The University of Texas at Austin (U.Tx.A.), may enable the Author to propose some thoughts regarding his unique graduate student experience, in parallel with successive years of academic student service – first as Vice-President and then as President of the Graduate Engineering Council (G.E.C.), an advisory graduate student body that would reflect graduate student opinions and recommendations near the Graduate School Dean and the University President. The nature and purpose of graduate work is clearly stated [U.Tx.A. (4)]:

"Graduate work at the U.Tx.A. is divided into disciplines. These are normally associated with departments, they may, however, be broader in scope involving courses and research in several departments. The candidate for an advanced degree presents work done in a chosen major area, but usually is also expected to have done some supporting work on an advanced level (upper-division or graduate) in one or more relevant areas. There are three components of graduate study: (1) course-work; (2) independent study; and, (3) independent scholarly research leading to a report, thesis, or dissertation. In some areas, internships, field studies, and other professional experiences may also be an integral part of the program. The proportion of each type of study may vary according to the previous training of the individual student and the nature of the major area.

The objective of graduate study is to develop the intellectual breadth and to provide the specialized training necessary to a career in teaching, in research, or in the professions. Emphasis is placed on the knowledge, methods, and skills needed for scholarly teaching, original research and problem solving, intellectual leadership, creative expression, and the other modes of achievement in the individual's chosen discipline."

The University of Texas at Austin with nearly 50,000 students was established in 1883 and it is the largest member of The University of Texas System, which consists of seven general academic institutions and six health science centres. The Graduate School established in 1909 has more than 9,000 students and approximately 500 doctoral degrees and 1,600 master's degrees are awarded annually. The graduate study is available in more than seventy fields, including architecture (M.Arch.), architectural studies (M.Sc.Arch.St.) and Community and Regional Planning (M.Sc.C.R.P.). The assistant, associate, and full professors who are active in the specific graduate program are also members of the Graduate Studies Committee (G.S.C.). The GSC recommends admission to the program, sets the requirements for the graduate degrees in that area, and recommends students for admission to candidacy. Once the candidate student has been accepted, a supervising or dissertation committee appointed for the candidate by the Graduate Dean assumes the responsibility for the direction of the student's work until it is completed, [U.Tx.A.(4)].

The purpose of graduate studies at the School of Architecture is to lead to professional, post-professional and non-professional degrees following advanced study in areas of scientific and historical inquiry, technological development, architectural design and research. The graduate students with knowledge and proficiency in professional skills may select any of the following areas of studies with the approval of the G.S.C.: (a) architectural design and theory; (b) historic preservation; (c) energy studies and computer simulation in architecture; (d) urban design, and, (e) research on topics accepted by the G.S.C.. The Master of Architecture degree program is offered to qualified applicants holding a baccalaureate degree in any discipline. If the student already has a professional degree in architecture, the M.Arch. is a post-professional degree, requiring thirty semester hours of graduate work. The research areas are [U.Tx. A.(4)]: (1) Design – the goal is to promote excellence in architectural practice through the refinement of design acumen and foster the knowledge in the design history and theory areas; (2) Energy Studies and Computer Simulation in Architecture – a strong emphasis is placed into the integration of technical knowledge in architectural design; (3) Historic Preservation – the dual objective is to provide knowledge and skills in the historical building preservation and the sensitive design to adapt their use to contemporary needs; and, (4) Urban Design – the objectives are to develop an urban environment comprehensive understanding, including the users' needs and to improve the built environment quality and efficiency through better designing skills.

The students with a pre-professional degree in architectural studies (e.g. B.Arch.) usually take two years of study in residence to complete the first-professional degree program – M.Arch.. Other students with any background may take three and one-half years of study in residence. The graduate courses being offered may change with time but it is diversified and the graduate student with the graduate advisor's help can build his own curricula. The graduate courses offered in 1985-87 were: (a) Topics in Architecture; (b) Visual Communication I and II; (c) Technical Communications; (d) Advanced Visual Communications; (e) Research in Architecture; (f) Environmental Controls I and II; (g) Construction I, II, III, IV, and V; (h) Survey of Architectural History I and II; (i) Topics in Architecture History; (j) Architecture and Society; (k) Professional Practice; (l) Architectural Design I, II, III, IV, and V; (m) Advanced Architectural Design; (n) Master's Studio; (o) Thesis; and, (p) Supervised Teaching in Architecture. The courses (m), (n) and (o) count as six credit hours whereas the remaining ones as three credit hours. On the

other hand, the scheduled semester class hours are for the courses (m) fifteen hours, (n) eighteen hours, (o) three hours, and the remaining courses six hours. The U.Tx.A. Master of Architecture degree program is usually built with the following structure:

Table 1
Master of Architecture Course Load

Year	First Semester	Second Semester
First	3 or 4 courses	3 or 4 courses
Second	2 or 3 courses	Thesis / Report

Although the thesis degree option requires less course work (3 + 3 + 2 courses) as compared with the final report option (4 + 4 + 3 courses) the requirements set by the G.S.C. are more stringent regarding the thesis preparation. However, in the end both final documents have to be approved by a jury of at least two professors.

The Portuguese model – the “Faculdade de Arquitectura” (FA - UTL)

Since December 1979, through a Government diploma (“Decreto-Lei nº 498-E/76”), the existing Department of Architecture of the “Escola Superior de Belas Artes de Lisboa” (the Lisbon Fine Arts School) established in July 10, 1950, joined the “universe” of the “Universidade Técnica de Lisboa (UTL)” (the Lisbon Technical University). The School of Architecture initial origins goes back as far as the XVI-th century to the “Aula do Risco” (the Drawing Class) located in the Lisbon’s “Paco da Ribeira” (the Riverfront Royal Palace). The King Dom João III with the collaboration of Italian architects, e.g. Filippo Terzi, initiated a long tradition of Civil Architecture studies. In the late XVIII-th century, the Queen Dona Maria I reorganized the “Aula do Risco” and established the “Aula do Desenho e Arquitetura Civil” (the Drawing and Civil Architecture Class). In 1836, the Queen Dona Maria II created the “Academia Real de Belas Artes” (the Royal Academy of Fine Arts).

In Oct. 5, 1910, after the Monarchic regime was overthrown, the Republican government reorganized the School of Architecture into the “Escola de Belas Artes de Lisboa” (the Lisbon Fine Arts School). In 2005, a total number of 2,000 students were enrolled where 1,723 students were undergraduates and 233 graduate-level students attended different master programs. The staff reached 173 teachers, where 77 had a doctoral degree and 96 had a baccalaureate / master’s degree.

The Technical University of Lisbon (UTL) origins goes back to 1911 (UTL(5)), one year after the First Republican government was instated. The “Instituto Industrial e Comercial de Lisboa” (the Lisbon Polytechnic School for Commerce and Industry Studies) splits into two separate Institutes – The “Instituto Superior Técnico” (the Engineering School) and the “Instituto Superior de Comércio” (the future Economics and Management School). Nearly twenty years later (1930), four existing Lisbon schools are integrated into an University – the UTL: (1) the “Instituto Superior Técnico”; (2) the “Instituto Superior de Ciências Económicas e Financeiras”; (3) the “Instituto Superior de Agronomia”; and, (4) the “Escola Superior de Medicina Veterinária”. The UTL universe was some decades later enlarged up to a total of seven schools, with three other existing schools: (1) the “Instituto Superior de Ciências Sociais e Políticas” (1961); (2) the

“Instituto Superior de Educação Física” (1976); and, finally, (3) the “Faculdade de Arquitectura” (1979).

The UTL main purpose is to associate all the different Schools and Institutes within its domain, and together they will foster the people’s needs for research and cultural achievements. There is also an obligation to educate the future generations for a professional life so that the superior economic and welfare objectives of the State can be reached through the continuous study / research of the most pressing community problems and through the conscious proposal of active measures to solve them [UTL(5)]. In 2005, the total UTL student’s number, within the seven Schools, was slightly above 22,000, where 18,493 were undergraduate students, 2,754 master program candidates, and 935 doctoral level students. The largest school, by far, is the “Instituto Superior Técnico” with nearly half the student’s and staff population. The smallest one is the School of Veterinarian Sciences.

This constellation of UTL Schools and Institutes overview is important to have a better grasp of the School of Architecture graduate programs when they were created within this original universe. In Oct. 06, 1992, a new set of graduate studies requirements were approved within the UTL Senate for the Master and Doctorate degree programs. At the “Faculdade de Arquitectura” the current architectural degree programs being offered are:

- (1) Undergraduate level - diplomas in Architecture, Design, Urban Management, Interior Architecture, Urban and Site Planning, and Fashion Design; and,
- (2) Graduate level – the Master degree approved programs are: (a) Architecture; (b) Bioclimatic Architecture; (c) Colour in Architecture; (d) Modern and Contemporary Architectonic Culture; (e) Real Estate Development; (f) Design; (g) Architectural Housing and Spatial Studies; (h) Housing, (i) Portuguese Architecture and Urban History; (j) Urban and Regional Planning Policies; (k) Urban and Environmental Re-generation; and, (l) *Architectural and Urban Nuclei Rehabilitation*; and,
- (3) Graduate level – the Doctoral degree programs are in Architecture, Design, and Urban Studies. Within the Architecture’s domain several different fields of specialisation exist: (a) architecture; (b) architectural technology; (c) visual communications; (d) history of architecture; and, (e) theory of architecture.

Most of the graduate degree master’s programs are inactive due to several different reasons: the Bologna agreement transition process, the higher tuition fees and economic recession, the lack of interest in the research areas. Currently, the Design, the Theory of Architecture and the *Architectural and Urban Nuclei Rehabilitation* master’s degree graduate programs are currently the only ones which have great success among former students from the FA-UTL and the other Portuguese schools.

The Master Degree Program on Architectural and Urban Nuclei Rehabilitation

Contemporary Heritage Concepts

The modern international heritage concepts tend to encompass not only the constructed object, the built surrounding spaces, as well as, neighbouring increasingly vast domains such as natural or built landscapes. More than one hundred years ago,

some of these concepts were established by visionaries, e.g., William Morris. In 1877, an unique British society was founded - the S.P.A.B. – Society for the Protection of Ancient Buildings, with the following well-established principles [SPAB (6)]:

- (1) *Repair not restoration* – although no building can withstand decay, neglect and depredation entirely, neither can aesthetic judgement nor archaeological proof justify the reproduction of worn or missing parts. Only as a practical expedient on a small-scale can a case for restoration be argued;
- (2) *Experimentation* – old buildings are not the place to test unproved materials;
- (3) *Responsible methods* – a repair done today should not preclude treatment tomorrow, nor should it result in further loss of fabric;
- (4) *Complement not parody* – new work should express modern needs in a modern language: These are the only terms in which new can relate to old in a way which is positive and responsive at the same time. If an addition proves essential, it should not be made to out-do or out-last the original;
- (5) *Regular maintenance* – this is the most practical and economic form of preservation;
- (6) *Information* – to repair old buildings well, they must be understood. Appreciation of a building's particular architectural qualities and a study of its construction, use and social development are all enlightening. These factors also help us to see why decay sets in and how it may be put right;
- (7) *Essential work* - the only work which is unquestionably necessary (whether it be repair, renewal or addition) is that essential to a building's survival;
- (8) *Integrity* – as good buildings age, the bond with their sites strengthens. A beautiful, interesting or simply ancient building still belongs where it stands however corrupted that place may have become. Use and adaptation of buildings leave their marks and these, in time, we also see as aspects of the building's integrity. This is why the Society will not condone the moving or gutting of buildings or their reduction to mere facades. Repairs carried out in place, rather than on elements dismantled and moved to the work-bench, help retain these qualities of veracity and continuity;
- (9) *Fit new to old* – when repairs are made, new material should always be fitted to the old and not the old adapted to accept the new. In this way more ancient fabric will survive;
- (10) *Workmanship* – why try to hide good repairs? Careful, considered workmanship does justice to fine buildings, leaving the most durable and useful record of what has been done. On the other hand, work concealed deliberately or artificially aged, even with the best intentions, is bound to mislead;
- (11) *Materials* – the use of architectural from elsewhere confuses the understanding and appreciation of a building, even making the untouched parts seem spurious: Trade in salvaged building materials encourages the destruction of old buildings, whereas demand for the same material new helps keep them in production: The use of different but compatible materials can be an honest alternative;
- (12) *Respect for age* – bulging, bowing, sagging and leaning are signs of age which deserve respect. Good repair will not officiously iron them out, smarten or hide the imperfections. Age can confer a beauty of its own. These are qualities to care for, not blemishes to be eradicated.

A few decades later, another British agency – the English Heritage (7), which had been administering the Government grants established for the preservation of ancient monuments, from 1931, and of historic buildings, from 1953, also established general guidelines regarding: (1) the purpose of repair; (2) the need for repair; (3) avoiding unnecessary damage; (4) analysing historic development; (5) analysing the causes of defects; (6) adopting proven techniques; (7) truth to materials; (8) removal of later alterations; (9) restoration of lost features; (10) safeguarding the future.

The FA-UTL Master degree program tries to give an adequate answer to the enrolled graduate student. This program is currently in its sixth edition (2006-07), after being re-structured into a total of 140 – class hours per semester. The actual courses being offered are:

Table 2

The FA-UTL Master of Science on Architectural and Urban Nuclei Rehabilitation - courses and class hours on a semester basis.

First Sem.	FHCRR	SCTM	QBC	EST	MI	ST
	44	24	20	20	10	22
Second Sem.	MPCR	PTI	CI	IPPP	GAP	ST
	44	24	20	20	10	22

Note – the courses' name codes are with Portuguese acronyms;

In the first year, the first semester courses' subjects are: (a) 'FHCRR' – Fundamentals and History of Conservation, Restoration and Rehabilitation; (b) 'SCTM' – Construction Systems– Techniques and Materials; (c)'QBC' – Critical Neighborhoods Improvement; (d) 'EST' – Economy, Society and Territory; (e) 'MI' – Research Methods; and, (f) 'ST' – Thematic Seminary. The other second semester courses are: (a) 'MPCR' – Methodology and Design for Conservation and Rehabilitation; (b) 'PTI' – Pathologies and Intervention Techniques; (c) 'CI' – Integrated Conservation; (d) 'IPPP' – Legal Heritage Documents and Recommendations; (e) 'GAP' – Management and Project Evaluation; and, (f) 'ST' – Thematic Seminary.

During the second year, the candidate is expected to prepare, develop, and defend his dissertation, i.e., an approved theme by the graduate studies board will lead to a dissertation to be defended orally in the presence of three person committee where the third member is from another University. The U.Tx.A. M.Sc. program course hour load compared with this master program with 140 – class hours / semester is clearly more extensive, if we consider a 14 – week semester model. The total number of class hours (NCH) yields:

$$\text{NCH} = 14 \text{ wks.} \times 3 \text{ courses} \times 6 \text{ hrs./wk./sem.} = 252 \text{ hrs./sem.}$$

Although, the Portuguese number of class hours is nearly one-half the US-model value, one may also refer that the tuition costs at a present value of Euros 4,000.- for a two year program are nearly 1/4 of a US school current value for out-of-the-state tuition. The need of preserving the national heritage, from a very small object, to the medium-size building or reaching the large-scale environment requires several concepts that the FA-UTL master curricula conveys to the graduate student.

The Approach and the Researchers

The FA-UTL methodology combines the theoretical and studio design teaching with the practical 'hands-on' approach, with the collaboration of industry experts, the Portuguese National Laboratory of Civil Engineering ('LNEC') technical researchers, and designers, both engineers and architects, with 'real world' experience. The public works construction activity is largely based on tradition. In a modern world strongly geared into specialization and technology, the traditional professionals, e.g., masons, stonemasons, plasters, ironsmiths) tend to become scarce and to vanish. On the other hand, the academic learning process needs to be complemented with on site construction experience. Although this desirable 'practical experience transfer process' is aimed for, in many situations only the practicing designer invited lecturer or a teacher with consulting experience can reach this objectives. The research/laboratory testing approach is another method of simulating construction world reality. The well-known 'LNEC' is an excellently equipped European laboratory that allows almost any type of public works experiment to be tested within its installations.

The FA-UTL undergraduate curricula also include two one-semester courses on heritage preservation where students are exposed to the current issues in this domain. The current urban environment saturation with new buildings and other infrastructures/equipments (highways, shopping malls, sport facilities, leisure areas) has been creating a repulse in the public's mind when the construction procedures are poorly achieved. The need of reviving old, degraded neighborhoods and the public authorities motivation to attract young people as permanent residents giving them better comfort conditions (transportation, health services, security) are major challenges for future M.Sc. architects. If the adequate measures are taken the renovated areas may become enjoyable and alive again.

The actual student's experience and the former course reviews have been highly encouraging. The extensive cooperation with the now extinct "Direccao-Geral dos Edificios e Monumentos Nacionais (DGEMN)" resulted into an excellent work performed by a former student team: the Lisbon Irish nuns "Convento do Bom Sucesso", located near the Tower of Belem and the Navy Museum, provided a detailed building survey to be used as a diagnosis basis and to elaborate a methodology proposal for building intervention. Another student's work – the "Hospital de Sao Jose", resulted into a Master's dissertation that became an useful contribution for the "Direccao-Geral das Construccoes Hospitalares (DGCH) – Ministry of Public Health" staff, where she works. During this Spring season, a group of three students which are already practising architects in Portugal's southernmost province of Algarve, organized together with the FA-UTL M.Sc. program Faculty, a study trip to visit the historic preservation work being carried out in this region – castles and fortresses, historic urban renewal, civil buildings, windmills, landscape areas.

The FA-UTL Faculty with private practice and consulting activity is also strongly motivated to present their work in this unique field of expertise. Design engineers and architects show their past and/or present work to the master students and a discussion session is useful to understand the intricacies of the conceptual design phase and the subsequent construction site existing problems to implement the proposed solution. Unique designs such the The Almeida Fortress Royal Horse-Ridding School, The Lisbon Palacio Fronteira (based on a S. Serlio design), The Palacio Pancas-Palha, The

Contemporary Cascais Mansion are few of the design examples being presented by the Faculty practising designers.

Recommendations

Although a great enthusiasm and teamwork effort exists there is an urgent need to implement a broader approach on the heritage preservation studies. There is also an increasingly public awareness on the importance of protecting not also the historical places as well as the contemporary constructions. A quantitative comparison between similar US and Portuguese degree programs shows that there is a large gap in the course load hours that are worth to be increased. Current financial strains in the Government's high-education budget may require that a "creative" engineered finance solution approach may be studied. The existing "Patron of the Arts" concept for the Fine Arts (Music, Ballet, Art, Sculpture) with tax-exemption for the donors may be extended to the architectural preservation world through generous contributions of private companies and individuals in close collaboration with the income revenue service officials.

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**Conservation and Restoration
in the University of Naples Federico II:
Education in Profession and Research**

The Basic Education

Since its setting up, the Superior School – afterwards become Faculty – of Architecture of Naples is characterized by a relevant trend of studies concerning History of Architecture and Restoration of Monuments. This is substantially due to the presence of Roberto Pane, who can be considered a leader in conservation and protection of architectural heritage. In fact, he has dedicated many of his publications to this field and he has often fought for the heritage safety. His active dedication to the defence of monuments and historical sites will constitute an example for future generations of Neapolitan teachers. Pane has brought prestige to the Neapolitan Faculty, contributing to its cultural growth, with his participation to public appointments, to national and international commissions and congresses, as the well known meeting in 1964 which gave birth to the Venice Charter.

The articulation of the courses referred to Restoration reflects, today, the enrichment and complexity of contents that have converged in the teaching during past decades. This is particularly relevant considering the five-year degree course in *Architecture*, the triennial course in *Science of Architecture* and, moreover, the speciality biennial courses in *Architecture-Restoration*, in *Architectural Planning*, in *Building and Urban Maintenance and Management* and, beginning from next academic year, in *Architecture and City-Evaluation and Planning*.

The courses of *Bases of Restoration*, only activated in the triennial degree course, and that of *Theories and History of Restoration*, activated in several degree courses, contribute to the students education at a first step. Definitely, the second one aims at providing the students with the instruments needed to understand the evolution of the practice of architectural restoration in relation to theoretical issues. The course deals with the questions, works and figures which have contributed to the elaboration of modern restoration theories and praxis in a significant way. Moreover, *in situ* investigations of historically stratified buildings are carried out in the same course, in order to directly estimate and compare the *ex cathedra* lessons.

The above mentioned courses provide the informative basis which are preparatory to the *Architectural Restoration Laboratory*, marked by a predominantly operative didactics. Granted that the branch of Restoration has the purpose of cultural heritage survival, the “restoration” term defines the whole of technical and scientific works aiming at the temporal continuity of an artwork, in the sphere of historic, critical and aesthetic methodology. Then the aim of the course is the learning of criteria, methodologies and techniques suitable for this mentioned purpose. Besides, considering that the protection concept in last decades has extended from single monuments to environmental values, the restorer’s task has to face the complex perspective of urban and territorial restoration. Therefore, the knowledge of both in force laws and local and international charters is also required.

The student’s education path has a further widening chance about heritage conservation in the *Architecture-Restoration* degree course, activated since the academic year 2005-2006. The main purpose of the course is the training of professional people able to face complex situations of conservation, protection and management of architectural and environmental heritage, as well as to plan a new architecture in historic urban contexts with cultural awareness.

The whole of the mentioned courses is nowadays held by the full professors Aldo Aveta, Stella Casiello and Francesco La Regina, by the associate professors Rosa Anna Genovese and Renata Picone, by the researchers Gianluigi de Martino, Bianca Gioia Marino, Rosario Paone and Valentina Russo, and by the temporary lecturers Raffaele Amore and Andrea Pane.



Fig. 1
Naples, Gravina Palace.
The Renaissance front of
the building, seat of the
Faculty of Architecture in
Naples.



Fig. 2
Naples, Gravina Palace.
Detail of the courtyard,
surrounded by piperno
arches and pillars.

The knowledge learned by students during the university course leads, at last, to a moment of synthesis and specific reflection: the presentation of the degree thesis, the drawing up of which is preceded by the attendance of Synthesis Laboratory course and its getting through. This last, also activated in the branch of Restoration, includes the different subjects aiming at architectural and urban conservation. Therefore, the Synthesis Laboratory forms the first student's approach to an interdisciplinary exchange of knowledge, which is essential, as well known, for the good success of a restoration plan.

Postgraduate Education in Profession: The School of Restoration of Monuments

The School of Restoration of Monuments still represents the main postgraduate education path offered by University of Naples in the field of Conservation. Its origins date back to 1966, when an experimental specialization course in Restoration, restricted to architects and civil engineers, was started at the School of Architecture, promoted by Roberto Pane. Three years later, the *Postgraduate School of Restoration of Monuments* was born, forming the second institution of this kind in Italy, after the one set up in 1957 by the University of Rome. The regular courses started in the academic year 1970-71, directed by Roberto Pane¹.

In his foundation statute, the aim of the School was «to help those engaged in the restoration and care of historic monuments and in the Town-planning of the historic centres to prepare adequately for their professional tasks», but also to emphasize «the preparation of architects in the technical, scientific approach to these problems which are dealt with by the Soprintendenza ai Monumenti»². The School consisted in a two-year period of course, with a maximum of 50 students per year, and was opened to architecture or civil building engineering graduates. The former regulations provided five basic subjects (*Theory and History of Restoration of Monuments; Planning of Historic Town Centres; Consolidation and Adaptation of Buildings; Restoration of Paintings, Frescos and Mosaics; Elements Dealing with Legal and Administrative Aspects*) and four subsidiary subjects (*History of Architecture; Art History; Organization and Management of Building Sites; Estimates and Costing*). The diploma was awarded presenting a written dissertation before a board of examiners consisting of the management committee of the School, after getting through five basic examinations and at least two subsidiary examinations, held at the end of the two-year period of course. Appointments to the teaching staff were based on a choice among permanent or temporary professors, but also among «Italian or foreign specialists whose authority in their field was recognised and of a high order». According to these last provisions, some non-resident teachers were appointed to basic subjects at the starting date of courses, as Italo Insolera (*Planning of Historic Town Centres*) and the director of Istituto Centrale del Restauro in Rome Pasquale Rotondi (*Restoration of Paintings, Frescos and Mosaics*)³.

Since the beginning, the peculiarity of Postgraduate School of Naples is an effective alliance between historical and theoretical subjects – starting from *Theory and History of Restoration of Monuments* itself, held by Roberto Pane – and operating and executive teaching. Among these last, a particular care to the structural aspects of restoration is shown by the two-year course of *Consolidation and Adaptation of Buildings* held by Franco Jossa and Roberto Di Stefano, as well as by a subsidiary subject

like *Organization and Management of Building Sites*, assigned to Ugo Carputi. In this plan, the opening to the world of artwork restoration stands out, testified by the mentioned course held by Rotondi, afterwards substituted by the surveyor Nicola Spinosa. Furthermore, we have to notice the significant presence of a subject like *Planning of Historic Town Centres*, partly corresponding to the present course of *Urban Restoration*. In fact, this subject expresses one of the main characters of the newly born Postgraduate School, which inherits Roberto Pane's leading participation to the drawing up of the Venice Charter (1964) and the earlier experience of the Plan for the Ancient Centre of Naples (1971). At last, the former statute allows to complete institutional lessons with specialist lectures on theoretic and operating aspects of restoration. Those activities, started since the first Seventies, will form an important peculiarity of Neapolitan School, showing the participation of famous scholars as Giovanni Urbani, Umberto Baldini, Piero Gazzola, Renato Bonelli, Guglielmo De Angelis d'Ossat, Edoardo Benvenuto, Salvatore Di Pasquale, just to mention a few of them⁴.

During the first two years of life, the School reaches 71 students in all, and gives the first diplomas in the academic year 1973-74. The presence of architectural and urban themes stands out since the first dissertations, concerning both single building and urban setting, or a whole historic town⁵. The acquisition of the impressive School seat – the old church of Santa Maria Donnaregina, which forms a *topos* of modern restoration history due to the works led by Gino Chierici between 1928 and 1934 – dates back also to the early years of activity. The building was assigned to the School in free bailment by the Major of Naples in 1975, and, after further restorations necessary to settle university functions, also hosted an equipped photogrammetry laboratory, full of advanced instruments for that time.

Meanwhile, since the academic year 1972-73, Roberto Pane leaves the School's direction owing to age limit, holding his course of *Theory and History of Restoration of Monuments* one year longer. The new director is Franco Jossa, full professor of Construction theory and dean of Faculty of Architecture, who will remain until 1976. Since 1972-73, a re-arrangement of the teaching staff occurs, showing the entry of Alberto Defez as teacher of the second course of *Consolidation*, besides the appointment of Roberto Di Stefano to the course of *Planning of Historic Town Centres* (held by him until 1974-75, then substituted by Urbano Cardarelli) and the presence, for one year only, of Raffaello Causa as teacher of *Art History*, afterwards replaced by Raffaele Mormone⁶.

In 1976, when Jossa's office finishes, Roberto Di Stefano is appointed director, leading the School until 2000. Excluding some moderate changes just introduced in 1976-77, the didactic regulation doesn't change until 1987-88⁷. In the same years, anyway, while the students constantly reach the limit of 50 members, the care lavished in the School by Di Stefano allows a big increase of its activities, especially in the public service functions. These last reach a climax after the earthquake of November 23th 1980, when the School constitutes a special Operative Centre of the University of Naples and draws up a list of the damages suffered by architectural heritage, on behalf of Campania district⁸.

In 1988, the Postgraduate School adopt the new name of *Specialization School of Restorations of Monuments*, because of its inclusion in the national regulation of the specialization schools sanctioned in 1982⁹. As a result, the didactic regulation is subjected to a considerable re-arrangement, also influenced by the updating of the debate about restoration. Anyway the former purposes are still maintained, as well as



Fig. 3

Naples, complex of Santa Maria Donnaregina. The church and the adjacent rooms are the seat of the School of Specialization in Restoration of Monuments (University of Naples Federico II).



Fig. 4

Naples, church of Santa Maria Donnaregina. The choir of nuns used as conference room.

the two-years period of course and the opening to architecture and civil engineering graduates¹⁰. The new regulation shares the course in a first theoretical and methodological year, oriented to complete the student's knowledge, and a second technical-operative year. The basic subjects are six in the first year (*Institutes in Historiography of Architecture; Restoration History and Basic Principles of Conservation; History of Science and Building Techniques; Technologies and Pathologies of Materials; Techniques of Survey and Rudiments of Topography and Photogrammetry; Cultural Heritage and Town Planning Law*) and five in the second year (*Consolidation Techniques; Economy Techniques Applied to Cultural Heritage; Techniques of the Building Yard of Excavation and Restoration; Architectural Restoration Plan; Planning of Conservation Areas*), besides four subsidiary courses to be selected among many subjects¹¹. The new didactic regulation involves some substantial changes of the teaching staff, with further variations introduced in the following years¹², while another reform of the University statute in 1997 allows more independence in subjects settlement¹³.

In the year 2000 the new elected director is Luigi Fusco Girard, who finds himself facing the risk of School's final closing, because of a ministerial provision extended to all specialization courses in Italy¹⁴. In spite of that event, the School reopens in the academic year 2002-2003, with some changes introduced by Fusco Girard in the course arrangement, like the increase of restoration subjects, thanks to participation of regular professors as Stella Casiello, Francesco La Regina, Aldo Aveta and Renata Picone. Since November 2005, Stella Casiello becomes the director. She starts a policy of institution's relaunching, aiming at School seat restoration, as well as increasing cultural activities and partly renewing the teaching staff, waiting for the next reform of the cultural heritage's specialization courses, established by D.M. January 31 2006. Therefore, with 300 diplomas granted from 1970-71 to 2006, the School continues its activity in 2006-2007, following for just one year longer the old study plan with some further changes in subjects and teachers¹⁵. Nevertheless, the imminent ministerial reform, which has to be accomplished during 2008, will basically change the statute and the course arrangement of the School, starting from its new name of *Specialization School of Restoration of Architectural Heritage and Landscape*.

Postgraduate Education in Research: the Doctorate Course

As third level of university education and, furthermore, first step of postgraduate academic curriculum¹⁶, the Research Doctorate in *Conservation of architectural heritage* is active in the University of Naples Federico II since 1991¹⁷ and it is affiliated to the Doctorate School, named with the "all-embracing" term of *Architecture* since 2004¹⁸.

As in the rest of Italy, a progressive transformation of Doctorate courses concerning the organizational methods and educative strategies is relevant in the Neapolitan case too. In fact, as a result of the introduction of Doctorate Schools directly affiliated to Universities since 2004¹⁹, at present each doctorate course has to coordinate the planning of its activities to several parallel PhD courses of the same School. The course, lost its character of "splendid isolation", that is of a privileged place of speculation and experimentation, has acquired a more "transversal" and interdisciplinary connotation during last years, almost anticipating the reform of disciplinary sectors into "macro-sectors" still in progress by the Ministry of University and Scientific Research. This interaction with subjects which are similar to each other, although connoted by

autonomous disciplinary statutes, is producing, as an immediate result, the circulation of scientific knowledge, otherwise, hardly communicating.

Consequently, also the cultural itinerary of the Neapolitan *Conservation of architectural heritage* doctorate has to mingle with the activities of the other courses of the School, including *Architectural and Urban Planning, Survey, History and Technology of Architecture, Town Planning and Evaluation Methods*. During the triennial formative iter, therefore, the doctorate students are involved in the compulsory attendance to base-courses set up by the Doctorate School and to specialized activities – periodical meetings, seminars, congresses, study trips – internal to the PhD course.

Parallely to the above mentioned common activities, each doctorate student determines and carries out, during a triennium, a research that becomes concrete in the doctoral thesis, connoted by a scientific method and original contents. This elaboration, consisting in a written text if necessary with graphic materials attached, is the result of a synergy among the doctorate student, as author of the research, his tutor and, more extensively, the Doctorate Academic Board.

The Neapolitan course, in spite of the above mentioned “transversal” national trend, still maintains a fundamentally specialized character. In fact, among the fourteen teachers of the Academic Board²⁰, only three of them come from a similar subject as the History of Architecture, while all the others, professors and researchers, belong to the scientific disciplinary sector Icar/19 (*Restoration*). Since the beginning of the course, instead, the coordinator – Giuseppe Fiengo until 1993 and Stella Casiello from that year and still today – has tended to theoretically confront teachers coming from different geographical contexts, leading to internationalize the doctorate course of the next academic cycle (XXIII). The doctorate course, associated today at national scale with the Universities of Trieste and Palermo²¹, is characterized by an Academic Board internally composed by teachers coming from the Universities of Venice and Bari, the professors and researchers belonging to the administrative seat of Naples and to the associated universities as well. Moreover, teachers of the Spanish University of Seville and of the Polytechnic of Bucarest are involved in the Academic Board or as tutors²².

Through a culturally acquainted confrontation with architectural testimonies of the past, the doctorate students can direct their researches towards different thematic areas. These briefly refer to theories and history of restoration, to the technical and constructive knowledge of the building, to decay and structural diseases processes, to conservation methods and, more extensively, to the architectural restoration plan.

Focusing the relationship established towards pre-existences in the past is the aim of a first doctorate cultural line (*Theories and history of architectural restoration*), in order to let emerge the significance conferred to architectural testimonies during past centuries and, consequently, to the works of their transformation or, on the contrary, conservation.

Monographic researches based on single figures – we can mention, among the others, those concerning Giacomo Boni, Gustavo Giovannoni, Gino Chierici, Roberto Pane, Piero Gazzola and Liliana Grassi – or centred on historically stratified architectural and urban complexes constitute, therefore, the object of several investigations, afterwards also published in some cases.

The analysis of traditional constructive building techniques and that of peculiar decay and structural diseases pathologies characterize the second doctorate cur-

riculum (*The knowledge yard*). With this latter path, doctorate students confront themselves with the architectural organism and its own technical-executive details and, in addition, with its most up-to-date methods of analysis and diagnosis. For example, studies on the fortifications existing in North Sardinia or in the South coast of Campania, about yellow tuff masonries of the Neapolitan Saint Chiara basilica or, moreover, concentrated on Venetian plasters or on Neapolitan wooden trusses, have been carried out during last years with cognitive goals and, indirectly, oriented to a potential operational relapse.

This latter aspect, properly connected to the restoration plan, is developed into a further scientific curriculum of the doctorate, concerning peculiar problems of the intervention on existing buildings, with reference to different dimensions of the object to safeguard. Doctoral thesis which are internal to this curriculum (*The architectural restoration plan*) can be developed as exclusively theoretical reflections or they can be connoted by a methodologically operational character. With reference to this latter research line, analysis concerning significant experiences of protection of Spanish and French historical sites or concerning the re-use of stratified buildings have been conducted. Moreover, this latter topic has been the subject of various researches in the doctorate course, directed towards the inquiry of the delicate questions related to the dialectic between conservation and planning of new architecture.

The qualification of "Research Doctor" – achieved by 64 students since 1991 – opens working prospects that, in a *posteriori* survey, are only partly referable to the academic ambit. This in consideration, moreover, of the limited number of academic competitions to Researcher and Professor, if compared to the number of Doctors put on the "market". An analogous situation marks the working prospects of Conservation Doctors in the public administration. A situation with pessimistic implications, considering the poor attention which has been paid to the Doctorate title in recent competitions advertised by the Ministry for Cultural Goods and Activities. This results in a wider and wider emigration of Research Doctors towards free profession, although referred to stratified contexts. From "doctor" to "professional" of research, the scholar elevates the medium level of the intervention on preexistences in several cases. However, as a bitter consequence, the activity that, as known, better measures the progress of a nation becomes inevitably impoverished: the Research, that's it.

Note

Although the present paper is the outcome of a collective work among the three mentioned authors, par. 1 is due to Stella Casiello, par. 2 to Andrea Pane and par. 3 to Valentina Russo.

References

1. Università degli studi di Napoli, Facoltà di Architettura, Scuola di Perfezionamento in Restauro dei Monumenti, *Relazione sull'attività svolta e prospettive*, (Napoli, chiesa trecentesca di Donnaregina, dicembre 1982), Arte tipografica, Napoli 1983, p. 7. The School's legal acknowledgement was sanctioned by D.P.R. 448 of May 14th 1969. The first lessons started in January 1971.
2. Università degli studi di Napoli, Facoltà di Architettura, *Scuola di perfezionamento in restauro dei monumenti*, 1971, p. 5. This mentioned book forms the first "student guide" of the newly born Postgraduate School.

3. Italo Insolera's appointment to *Planning of Historic Town Centres* will go on until academic year 1971-72, while the course of *Restoration of Paintings, Frescos and Mosaics*, held by Pasquale Rotondi – formerly director of ICR since 1961 and until 1973 – will last till 1972-73. In the first year of School's activity (1970-71), the remaining subjects were appointed as follows: *Theory and History of Restoration of Monuments*, Roberto Pane; *Consolidation and Adaptation of Buildings*, Franco Jossa and Roberto Di Stefano; *Elements Dealing with Legal and Administrative Aspects*, Guido D'Angelo; *History of Architecture*, Arnaldo Venditti; *Art History*, Ottavio Morisani; *Organization and Management of Building Sites*, Ugo Carputi; *Estimates and Costing*, Carlo Forte (ibidem, p. 13-32).
4. Cf. Università degli studi di Napoli, Scuola di Specializzazione in Restauro dei Monumenti, *Attività 1970-2000*, a cura di R. A. Genovese, Napoli 2001, with a list of meetings, seminars and lectures held by the School since 1972.
5. Cf. *Attività 1970-2000*, quoted, p. 81-94.
6. The remaining changes concern, only in the academic year 1972-73, the course of *Elements Dealing with Legal and Administrative Aspects*, held by G. Pasini and *Estimates and Costing*, held by F. Fattinanzi. Since 1973-74, A. Venditti is appointed to *Theory and History of Restoration of Monuments*, while *History of Architecture* is held by Renato De Fusco. The course of *Art History* at last, held by Raffaello Causa only in 1972-73, will be assigned to Raffaele Mormone, who will keep it continually until 1994-95. Further moderate changes will be introduced in 1975-76, showing Di Stefano's handing over from *Planning of Historic Town Centres* to *Theory and History of Restoration of Monuments*, replaced by Urbano Cardarelli (afterwards confirmed, with small variations in the name of the course, until his death in 1998), and at last, the return of Venditti to the course of *History of Architecture* (cf. *Relazione sull'attività svolta e prospettive*, quoted, p. 22; *Attività 1970-2000*, cit., p. 40-41).
7. Changes apply to the course of *Estimates and Costing* – where Carlo Forte, died before his time in 1977, is substituted by Almerico Realfonzo – and *Consolidation and Adaptation of Buildings*, featuring the only Alberto Defez because of Jossa's retirement. Then for more than a decade, from 1976-77 to 1987-88, the appointments to the courses are the followings: *Theory and History of Restoration of Monuments*, R. Di Stefano; *Planning of Historic Town Centres*, U. Cardarelli; *Consolidation and Adaptation of Buildings*, A. Defez; *Restoration of Paintings, Frescos and Mosaics*, N. Spinosa; *Elements Dealing with Legal and Administrative aspects*, G. D'Angelo; *History of Architecture*, A. Venditti; *Organization and Management of Building sites*, U. Carputi; *Estimates and Costing*, A. Realfonzo; *Art History*, R. Mormone. The didactic coordination is assigned to R. A. Genovese (cf. *Attività 1970-2000*, quoted, p. 40).
8. *Relazione sull'attività svolta e prospettive*, quoted, p. 10. The work will be illustrated in the book *Campania oltre il terremoto: verso il recupero dei valori architettonici*, Arte tipografica, Napoli 1982.
9. D.P.R. 162 of March 10th 1982.
10. The paragraph 1017 in the Regulations of University of Naples, approved with D.M. April 26th 1988, clarify that «the School gives the diploma of Specialist in restoration of monuments, this last considered as care, conservation and restoration of architectural and environmental heritage. The School aims to confer a specific training, additional to university education, in the field of critics, history, arts and techniques, turned to the professionals who intend to work in restoration activity».
11. Among the subsidiary subjects that the School can activate, twelve choices are possible, although only four courses are started from 1988-89 to 1994-95: *History of Town and Territory* (assigned, in chronological order to A. Rigillo, U. Cardarelli, M. R. Pessolano), *Art History* (R. Mormone), *Technical Physics and Installations* (G. Iannelli) and *Estimates and Costing* (assigned to A. Realfonzo and then to V. Irolli). From 1994-95 to 1999-2000, after Mormone's retirement,

the *Art History* course is substituted by *Archaeometry and Ancient Metrology*, assigned to A. De Simone.

12. In the academic year 1988-89, the basic subjects are assigned as follows: *Institutes in Historiography of Architecture*, R. Mormone; *Restoration History and Basic Principles of Conservation*, R. Di Stefano; *History of Science and Building Techniques*, Benito De Sivo; *Technologies and Pathologies of Materials*, Paola Rota Rossi Doria; *Techniques of Survey and Rudiments of Topography and Photogrammetry*, R. Di Stefano; *Cultural Heritage and Town Planning Law*, Giovanni Leone; *Consolidation Techniques*, Alberto Defez; *Economy Techniques Applied to Cultural Heritage*, A. Realfonzo; *Techniques of the Building Yard of Excavation and Restoration*, U. Caputi; *Architectural Restoration Plan*, U. Cardarelli; *Planning of Conservation Areas*, U. Cardarelli. For following changes refer to the scheme published in *Attività 1970-2000*, quoted, p. 41.
13. Among the other rules, the new statute sanctions the full independence of the School in defining its study plan, provided that it includes, in 800 hours of didactics, at least 500 hours referred to the following eight subject areas: 1. Restoration; 2. History; 3. Drawing and Survey; 4. Materials; 5. Structures; 6. Economics and Law; 7. Installation, Environment, Fitting; 8. Archaeological Methodologies (par. 7 D.P.R. July 9th 1997).
14. Established by D.M. 509 of November 3 1999, which previews the closing of the schools within the third academic year since the law becomes effective (par. 13 comma 6), afterwards changed by D.M. 270 of October 22 2004.
15. In the academic year 2006-2007, the courses are assigned as follows. First year: *History and Analysis Methods of Architecture*, Ersilia Carelli; *Theory and History of Restoration of Monuments*, Giuseppe Fiengo; *History of Town and Territory*, Maria Raffaella Pessolano; *History of Modern Architecture*; Fabio Mangone; *Drawing Techniques for Restoration*, Rosa Anna Genovese; *Statics and Stability of Masonry and Monumental Buildings*, Paolo Belli; *Restoration Techniques*, Aldo Aveta; *Analysis of Town and Territory*, Mario Coletta; *Environmental Economics and Estimates*, Luigi Fusco Girard; *Questions about Conservation of Steel and Concrete Structures*, Federico Guarracino. Second year: *Architectural Restoration*, Stella Casiello; *Chemistry of Restoration and Technologies for Conservation of Materials*, Ignazio Crivelli Visconti; *Executive Plan of Architecture*, Lucio Morrica; *Structural Questions about Monuments and Historic Buildings*, Raffaele Landolfo; *Town Planning*, Paride Caputi; *Urban Restoration*, Renata Picone; *Foundations*, Carlo Viggiani; *Economic Evaluation of Projects*, Paolo Stampacchia; *Methodology and Techniques of Archaeological Research*, Antonio De Simone; *Technical Installations*, Francesco Gagliardi.
16. The Research Doctorate is normatively regulated, in Italy, in accordance with Law no. 28/1980 (*Delegation to government for the rearrangement of academic teaching and respective educative sectors, and for the organizing and didactic experimentation*), art. 8, with D.P.R. 382/1980, Title II, Items II e III, with Law no. 210/1998 on autonomy of universities and with D.M. 224/1999 concerning the requirements of the Research Doctorate.
17. For an exhaustive examination of the activities carried out from 1991 to 2004 (teachers, students, research topics, seminars, etc.), see Università degli Studi di Napoli Federico II, Dipartimento di Storia dell'architettura e restauro, *Dottorato di ricerca in Conservazione dei beni architettonici. Attività VI-XIX ciclo*, (ed. V. Russo, A. Pane, M. A. Massarotti, V. Esposito), Arte Tipografica editrice, Napoli 2004.
18. Since 2004, the director of the Doctorate School is Luigi Fusco Girard, professor of *Valuation and professional practise*.
19. See D.M. 262/2004, art. 17, comma 2 and 3.
20. At the present time the Academic Board is composed by professors Stella Casiello (coordinator), Aldo Aveta (University of Naples Federico II), Antonella Cangelosi (University of Palermo), Ignazio Carabellese (Polytechnic of Bari), Ersilia Carelli (University of Naples Federico II), Gianluigi de Martino (University of Naples Federico II), Ana Marín Fidalgo (University of Seville), Bianca Gioia Marino (University of Naples Federico II), Renata Picone (University of Naples Federico II),

Sergio Pratali Maffei (University of Trieste), Valentina Russo (University of Naples Federico II), Franco Tomaselli (University of Palermo), Eugenio Vassallo (University IUAV of Venice), Sergio Villari (University of Naples Federico II).

21. Since 1991 and subsequently, the Doctorate Academic Board has been composed, among the others, by teachers coming from the University of Naples (Francesco La Regina and Raffaele Mormone), from the University of Rome La Sapienza (Alessandro S. Curuni and Gaetano Mirarelli Mariani), from the University of Palermo (Salvatore Boscarino and Giuseppe La Monica). Moreover, professors Mauro Civita (Polytechnic of Bari), Carolina Di Biase, Giorgio Bezoari and Attilio Selvini (Polytechnic of Milan) and Mario Piana (University IUAV of Venice) have participated to the Academic Board.
22. Ana Marín Fidalgo (University of Seville) and Rodica Crisan (Polytecnic of Bucarest), respectively.

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**The Teaching of Architectural Restoration
on the Degree Course
in Constructional Engineering-Architecture
at the University of L'Aquila**

Teaching what and why

The introduction of the architectural restoration course as a mandatory and distinctive discipline in the Faculty of Engineering is recent and coincides with the creation of the teaching degree in Constructional Engineering – Architecture, recognised by the E.U., introduced a little over ten years ago.

This new degree course, launched initially at the universities of Rome “Sapienza”, Pavia and L’ Aquila, has spread progressively to numerous other Italian engineering faculties – currently more than ten. It aims at training a technical designer with cultural and operational characteristics very like those of the architect.

The teaching of restoration, in particular, aims at acquiring a survey and design methodology strongly linked to the study and critical analysis of historic architecture. It ranges from an understanding of the actual spatial, figurative, geometric, structural and material features of the building, gains substance from an understanding of construction developments in history, and culminates in the definition of a project that can conjugate solutions consciously and effectively with any problems of space and conservation encountered.

Study and design activities form part of a didactic itinerary that simultaneously provides both historical-theoretical and technical support: on the one hand, the history of restoration and a focus on current theoretical debate, as well as a critical overview of the most recent themes and solutions dealt with in Italy and the rest of Europe, while on the other, an illustration of usable analytical procedures, the most common material, technical and structural characteristics found in historical buildings, eventual areas of intervention (always contextualised) of the general regulative reference scenario¹.

The course’s important critical and evaluative component, both in the classroom and in hands-on teaching, aims at ensuring that the student constantly checks his/her working data and makes a correct assessment of the links between cause and effect in the phenomena analysed, whether of a historical-constructional, design, or purely technical nature, especially aiming at averting the tendency – perhaps more pronounced in engineering students – to utilise set answers and operational solutions deemed valid *a priori*, whatever the concrete reality on the ground and, more particularly, whatever the relationship between the conservation problem examined and the choice of project proposed.

How Teaching Proceeds

The training course is a process of concatenation, linking theoretical considerations with operational answers, questions concerning direct examination (manual and/or instrumental surveys, geometrical technological and material studies, structures and walls) with an analysis of the bibliography and sources, as well as general knowledge of the history of architecture, design approaches, with the knowledge acquired on building construction (figs. 1-2).

Connection with design workshops is thus constant and continuous. Practice runs parallel to the lessons, with building survey and analytical study, focused – on a case-by-case basis – either on single small-size buildings chosen by the students (accessible and with evident conservation problems), or on portions of more complex subjects (the Spanish fort, the squares of L’Aquila) which are coordinated and restored to the

Fig. 1

S. Maria del Ponte at Tione degli Abruzzi (Aq). Geometric-proportional analysis of the plan. The survey highlighted the procedure used for extending the mediaeval church in one of the many phases of its transformation (drawing by Barbara Malandra).

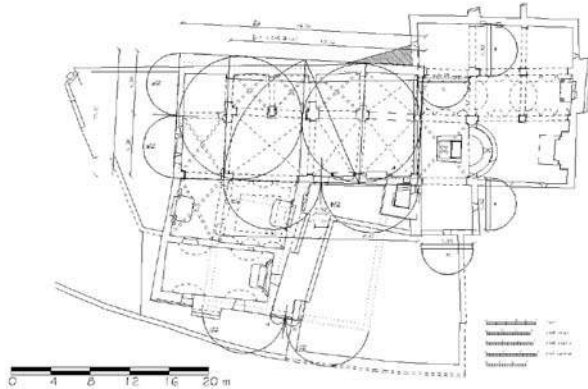
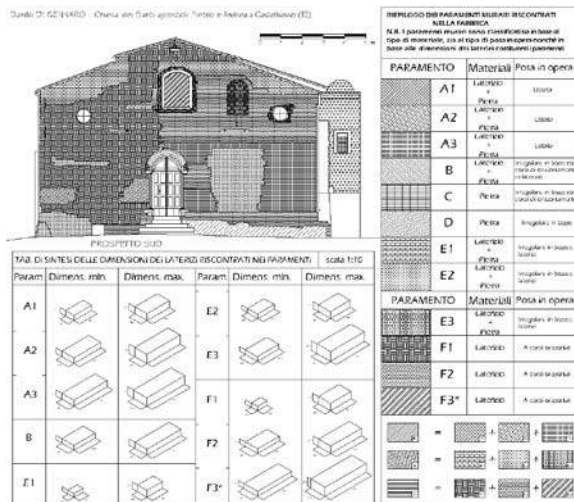


Fig. 2

SS. Pietro e Andrea at Castelbasso (Te). Study of the wall structure and various types of brick employed in the building. In the almost total absence of any documentation, particularly from the mediaeval period, this survey made it possible to identify the numerous building sites relating to the church over the years (drawing by Danilo Di Gennaro).



original unit within the course. Illustrations of the historical-theoretical questions of restoration thus accompany the initial phase of the survey and the collecting of bibliographic material, while the more technical lessons are tackled on a time-by-time basis as the related questions emerge more directly from workshop progress.

This latter is also punctuated by homework on themes, with fixed deadlines, so that the students' work runs parallel with a check on proper project progress according to schedule.

The availability of a whole year for the entire didactic curriculum is assuredly beneficial to the student's maturity, since it facilitates a proper 'metabolisation' of the work method and the results of each analytical step, as well as the working out of an effective summary, utilised in the final design proposal.

The latter is carried out as the elaboration of a preliminary design, which tackles and provides answers of a general kind for all problems of an architectural, structural,

technical-conservation nature, of operational and plant engineering adaptation, etc., encountered in the building. This is then thoroughly investigated in the final design (drafted as plans, sections and elevations, and – where possible – verified with 3D graphics) with provision of carefully selected executive details (figs. 3-4).

Choosing single subjects for small study groups proceeding independently has so far led to fairly good individual results, making the operational units more accountable and leaving them substantially freer to follow a path that is methodologically controlled but open to a higher level of personal research. Such an approach, however, makes it more difficult to control the course's general schedule, it privileges the production of the better and more motivated students and does not allow much by way of correctives to help less brilliant students.

The experiments conducted with the adoption of a single theme for the course have 'pigeon-holed' the exercise within rigidly controlled tracks, in which the *governance* of the work carried out by lecturer and tutors tows along the less brilliant students, but in some way sacrifices and restricts the qualities of autonomy and creativity in the best, levelling overall final results to a greater extent.

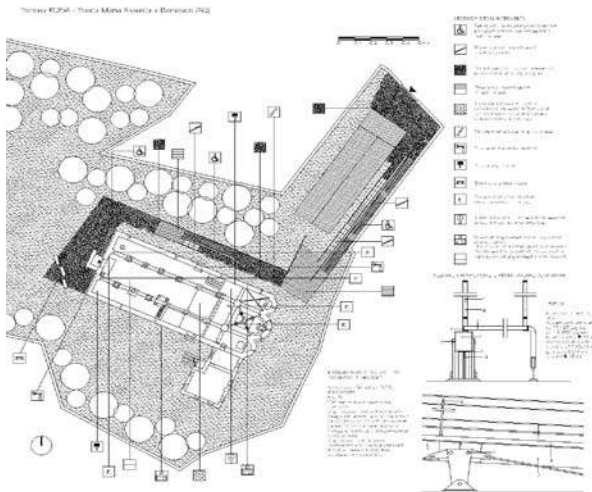


Fig. 3
S. Maria Assunta at Bominaco (Aq). Preliminary design for church restoration and arrangement of the surroundings, with executive details concerning the walkway giving access to those suffering from handicaps (drawing by Simona Rosa).

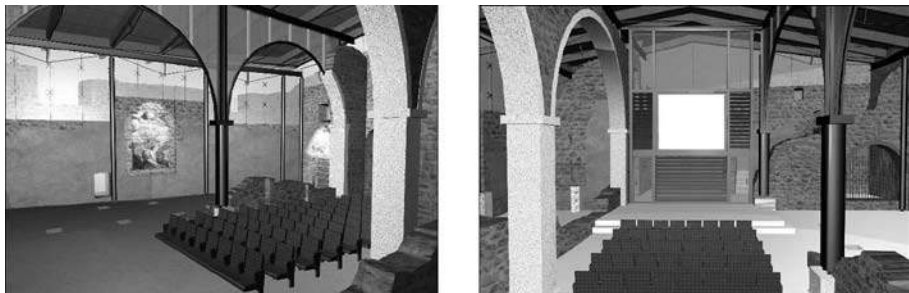


Fig. 4
S. Pietro at Castello di Fagnano (Aq). Study rendering for the church's spatial integration (drawing by Andrea Bucci).

Who teaches

The architectural restoration course at L'Aquila is held by a full professor, assisted by the work of five tutors, engineers and architects, selected for the post on the basis of their curriculum each year as a result of a competitive examination launched by the University. The selected tutors have highly oriented *curricula*: they are all specialists or are specialising in restoration², some are Ph.D. graduates or undergraduates.

While L'Aquila's university culture, especially in the engineering and architectural sectors, is closely linked, owing to vicinity and the practice of exchanging lecturers and ideas, to Roman university training, restoration - and with it the history of architecture - in particular reflect the methods and contents of the 'Roman School', due both to the specific cultural background of the lecturers (current and past), and to a natural similarity of methods and interest for direct research into historical buildings.

The number of students on the course over the past decade has grown constantly, rising from 40 to 150 units. It will consequently soon be necessary to increase the number of courses in view of the numbers provided for by law.

How much is taught and to what extent

The introduction of the mandatory discipline of restoration in the constructional engineering-architectural degree course has been marked - as stated above and as happened when the Faculty of Architecture was established - by the definition of a new training profile for the engineer-architect, now much closer and more interchangeable with that of the architect. The course, held during the fifth year and lasting twelve months, requires the inclusion of 9 Formative Credit Units (FCUs) for lessons and practical work (for 60 + 60 hours) and 3 FCUs for the laboratory (60 hours).

Preparatory to the examination are the subjects of History of Architecture, Architectural Drawing, and Architectural Technology, so as to guarantee that the teaching of restoration takes place only after ensuring that the student possesses a solid and differentiated cultural and technical basis. One particular deeper approach to surveys can involve the optional teaching of building surveys, also taking place during the fifth year of the degree course, although courses for a closer examination of the structural aspects and static restoration of historical buildings are lacking. For these reasons, the course seeks to provide an overview, necessarily synthetic, but as wide-ranging as possible, of problems of a technical and structural nature that are specific to historic buildings, at the same time thoroughly examining questions of a cultural kind relating to restoration, while emphasising the specificity of different disciplines, aspects relating to the history of architecture, to architectural design, technology and other subjects included in the degree course.

More thorough investigations also take place during the preparation of the degree thesis, the real training ground for the final maturing of the training course.

Students start their thesis in a special thesis workshop, with a tutor qualified in the restoration discipline, and it is substantially drafted under the control of the reporting lecturer.

Future prospects

Of the numerous degree theses on restoration discussed at the Engineering Faculty of L'Aquila over the past ten years, many have been awarded full marks, several have been the subject of specific publications³ and one was presented at a recent convention on diagnostics⁴.

Various engineers with a degree in restoration have continued their training at the Specialist School in the Restoration of Monuments of Rome's "Sapienza" University, some are currently involved in research doctorates, also in Rome⁵, at L'Aquila⁶ and at other Italian universities. Many continue working professionally in the sector of conservation and cultural heritage, collaborating with the local heads of the monuments and fine arts service, or taking part in preparing projects and project supervision.

In Italy, the opening of numerous degree courses in constructional engineering and architecture has highlighted interest in a fully architectural training course, understood as a real 'operational' synthesis of scientific and classical cultures. Students show considerable interest in restoration and results are often positive, confirmed, as stated above, by post-degree work and training sought even by engineers. Future developments in the teaching of restoration at engineering faculties, however, depend largely on several variables.

One of these concerns the possibility that this cultural transformation may transcend the specific convictions of the single degree course and also involve other traditional themes of the Faculty of Engineering, still greatly tied to the idea of engineering as being mainly focused on quantitative and technical aspects and less sensitive to the critical and qualitative sides of design activity.

Such a mindset, largely superseded by the lecturers, engineers and architects of the degree course in constructional engineering and architecture, still produces cultural resistance within the Faculty, with evident repercussions on training proposals and on the selection of programmes and the recruitment of teachers.

Currently, the situation at the Faculty of Engineering is open to many possible developments, differently oriented toward an opening to a balanced, stable and correct didactics, in which the existing teaching of restoration is effectively assigned to lecturers of that specific discipline, or else to solutions that vary from time to time and are more than occasionally 'extreme'. In some cases, indeed, this has even led to a split between engineering and architectural cultures, with new Faculties of Architecture created from the ribs of the Engineering Faculties. Elsewhere, the more typically architectural components and, with them, restoration, appear decidedly in second position, thus favouring a prevalently technological approach, more capable of mediating with the traditionally hegemonic scientific and didactic approach to engineering.

Distinct from, but closely connected to this reality, is the question of the definitive recognition of the engineer's competence in preparing restoration projects. The current legislative and operational situation is, in fact, somewhat confused, with Monuments and Fine Arts Departments in some cases still requiring, in accordance with a Royal Decree dating back nearly one century⁷, the qualification of the architect, while they may in turn be directed by engineer-officials, and meeting with substantial difficulty in harmonising – in view of the rapidity and extent of reforms concerning training in Italy over the past few decades – the social expectations, professional organisation and effective competence offered by university training.

The problem is made still more complex by the inclusion of other professional qualifications within the Cultural Heritage sector. Just at L'Aquila, for example, the discipline of restoration is taught as part of the course on cultural and environmental heritage (three-year degree course at the Faculty of Letters and Philosophy, to which is added the two-year specialisation course on the history and technology of artistic and craftwork production) and the inter-faculty degree course on the restoration and conservation of historical, artistic and cultural heritage.

Such a situation favours interdisciplinary dialogue extended to the wider front of scientific and classical competences, but it also opens many questions about the specificity of the roles involved in restoration, with which we shall all have to deal in the near future⁸.

A clear identification of each operational specificity (besides engineers and architects, the cultural heritage involves, in various ways, art historians, archaeologists, physicists, chemists, biologists, geologists, cultural heritage officials, graduates in restoration and in diagnostics), verification that skills required and training profiles actually match, the preparation of shared procedures and methods for multi-disciplinary work, a clear differentiation of levels of training, three-year degree, teachers' training, post-graduate specialisation, and the revision of existing laws and regulations are some of the most important points that must be tackled today with thorough examination and reform, if we wish restoration to continue to be one of the major components in Italian culture in the future.

References

1. Seminal reference texts for the course include: C. Brandi, *Teoria del restauro*, Roma, Edizioni di Storia e Letteratura, 1963; Torino, Einaudi, 1977; G. Carbonara, *Avvicinamento al restauro. Teoria, storia, monumenti*, Napoli, Liguori, 1997; M.P. Sette, *Il Restauro in Architettura*, Torino, UTET, 2001; D. Fiorani, *Restauro architettonico e strumento informatico. Guida agli elaborati grafici*, Napoli, Liguori, 2004.
2. All the tutors come from the Specialist School for the Restoration of Monuments of Rome's 'La Sapienza' University, directed by G. Carbonara.
3. The preparation and research for two of these theses have recently contributed to the launching, with the publishers Alinea of Florence a special series of the Department of Architecture and Town Planning, with the volume: L. Cantalini, A. Placidi, *Architettura, trasformazioni, restauro. Il convento di San Giacomo ad Ofena*, Firenze, Alinea, 2007.
4. D. Fiorani, C. Cacace, B. Malandra, *Conoscenza, monitoraggio, progetto, intervento. Annotazioni su un percorso virtuoso*, in *La diagnostica intelligente*, proceedings of the convention (Cosenza, Arcavacata di Rende, 28-29 giugno 2007), under press.
5. Degree in the History and Restoration of Architecture at Rome's "Sapienza" University, coordinated by P. Fancelli.
6. Degree in Mediaeval Archaeology at the University of L'Aquila, coordinated by F. Redi.
7. Royal Decree 23 October 1925, n° 2537, art. 52.
8. Cf. On the subject A. La Regina, P.A. Valentino (edited by), *La formazione vale un patrimonio. Beni culturali, saperi, occupazione*, Milano, Giunti, 2007.

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**Teaching History and Theory
of Conservation/Restoration**

Premise

Inside the training courses of Italian schools of architecture, greatly modified by the many reforms made in the last few years, the teaching of theory and history of restoration, often considered propaedeutic to the Architectural Restoration Workshop, has been maintained.

This contribution is meant to offer a reflection on the adequacy of such teaching in the training of the architect, creating a system of considerations concerning the basic cultural training and the effectiveness of the teaching in relation to the quality of the project and the development of the critical capabilities and capacities for reflection: all this on themes that more and more frequently go beyond the narrow sphere of the experts. Restoration, in particular architectural restoration, in the last few years has become more and more the subject of controversies and debates among people who are not experts, and if on one side this is certainly positive, on the other side it risks producing a widespread impoverishment of the language concealing an even more dangerous decline in ideas. Restoration theories, from the first nineteenth-century formulations to the present-day debate, have had the merit of revealing to the student the complexity of the ideological and conceptual aspects underlying design choices that each time recognize as the object of the restoration the historical value, the aesthetical value these being the testimonial significant of the material of the work and its signs.

Hence the aims of this course, as can be inferred from the curricula drawn up by the teachers, is to offer students who subsequently will venture into conservation projects information that certainly broadens their knowledge but at the same time increases their awareness in relation to the delicacy and complexity of the subject.

However, to these premises there do not always correspond appreciable effects on the quality of the projects realized within the Architectural Restoration Workshop. It is only very rarely, indeed, that the students draw on the reflections by theorists of restoration to appraise design choices that tend to confine themselves simply to the listing of a series of techniques and products losing sight of the overall project and operating as if the technique was objective in itself and saved them from errors.

The organization of teaching within the different training courses

Usually the courses are connoted by a marked historical-chronological structure and concentrate above all on the 19th century, the period in which the theories of the so-called “fathers” of restoration were defined. The story often ends with the season of critical restoration and with the theoretical commitment by Cesare Brandi, but in some cases the scenario is broadened to include urban restoration themes, the historic areas and landscape tutelage.

The broadening of the training offer in the last few years, with the passage from the Master's degree in architecture (5 years) to the opportunity to adopt the formula of the three-year bachelor degree followed by the two-year master and with the possibility of creating three-year degree courses already characterized from the disciplinary point of view, has led to the diversification of the courses; these in fact train students with very different levels. Let us see an example: the Faculty of Architecture in Genoa runs a course in “History and theories of restoration” in the first year of the degree course in Architectural Restoration, a course of the same name in the 3rd year of



Fig. 1
John Ruskin, Cà da Mosto, Venice.



Fig. 2
Hubert Robert, La violation des caveaux des rois dans la basilique Saint-Denis, en Octobre 1793.

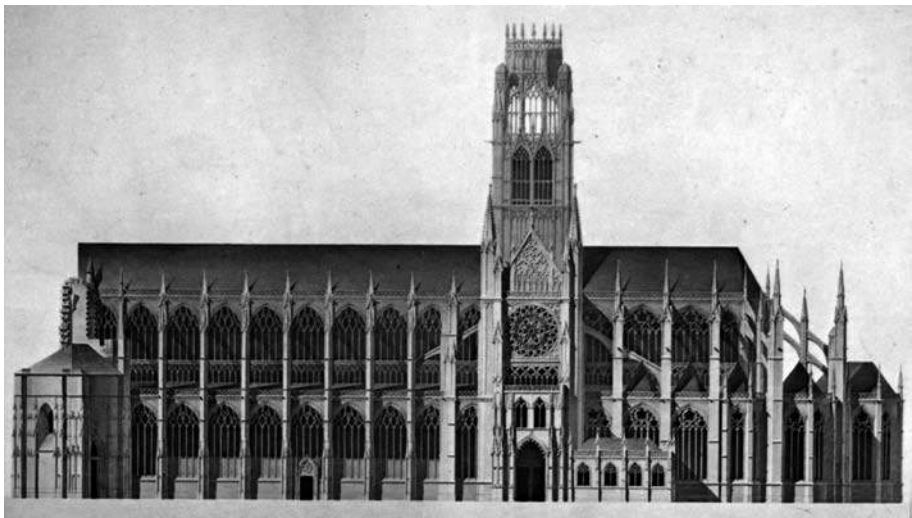


Fig. 3
Saint-Ouen at Rouen, project by Henri Grègoire, 1838.

the single-cycle higher degree course in Architecture and a course in “History of Restoration and principles of conservation” in the 1st year of the School of Specialization in Restoration of Monuments (a course which students can enter after the master’s degree). Naturally the three courses have different aims, since they are situated differently inside the degree course and, at least in the case of the course of the specialization school, since some of the students during their university career have already attended a course in history of restoration.

The structure of teaching: a chronological or a thematic approach?

The need for diversification goes with the rightful definition of courses referred to above and this leads us to try to identify a possible criterion for progression in the complexity of the themes dealt with, making it necessary to plan different pathways in the courses at different levels.

The most immediate solution may seem to be proceeding from basic notions (if the teaching is imparted in the first years of the same path) to specialised ones (if it is present in the third cycle of studies). However, having said this, the problem shifts to the definition of basic and specialised notion in teaching that in itself is already specialised, depending on the acquisition of knowledge which must be imparted during the first two years. A teaching course in the first year, for instance, cannot count on knowledge of the history of architecture in the eighteenth and nineteenth centuries, which instead is essential for understanding the rise and evolution of the debate on restoration.

This impasse could be overcome by replacing the traditional chronological “story” with a more agile and flexible structure built up starting from a series of themes and problems which recur within the debate and can be addressed both from the theoretical and from the historical point of view.

Traditionally courses on “theories and history of restoration” are organized following the following chronological axis:

- a) the emergence, before the 19th century, of the need to conserve artistic and architectural works, though this is not yet formalised in theories and practices to be linked to “architectural restoration”;
- b) the first solution to the problems in the 19th century: conserve or restore?
- c) the 20th-century debate, involving strengthening of both solutions.

It would not be difficult to break away from strict chronological progression thanks to the fact that there exist “topic” themes like for instance the integration of missing parts, the elimination of additions, compatibility, reversibility, the relationship with the techniques, etc. that it is possible to address either by analyzing the historical development of the solutions undertaken or by looking more deeply into their ideological and cultural implications.

In this way it would also be possible to address issues familiar to the students in that they are present in the “daily” debate, this familiarity being increased starting from real and “famous” cases. Only later, once their attention has been captured, would the theoretical implications and the references to cases resolved in the same way in the past centuries be made evident.

It could be salutary to bring into teaching some elements of reflection that do not belong to the traditional curricula of "Theories and history of restoration", which would constitute a first approach of future architects to the world of speculation on design. These themes at times would be provocative but precisely for this reason alluring: what does it mean today to speak of conservation, and therefore of prolongation of the life of objects, in a society rooted in the most unbridled consumerism, where the disposable has become a modality of contemporary life? How and in how many ways is it possible to correlate the theme of identity with that of conservation? To what extent do we preserve the identity of an object though modifying substantial parts of it? Is reference still made to the unity of the image in the actions carried out today? Are we able to get away entirely from the taste of the moment, which inevitably influences our evaluations? What is the present relationship between the world of sciences for restoration and that of design? How far can delegation by the one to the other go?

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**Teaching the Restoration
of Monuments at Palermo:
The State of the Art**

The Architecture Faculty of the University of Palermo, founded in 1945, is the oldest in Sicily; a Faculty of Architecture based in Siracusa was added in the 1990s and is dependant on the University of Catania; while in 2005 teaching began at the University *Kore* based in Enna, which offers a three-year degree course in the Science of Architecture as part of its department of Fine Arts Conservation.

The faculty of architecture of the University of Palermo provides a five-year architecture course (cl 4/5) as well as another, initiated in 2000, at the extended department of Agrigento; furthermore the department at Palermo offers a three-year course dedicated to Architectural Restoration, Renewal and Reutilization (cl 4) as well as a specialization in Architectural Conservation and Restoration (cl 10)¹.

Who Teaches Conservation and Restoration?

When architecture departments were initially established in Italy, the first professors were inevitably the Soprintendents of Monuments, whose everyday working experience provided in itself the basis for their professional capacity. At Palermo the first professor of restoration was Mario Guiotto (1945-49), followed by Armando Dillon (1949-55) and Giuseppe Giaccone (1955-66). In their place came professors from other disciplinary fields, at Palermo, architect Roberto Calandra, previously responsible for Urban Planning, and Salvatore Boscarino, from 1989 to 1998². A new generation of professors was the product of wide-ranging professional experience and they were the subsequent winners of competitions in sector Icar/19.

What and Why?

As part of the course “Laboratory for the restoration of monuments”, restoration is treated in its dual aspects of both a theoretical and a practical activity, with particular emphasis on the cultural implications of restoring historic monuments. Above all, the act of restoration has to be, at the same time, an act of historical-critical judgment combined with technical know-how where the experience of the first confirms the analytical conclusions of the second, as well as providing the moral authority required to define to what extent the restoration should proceed. Restoration has, as its primary goal, the *conservation*, whenever possible, of the original building materials, which are conserved because they are considered to be «the testimony, the documentary evidence and the reflection of a unique civilization, a particular culture and creative capacity, a resource which cannot be replaced and which belongs to the entire community».

It must be taken into account however, and in this it should be noted that architectural restoration varies from the restoration of paintings and sculpture, that in these monuments, as they have just been defined, human beings carry on their everyday activities: living, studying, working. For this reason, another goal of architectural restoration regards the *function* of the building, preserving whenever possible the same use or, alternatively, determining a new one which is compatible and consistent with the structure’s physical character.

As a result, it is essential to fully “understand” the monument and consequently to articulate a restoration project accordingly: comprehension and the resulting project are fundamentally dependant on one another and constitute the two essential poles of architectural restoration.

The classroom lectures, then, must above all guarantee the transmission of the diagnostic means of identifying the causes of deterioration without underestimating the importance of the humanistic and philosophical implications in such a way as to instill and reinforce in the students the incentives that will encourage them to “conserve” buildings rather than “transform” them, a tendency that until now has been part of the DNA of architectural graduates.

How is restoration taught?

At Palermo, the course *Laboratory for the restoration of monuments*, taught in the fourth year, is a six-month course (October to January) accommodating a maximum of fifty students. Comprised of 150 hours, 100 are taught by the professor (Icar/19) and 50 are dedicated to other disciplines taught by other professors interacting according to the logic of either in-depth analysis or complimentary studies. In general topics are selected from courses dedicated to the “Deterioration and diagnosis of historic structures” and “Structural Problems” in order to increase that complex background of expertise that results from the study of restoration. As for my course, which is principally aimed at creating concrete working experience (project development, restoration, worksite direction), in the last three years, I have chosen a curriculum of “Technical Systems for historic architecture” in order to explore issues of the compatibility of technical systems with the restoration of historic structures.

During a typical Laboratory, throughout a sequence of classroom lectures, everyone works together (including professors) on the restoration projects of historic buildings assigned to students who have been divided into working groups. The assigned buildings are more or less representative (ranging from the Cathedral to small individual structures) and more or less historic (including however “modern” examples), linked to problems of the city in such a way that the role of the University is not merely academic but one which, in so far as possible, confronts topical arguments related to the most current technical-artistic issues of contemporary life. The University is consequently involved in a wide range of cultural issues as advocate of a practical approach to community problem solving.

The single priority that is observed for assigning projects is that the buildings to be assigned are in a poor state of conservation and that they are readily accessible, because the process of architectural drawing and the tactile experience of measurement are considered fundamental experiences for the students.

The realization of the project is developed according to a methodology of restoration established throughout Italy. All of the notes accumulated while working on the elevations (both geometric and architectural) must be recorded, including the historical ones, and interpreted together with the documentation relative to the technical construction in such a way as not only to emphasize the project’s overall visual impact but also, and above all, the character of its material qualities, the very qualities which in their turn guarantee the most thorough conservation of the “pre-existent”. The next step is the creation of the “materials chart” and then the closely related “deterioration chart” which, together with the “program of restoration/conservation procedures”, make up the core of the teaching process. «The “state of defects” includes a survey of the alteration of the stone materials used in the construction as well as a study of the building’s structural stability. We have to treat this deterioration in such a

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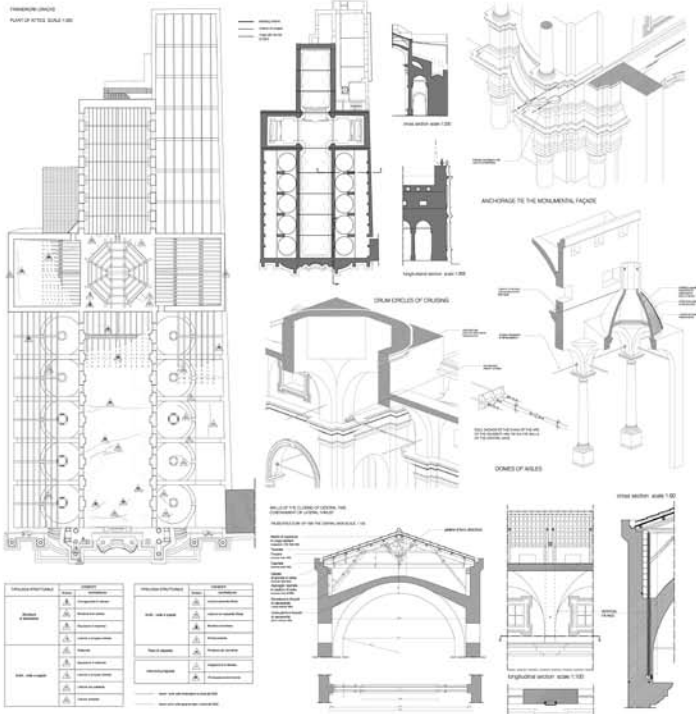
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The church of S. Anna is a singular example of the relationship between the factory, historic, and earthquakes from 1726 until 2002. The Church is hit from 5 earthquakes that cause much damage to followed restoration and consolidation.

Some photos of disruptions and main injury suffered by the Church after the earthquakes that struck Palermo on 8 September 2002 from the top: drum, nave, fine, side chapel, nave side service aisle.

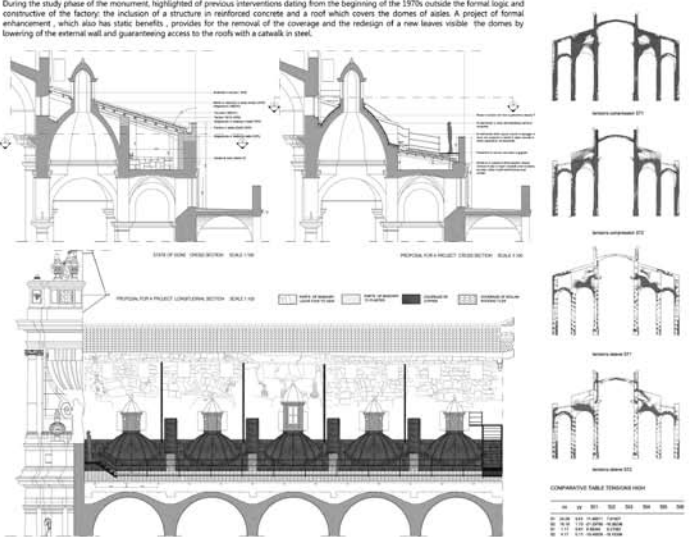


During the study phase of the monument, highlighted of previous interventions dating from the beginning of the 1970s outside the formal logic and constructive of the factory, the inclusion of a structure in reinforced concrete and a roof which covers the domes of aisles. A project of formal enhancement, which also has static benefits, provides for the removal of the coverage and the redesign of a new leaves visible: the domes by lowering of the external wall and guaranteeing access to the roofs with a catwalk in steel.

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way as to reduce the instability between the structure and the external environment; to neglect this issue amounts to ignoring the ethical responsibility which must, both professionally and culturally, characterize the restorer»³. The pre-eminent objective of conserving pre-existing materials is rigorously pursued with all its didactic-methodological implications, underscored by a curriculum dedicated to the in-depth study of the techniques of consolidation.

The achievement of this objective is reinforced by the proposals of restoration and re-functionalization which, as a direct result of studying through historical-critical research, the formal character of the assigned structure, explores alternative relationships between conservation and innovative techniques aimed at restoring an architecture which is structurally stable, functional and of aesthetically high quality, conforming to the never outdated triad of Vitruvius.

When and to what extent is conservation/restoration taught?

The architecture faculty of the University Palermo has always given much importance to the project phase, a particular characteristic of the school⁴. Restoration is present in the third year course *Theory and History of Restoration* (50 hours, 4 credits) and in the fourth year course *Laboratory for the Restoration of Monuments* (150 hours, 10 credits).

In recent years, following a regulation first established in the academic year 2002-03⁵, based on the D.M.509/99, more attention has been paid to inter-disciplinary coordination, giving rise to an annually appointed Coordinator of Project Planning with the aim of assuring interdisciplinary interaction in such a way as to counteract the inevitable extremes of specialization. Thus, common issues of teaching and research, are developed in the individual courses along the lines of the specific disciplines, group seminars are organized together with didactic exhibitions and individual essays are published in volumes dedicated to more generalized overall themes⁶.

Admittedly this approach provides valuable experiences, but we are also convinced that the competence of the restoration specialist, confirmed by an Architectural Degree, remains somewhat limited for a student graduating today, and above all at a time when the possibilities of employment are above all provided by work on pre-existing structures. Undoubtedly additional attention to themes of architectural deterioration and diagnostic techniques would constitute a valid improvement of the program, in the same way that it would be important to devote such subjects as Architectural Drawing and Technology more to the study of pre-existing structures rather than focusing them so exclusively on new constructions.

The planning phase of the project still tends, even if perhaps somewhat less today than in the past, to prevail over that of its restoration, perhaps an act of self defense on the part of planning professionals or a defense of the exclusiveness of their authority. This calls for reinforcing the discipline of restoration, certainly without pretending an exaggerated autonomy, but nevertheless underscoring the fact it is, at the moment, still the only course that provides the required legal competence to practice Restoration (R.D. n.2537 of 22.10.25 art.52; confirmed by the Consiglio di Stato n.5239/06). Not defending this article signifies «agreeing to the implicit undermining of the basic training and exercise of the professional architect-restorer and above all to the dismemberment of architecture», a process already underway with regard to the activity of restorer⁷.

It seems to me essential to initiate a renewed exchange between the disciplines of Restoration and Project Planning which in the last fifty years have largely developed independently, a process which has neither helped one or the other; and above all, this process has not contributed to the care of our monuments⁸. This exchange could take place either in the Coordinating Laboratories, in the fifth year, or when the students prepare their undergraduate dissertations, or their doctoral dissertations; this last solution is the one I personally consider ideal because by then the student has had the opportunity to autonomously develop his own ideas regarding restoration and project planning, free of all outside influence.

At the same time I believe that specialist training in Conservation (degree in class 10) is an important improvement in recent years, but it should not constitute an excuse for diminishing the preparation in Architecture, which given its “generalized” and predominantly “humanistic” character seems to me to guarantee the cultural dimension that restoration cannot afford to lose in preference to a deceptive technical proficiency. Restoration, by its very nature demands a process of synthesis in which the varied components –history, science and technology- are brought together and it is along these lines that I proceed with my undergraduate dissertations, two of which I am presenting as my contribution to this conference.

The first of these⁹, which is dedicated to an important example of baroque architecture –the church of Saint Ann- was developed according to a traditional approach utilizing architectural drawing, historic research, architectural comprehension, and the identification of materials and deterioration, comprising together an in-depth study which further benefited from the aid of my colleague Teotista Panzeca, professor of the Science of Construction, who was consulted regarding the presence of structural faults, the principal cause of the building’s compromised state of conservation. The final result was a project which aims at re-establishing the monument’s architectural importance by freeing the cupolas on the roof of one of the lateral naves, disfigured by unjustifiable recent construction.

The second project¹⁰, which concerns an 18th-century villa –Villa Barone della Scala- seriously compromised, in part, by subsequent transformations of its interior, but even more so, by the transformation of its immediate surroundings. This project benefited from the assistance of my colleague F.Schilleci, of Urban Planning, in order to re-examine the villa’s urban context; together with that of G. Cuccia, of Project Planning, with whom the issue of recreating an appropriate context was confronted as well as the reconstruction of the villa’s collapsed wing; and finally that of M. Beccali, of Technical Systems, who provided the building, which was assigned a new public use, with the necessary technical systems.

Note

This article describes the teaching of Restoration in the five-year course (cl 4/s) of the Department of Architecture of the University of Palermo. For the three-year course in Architectural Restoration, Renewal and Reutilization (cl 4) and the specialist degree in Conservation and Architectural Restoration (cl 10) see the article in this volume by Professors Tomaselli and Ventimiglia.

References

- 1 The situation described is that regulated by D. Lgs. 509/99 but which is about to be changed by the recent reform of L.270/04. See S. Musso, *Facoltà, si cambia!*, in “Il Giornale dell’architettura”.

- n.51, May 2007, p. 11. For the University of Palermo the most important variation of the new regulation, which is to become effective next year, is the reduction of the number of required courses from a total of 43 to that of 30 as well as the substitution of the three-year course of Restoration, Renewal and Reutilization with that of the Science of Architecture (also cl 4).
- 2 S. Boscarino, *Rapporto sull'insegnamento del restauro dei monumenti*, (1982) in Id., *Sul restauro dei monumenti*, Milan 1985, pp.172-177; see also R. Prescia, *Restauri a Palermo* (1943-2006) soon to be published.
 - 3 S. Boscarino, *Conoscenza delle struttura architettoniche: metodi e tecniche d'approccio* (1988), in Id., *Sul restauro architettonico. Saggi e note*, curated by A. Cangelosi and R. Prescia, edited by F. Angeli, Milan, 1999, p.42. Prof. Boscarino was responsible for the introduction at the University of Palermo of discussions on the state of architectural defects and my course is based on his teachings. See R. Prescia and T. Campisi (curated by), *Metodi operative per il progetto di restauro – Esercitazioni didattiche*, with S. Battaglia, E. Palermo, S. Portanova, Palermo, 2005.
 - 4 F. Alfano, *L'insegnamento della progettazione architettonica nella Facoltà di Architettura di Palermo dal 1984 al 1994*, in Id., *Trasmissibilità e insegnamento del progetto di architettura. L'esperienza della scuola di Palermo*, Naples, 2000, pp.11-24.
 - 5 See University of Palermo, Faculty of Architecture, *Quadro didattico 2001-2. Offerta formativa 2002-3*, Palermo 2003 and the later editions of 2005 and 2006.
 - 6 The chosen theme was that of the Valle dell'Oreto (the Palermo River) in the interest of which a Convention was signed by the Fondazione Fiumara d'arte di A. Presti and the Fondazione "Salvare Palermo" for a project of conservation and development of this seriously deteriorated area. See R. Prescia, *A più voci sul fiume Oreto*, in "Per", giornale della fondazione Salvare Palermo, n.12, May/August 2005, pp.6-7; A. Sarro, (curated by), *Temi operative per la valle dell' Oreto*, Palermo, 2008.
 - 7 Professors Document Icar/19 of 31.05.06 in response to art. 29 of D.Lgs. n.156 of 24.03.06 which permits "restorers" to work on decorated surfaces without the supervision of architect-restorers.
 - 8 An ongoing debate initiated by Minister Mussi regarding macro-sectors.
 - 9 E. Galizia, V. La Rosa, *La Chiesa di S. Anna la Misericordia a Palermo tra storia e progetto*, Undergraduate Dissertation in Architecture, Prof. Arch. R. Prescia, University of Palermo, A.A. 2006-7.
 - 10 A. Giannone, A. Incognito, *La Valle dell'Oreto tra ri-conoscimento e valorizzazione. Il caso della villa Barone della Scala*, Undergraduate Dissertation in Architecture, Prof. Arch. R. Prescia University of Palermo, A.A. 2005-6.

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**Teaching Restoration Methodology:
Role of Scientific Contributions
in the Conservation of Architectural Heritage**

The subjects of the Restoration discipline are taught in the Faculty of Architecture that promoted the activation of specific degrees in the University of Palermo. The teaching methodology is supported by a powerful tool that is the applied work of research, developed by the "Laboratorio di Indagini e Restauro dei Beni Architettonici" L.I.R.B.A. "Salvatore Boscarino" (Laboratory for the investigations and restoration of the architectural heritage). The educational experience articulates by following stadiums through a triennial first level degree, a second level degree in "Conservazione e restauro dei beni architettonici e ambientali" (Conservation and restoration of architectural and environmental heritage) and a biennial second level Master in Restoration of Monuments. The pedagogy of teaching sets out with the basic level formation and develops up to the acquisition of the necessary knowledge and experiences for the conservation planning and the direction of the correlated site.

The opening of courses completely dedicated to the intervention on pre-existing historical architecture and their popularity with young people substantially weakened the obstinate conviction that the Faculty of Architecture in Palermo had to identify itself only with the five-yearly degree course in Architecture. In fact, it's getting more and more difficult to attribute value and credibility to an unspecific formative curriculum to introduce in the labour market a generic and confused planner, that should be able in every possible planning experience, revealing mature capability both in the field of the architectural composition and in the conservation of monuments, or in the sector of the urban planning or the serial production of daily use objects too.

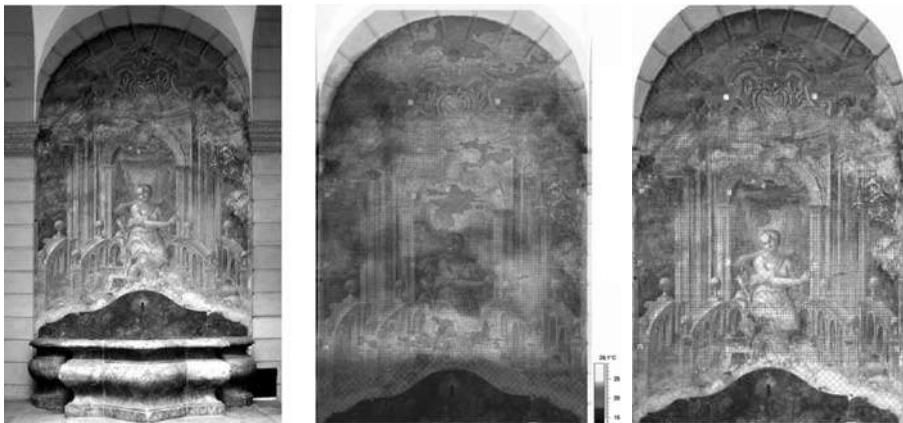


Fig. 1-3

Palermo, Comitini palace, mural painting in the inside courtyard. Thermogrammetry processed and drafted through the application of metallic marker to allow the metric correction and the editing/cutting of the visible and infrared images. Simultaneous visualization of the metric image of surfaces and thermography with the indications of conservative treatments.

The works of research in the field of non destructive investigations for the knowledge of the ancient buildings and the diagnosis of their conservation condition have made a fundamental support to some didactic experiences in the second level degree and, in particular, in the master in Restoration of Monuments. The value of material document attributed to the pre-existing architecture need the student to know how to manifest a serious analytical attitude and managerial ability to carry out works of

knowledge; this kind of education can be developed in the university course area if students succeed in interacting with the analytical systems and are able to sustain the action with the theoretical and methodological contents of the restoration discipline.

The analytical methodologies and the diagnostic tools develop an essential role to conceive the conservation project because the assignment of documentary value to material in architecture makes every analytical gesture at the same time gesture of projecting effectiveness, turned toward the superior conservative purpose to maintain all the stratigraphical components of the architectural organism, in the full respect of the material authenticity.

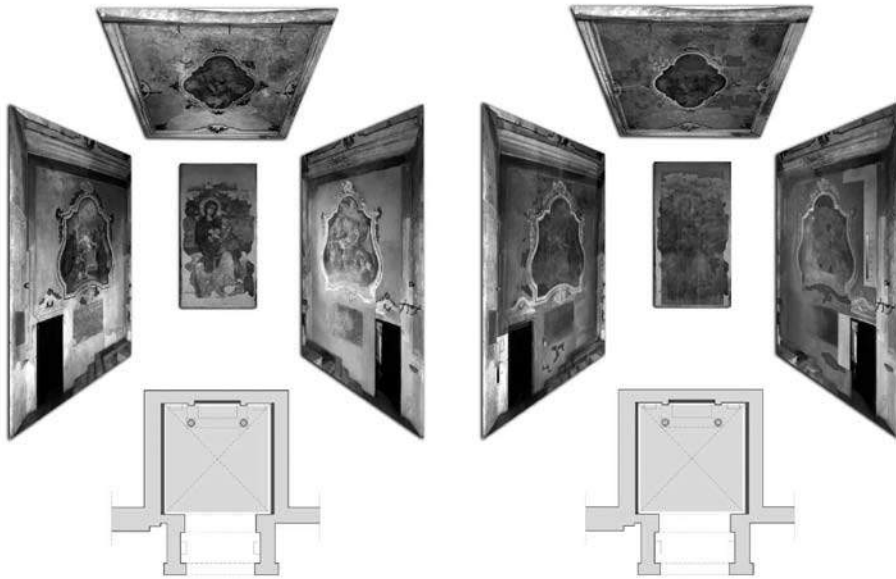


Fig. 4-5

Palermo, Santa Maria della Catena Church, three-dimensional thermogrammetry with graphic elaboration of the restoration project developed through the T.r.u.e. methodology. The preliminary examination of the conservation action has put in evidence the adhesion anomalies and the presence of damp; the degradations mappings are directly drawn on the metric visible and infrared images of the architectural surfaces.

The topographical and photogrammetric surveys and the drawing of the ancient architectures, the direct or instrumental reading of the architectural text, the manifold interdisciplinary approaches to research works for the knowledge lose their meaning without the aim of conservation, and without the conservative action to frame and calibrate in the project editing.

In the restoration courses, the presumed autonomy of “project” (assumed as well as a supreme entity and abstract means of transformation) has been replaced by a modern conception of the project-work that clearly identify the subject of interest (monument) and the aim (conservation). The cognitive activity develops by a methodological teaching approach that doesn’t consider analysis and project as autonomous components but, contrarily, they are unified by the graphic elaboration of the project,

in which the knowledge of the architecture sustain the project, that's the action to be done on material consistency.

In such a cultural perspective, the education of students cannot elude the dialogue with the researchers in the applied sciences as the chemist, the physicist, the biologist, which can produce knowledge to be integrated to the project. To be able to communicate in other disciplines languages, to formulate hypothesis and questions, to manage the contributions of other disciplinary sectors, the pedagogical experience should promote every possible meeting among students and the researchers.

But the elaboration of the diagnosis is effective if it's conceived by the expert connoisseur of the architectural organism; in fact the chemist, the physicist, the biologist can obtain scientific data that are exclusively mere measurements without a correct iconographic elaboration of the diagnosis for the conservation project. The results of the diagnostic investigations can scientifically support the project editing if the designers can comprehend their meaning and conceive them along the methodological experience of the restoration discipline.



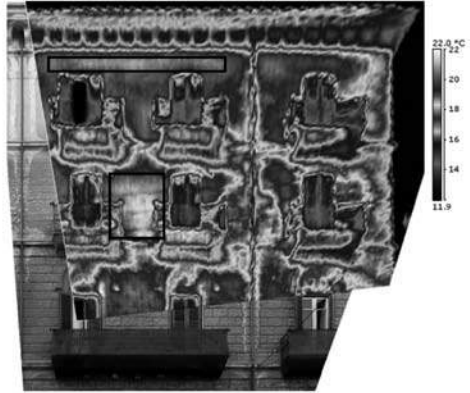
Fig. 6-7

Palermo, Florio plaza, building with artificial stone plaster. Photogrammetric survey and thermogrammetry edited to obtain the metric location of the superficial thermal anomalies and, therefore, to comprehend the adhesion levels of the finishes. The investigation reveals the plaster to be tenaciously adherent to the substratum and suggests planning the cleaning treatments and a partial integration and consolidation exclusively.

In the constant investigation of the connexion between lecture and applied research launched by the Faculty of Architecture in Palermo, the teachers try to make the students interact with the works of research planned and developed by the laboratory in order to stimulate the future restorers to get an organic aggregation of the interdisciplinary knowledge through the crossbreeding and the graphic synthesis in the project.



Prospetto laterale dell'edificio in un'immagine privata delle deformazioni prospettiche. Il fronte è caratterizzato dalla lacuna provocata dal distacco del rivestimento. Dall'osservazione visiva lo stato di conservazione dell'intonaco appare buono, senza deformazioni e con diffusi depositi superficiali.



Termografia con mosaicatura delle immagini dell'intensità radiante in relazione all'immagine al visibile del fronte laterale. L'unica anomalia termica evidente è localizzata al terzo livello tra le due aperture centrali con balconi, il rivestimento nel complesso non presenta ulteriori segni di distacco delle finiture a finita pietra.

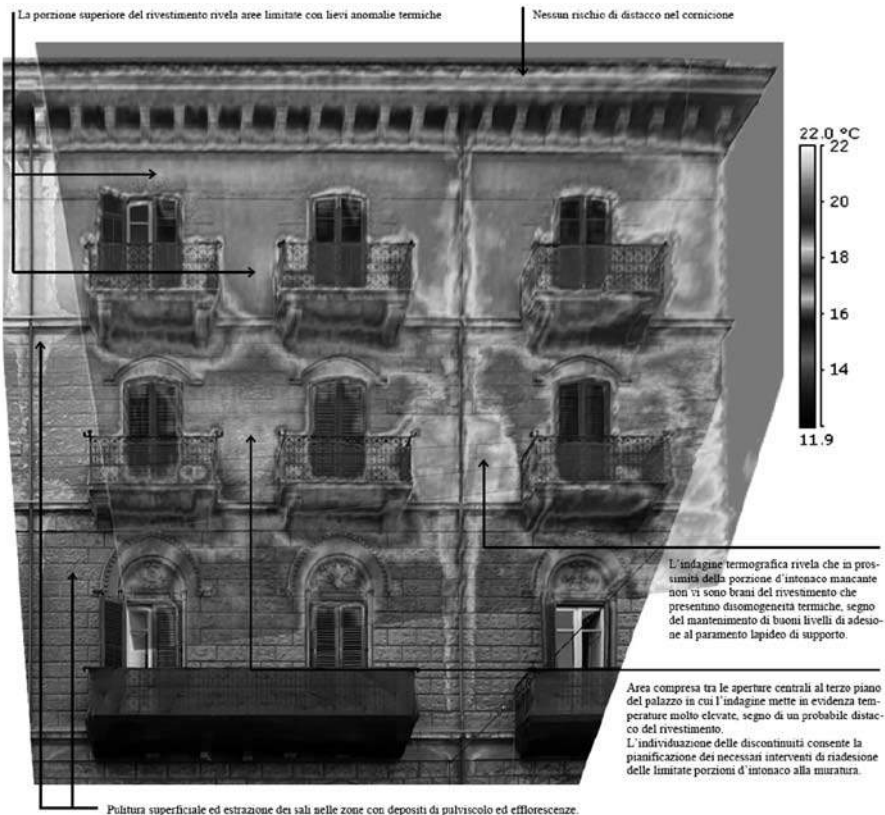


Fig. 8-10

Palermo, building in Roma street, thermogrammetric evaluation of the adhesion levels in the artificial stone plaster and preliminary project of the conservative interventions. The diagnosis of the architectural finishes is edited through the T.r.u.e. methodology to observe the areas to be consolidated with metric precision.

The experimentation of the diagnostic analytical methodology T.R.U.E. (Thermography, radar, ultrasound, endoscopy) has involved the students of the restoration and diagnostic survey courses, that employed the measurement and non destructive diagnostic survey instruments (for example thermocamera, radar and ultrasonic systems) and than drawn the diagnosis.

The planned investigations are carried out on site by the restoration teachers and students with the goal to get files to elaborate by specific diagnostic and computer aided design software to elaborate and compute the thematic maps (degradations, lesions, interventions). L.I.R.B.A. analytical methodology considers material and metric data to be essential in the final maps, in order to visualize them simultaneously with the architectonic survey (graphic, photographic, photogrammetric, three-dimensional) and go on planning the conservative interventions directly on the gotten graphs (Fig. 3, 5, 10, 13).

The T.R.U.E. analytical methodology and software for the architectural diagnosis are conceived to introduce and permeate the diagnosis into the conservation project. The diagnostic instrumental investigations (non destructive tests in particular) can certainly localize every defect that the structures and the architectural finishes can reveal and support the maintenance of the material document. The adhesion decreasing and the discontinuities are made evident by superficial temperature maps and tomographic sections that return density of materials and internal anomalies.

Thermography, radar and ultrasonic test, in synergy with other diagnostic surveys, can give information that once was only possible through direct investigation, destroying the material integrity: it is possible to study the degradation entity in those superficial portions or thickness to be consolidated, or verify the result of the conservative treatments already carried out in the restoration site.

The investigations systems reached high sensibility nowadays and software can support data editing for every single survey to obtain scientific evaluations. But the value of the investigations is subsequently increased by the comparative analysis of all the diagnostic information and it's important for the different data to interact.

The T.R.U.E. methodology is characterized by the consequent implementation of non destructive diagnostic surveys and endoscopic observations (respecting a specific sequence) and pursues the finality to elaborate the conservation project of plasters and other kind of architectural finishes, in the full respect of the authenticity of monuments and their historical stratification.

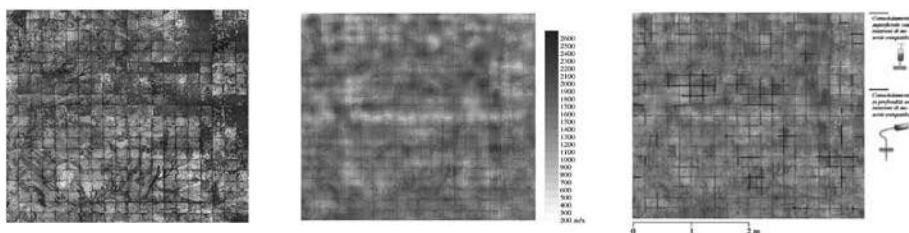


Fig. 11-13

Palermo, Comitini palace, particular of the majolica flooring in the Mirrors Gallery. Photogrammetric survey, ultrasonic and radar tomographies edited with the system of simultaneous visualization by the analytical T.r.u.e. methodology and description of consolidation treatments.

The Methodology is applied by developing some steps: first of all the photogrammetric survey is performed on the surface to be investigated (Fig. 1, 6, 8, 11), then the indirect diagnostic investigations and the software analysis and drawing of the final mappings, ending with endoscopic view if necessary. The T.R.U.E. software is conceived and projected to obtain the simultaneous reading of the diagnostic graphs, visualizing them contemporarily in different transparency levels (Fig. 2, 5, 7, 9, 10, 12, 13).

After the elaboration of the diagnosis, the gotten graphs can be imported and scaled in c.a.d. software (raster image) in order to support the final editing of the project (Fig. 3, 5, 13). This way the interventions could be planned and estimated only where defects have been located and avoiding the risk to supersize consolidation.

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**Teaching Restoration
in the First School of Architecture in Turin**

The experimentation of a theoretical-practical approach to the disciplines of restoration, in the second year of the program of study of the bachelor in Architectural Sciences, is one of the innovative features that characterizes the New Training Model of the First School of Architecture in Politecnico of Turin.

The aim of the essay is to show a synthesis of the principles and of the experiences achieved through a theoretical course ("Introduction to Restoration", Luciano Re) and the partnership in two interdisciplinary labs ("Architecture-restoration Lab", Barbara Vinardi and Monica Fantone).

Nowadays, Restoration proposes - in the context of the first experiences of learning and of didactic research - teachings and topics traditionally carried out during the last courses of the quinquennial program of study. This original position showed the existence of a relationship among knowledge, professionalism and production that has deeply innovated during the second half of the XXth century, for cultural and structural reasons and according to emerging necessities and sensibility. Restoration -introduced in the university didactics in the early XXth century on the initiative of Gustavo Giovannoni- gives the opportunity to instruct towards specific competences to safeguard, preserve, conserve and even restore a little heritage of objects somehow concluded, the "monuments", preserved by initiative and care of the *Ministero per la Pubblica Istruzione* as cultural and moral examples, for their antiquity and for their historical, symbolic and aesthetical importance; in fact, since then, a kind of sensitivity, stated by Giovannoni himself, was spreading and warned that the value of the architectural productions of the past had to be sought even in the micro-urban areas, in the consistence and in the texture of the groups of buildings and of the environmental settings.

A deep knowledge of the traditional construction, not only in the current practice but also of its principles and values, was the shared ground of the professional competences; so that every good architect was also a decent restorer, assuming the few, clear propositions expressed by Camillo Boito; and vice versa.

The specificity of restoration concerned essentially the sensitivity in the recognition of the aesthetical historical value of the object and then in the artistic aspects of the consequent intervention. This didn't mean that the project of new architecture and restoration were indiscriminately mixed, but that the methodological competence, the structural conceptions, the logic (more than the taste) and the procedures of the production were set in a kind of continuity, of analogy, of synergy; they also took advantage of a traditional exchangeability of tasks between planner and performer, even when the work was minutely defined by a project developed in any aspect of the executive technology, and this is the case of Antonelli or Caselli's architectures and of the qualified production of the Thirties. In addition to this, for all the architects trained till the second postwar period tradition and innovation constituted indissoluble components, in an organization of the building techniques that gradually was transforming from a handicraft productive model to an industrial structure of the building site, in the material availability and component, recognizable in a new choice of materials and components but also in a more rigid planning.

Nowadays, restoration can be described by Pio Baldi's words who states that "its principle is there where the traditional techniques are ended" (even that of the modernity: a reinforced concrete and glass tiles has the same problems, or even more, of a stone cut ashlar). Consequently, the knowledge connected with restoration be-

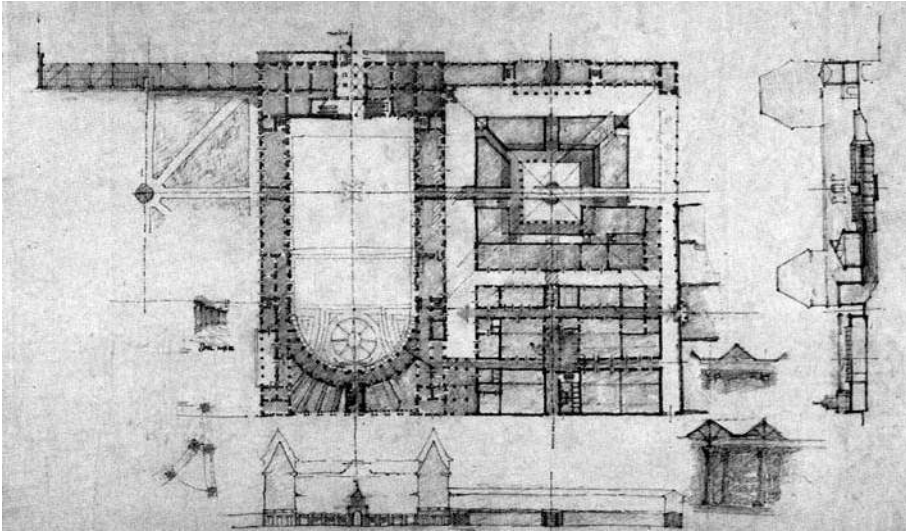


Fig. 1

Construction vs/and restoration. Drawing by Agostino Magnaghi and Luciano Re in "Il Valentino. Sintesi storica e metodologia per il progetto", Politecnico di Torino-Dipartimento Casa-Città, Celid, Torino 1986.



Fig. 2

Via dei Mille in front of Aiuela Balbo in Turin, area of the rehabilitation and change of use intervention.

comes a matter of practical more than cultural importance, concerning the heritage of the past, independently if we deal with "monuments" or preexistences in general. They need however to be treated appropriately, not only for critical reasons but also to maintain their value and bring out the usage. That is for the now preponderant incidence of the intervention on the already built heritage, in comparison with the whole urban production (valuated about 60-70%), and for the characteristics of the constructions in a territory such as the Italian's, where the consistence of the buildings and of their historical nucleuses shows in many cases delicate and irreproducible cultural identities (artistic, typological, historical-documentary, environmental), indissolubly connected even to the continuity of qualified social and productive relationships.

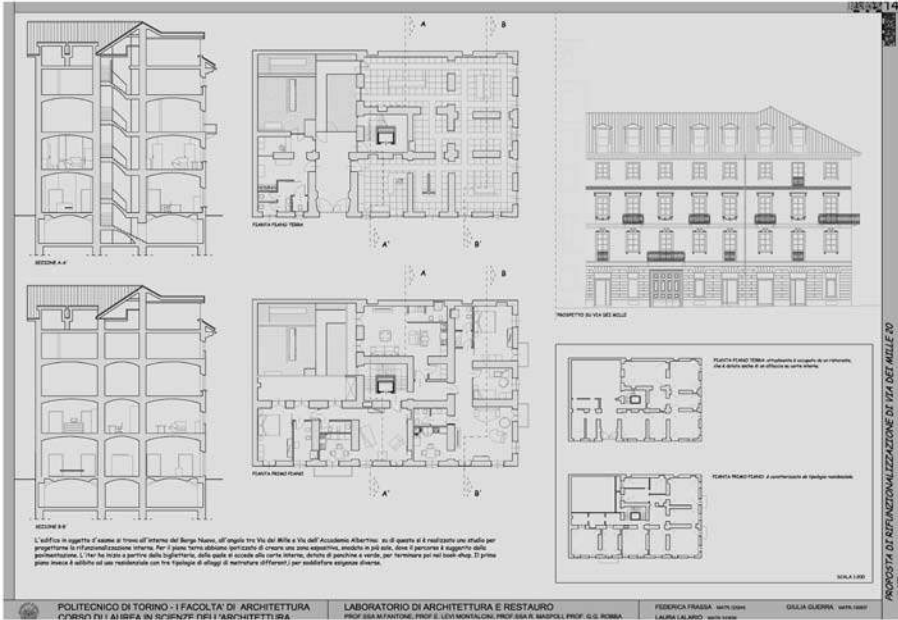


Fig. 3
 “Architecture-restoration Lab”, a.a. 2006-07; teacher of architecture planning: Emanuele Levi Montalcini; teacher of restoration: Monica Fantone; students: Federica Frassa, Laura Lalario.

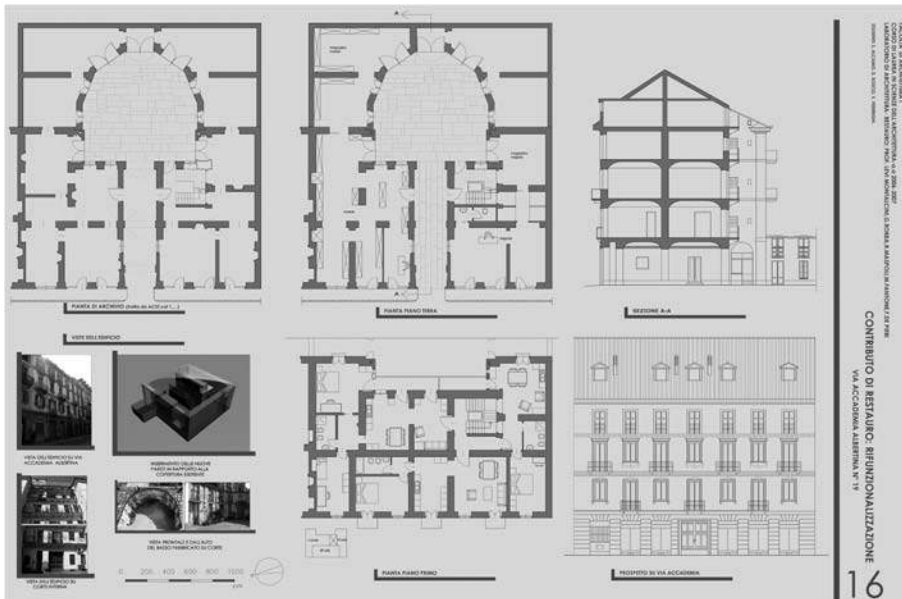


Fig. 4
 “Architecture-restoration Lab”, a.a. 2006-07; teacher of architecture planning: Emanuele Levi Montalcini; teacher of restoration: Monica Fantone; students: Serena Alcamo, Daniela Bosco, Valeria Federighi.

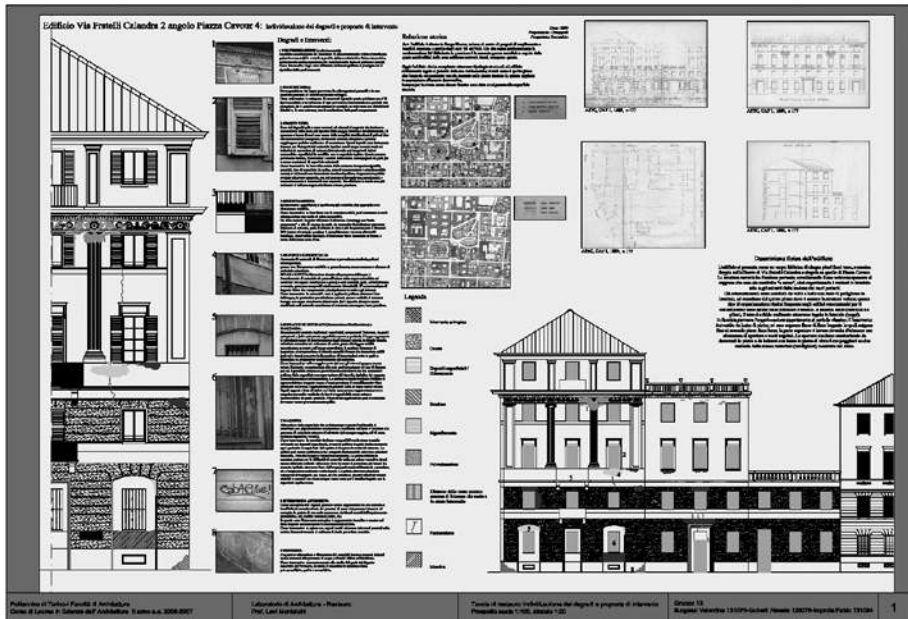


Fig. 5
 "Architecture-restoration Lab", a.a. 2006-07; teacher of architecture planning: Emanuele Levi Montalcini; teacher of restoration: Monica Fantone; students: Valentina Burgassi, Alessia Guberti, Fabio Improta.

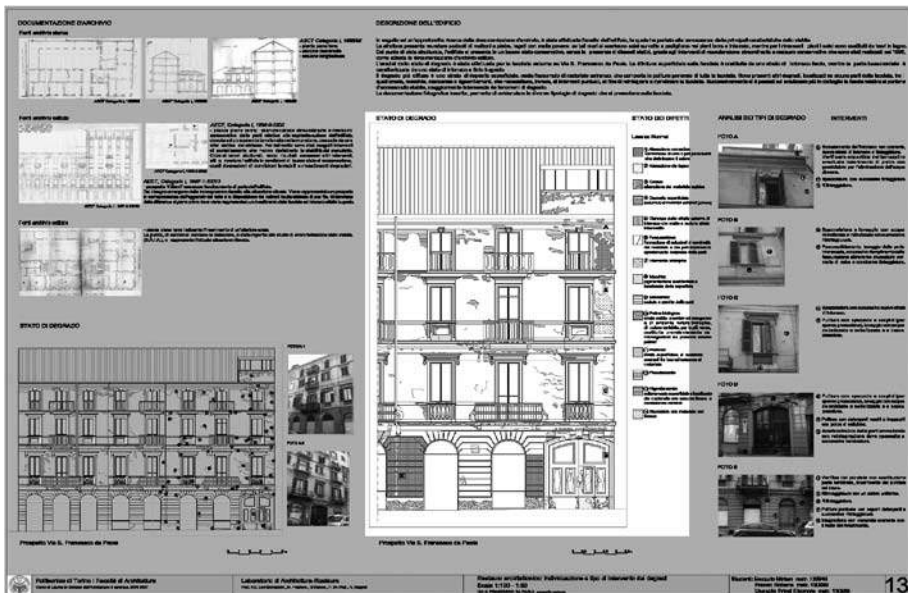


Fig. 6
 "Architecture-restoration Lab", a.a. 2006-07; teacher of architecture planning: Emanuele Levi Montalcini; teacher of restoration: Monica Fantone; students: Miriam Bozzuto, Roberta Franco, Eleonora Usseglio Prinsi.

Besides this, it is a common feeling that the preserved objects (and still more the territorial structures that connect them: perimeters, layouts, views) are much less than those whose value is evident. Such discrepancy is not at all resolved by the recent unification of the preservation laws, with some marginal extensions, in the *Codice dei Beni Culturali* of the 2004 and in its updates, and it brings to an unjustified and unbearable claim of theoretical-practical autonomies, for some categories of objects of evident cultural meaning such as the “contemporary architecture” and the “industrial archeology”;

Restoration has to be considered as synthesis discipline, in its double aim - paraphrasing the definition given by Renato Bonelli - of returning critically the architectures to their times (the original and the crossed ones), and simultaneously to the our social uses, practical and cultural.

The experience of the first three-year period of the New Formative Model has pursued this aim facing the intrinsic difficulties, starting a productive interdisciplinary integration on the basis of a synthetic communication of the principles of the teaching, closely connected with history, theories, rules and intents.

So restoration is a merge of knowledge that converges in the appreciation of the existing heritage (architectures, objects, territorial textures) in order to plan and realize the opportune actions to ensure the duration (*diuturnitas*) of its practical and cultural updating, through the conservation (as a primary aim) and compatible and sustainable (minimal and reversible or at least retractable) interventions. These principles are oriented to the territory (“cultural landscape”), to the relationship between territorial project and the presence of architectural and environmental consistence, to the architectural, landscape and building intervention, to the structural consolidation and to the settings (technical plant, accessibility and security rules), essential to ensure the maintenance through an appropriate use and then the duration of the preexistences.

The technical aspects of the diagnostics, of the reparation techniques, as well as the intervention communication techniques (graphical symbols, tenders and price lists prescriptions) convey to the field of Restoration. But all these technical instruments worth in order to the fact that they are finalized to a correct realization of their theoretical principles and of their critical policies; synergic with those of the project, so that the preexistences are not only hints for the inventive inspiration or annoying material and cultural impediments to revolve when it is not possible to eliminate them. Obviously, according to this point of view the conception of restoration involves a propo- sitive rather than effective point of view of safeguard. In other words, restoration is to intend as a qualifying presence of the project, rather than an aprioristic opposition to the reasons of the construction of new buildings: the principles of the conservation are part of the actuality of the ancient buildings and they deny the mysticism and the imitation, driving aware and respectful interventions on the existing.

It remains, however, the substantial difficulty to define an intervention program fixed in advance and unchangeable, to compare with an operating routine directed by the laws and by the hierarchy of the project phases that tend to exclude any hypothesis of experimentation in the organization, in the timetable, in the approval, in the economy. On the contrary, experimentation should be instead unavoidable, because the preliminary historical and diagnostic studies are a main part and not only premise of the following operative phase.



Fig. 7
The outside wall rests of the Quartiere di Cavalleria measured and widened by Colonel Barabino in 1832.



Fig. 8
The facade rests of the Quartiere di Cavalleria along via Verdi.

It is nevertheless fundamental the necessity to interpret things as the result of a complex building process happened in the history. The form of an arch comes from the architect's graphic tools and from the metric system of the time, from the construction of the centre, from its elastic behavior as well as from the action of the time in causing natural wear, degrade and ruin to its consistence and shape (other than tracing a *spline* to connect some surveyed points). So, in addition to rules, standards and certified proceedings, on the table of the architect doesn't have to be brought only history books, but even the treatises and the recipes that can help him to understand the reasons and the methods of construction of the old architectures, their material realizations but still first their theoretical and constituent principles. As a consequence, what survives of the past architecture in terms of proportion, symmetry, technology and of materials, are those characteristics that have made the architecture durable and therefore they are the principles to be considered as fundamental of the building art.

Other than these aims, the traditional and specific tasks of the profession of the architect remain, considering the restoration project as an operative instrument of the critical-technical sustainability of the works and of valuable environmental textures, the "cultural heritage"; and the value of the academic training lays above all in the constitution of a store of theoretical and critical principles like a good grounding for any operative policy.

Restoration, in an university purely orientated towards the project of new architectures, deals directly with the creativeness and the topics of design accepting a challenge that makes problems techniques of the new, compare with those of the tradition; it has therefore to provide the means and consciousness to treat the existing

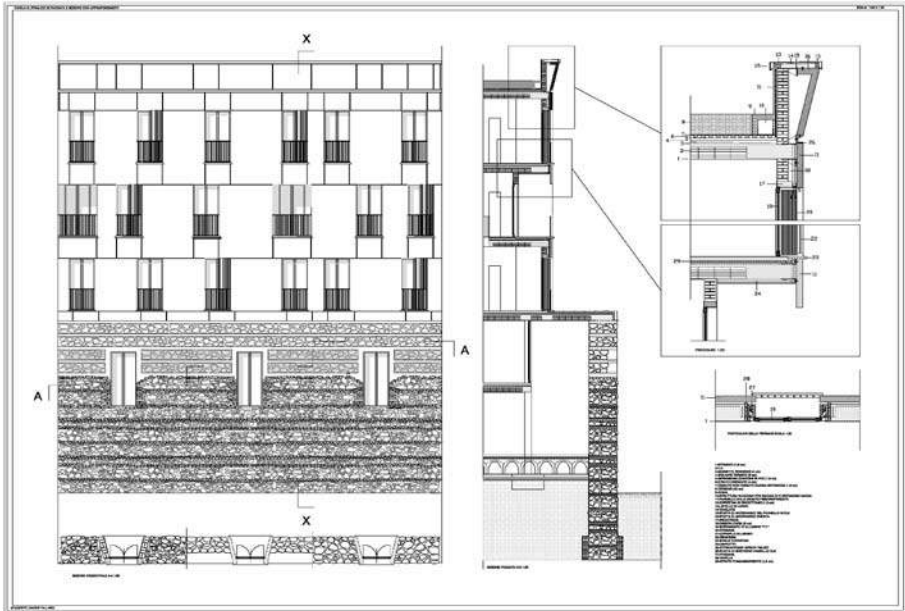


Fig. 9
 “Architecture-restoration Lab”, a.a. 2006-07; teacher of architecture planning: Marco Trisciuglio;
 teacher of restoration: Barbara Vinardi; student: Davide Pallaro.

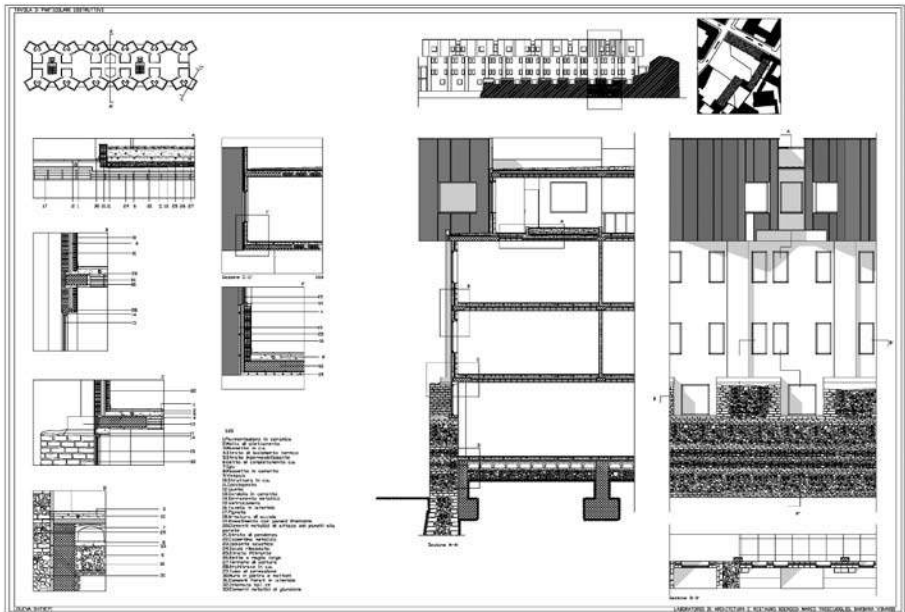


Fig. 10
 “Architecture-restoration Lab”, a.a. 2006-07; teacher of architecture planning: Marco Trisciuglio;
 teacher of restoration: Barbara Vinardi; student: Louena Shtrepi.

buildings with ideological respect and the correct technical knowledge in the double purpose of compatibility and sustainability.

The experiences of the second year laboratories have given the occasion to point out as restoration and project can represent two different aspects that can cooperate and integrate each other. The essays during the courses have not only addressed the attention to the importance of the recognition of the surface consistence, of their conditions and promoted the formulation of intervention hypothesis, but above all they have forced the students to face the matter of the rehabilitation and change of use of the historical buildings that have to be compatible with the existing space and significance. This opportunity has underlined the different terms of the project when it deals with new buildings or the pre-existent ones; the material consistence, the height between two floors, the load-bearing system, the wall thickness, the vaults represent a tie but also a point of strength in the project of renovation. Conservation and minimal intervention guide lines are the premises for any approach to the architectural heritage that is a reality the professionals face every day and the student need to know.

The two labs and the course of "Introduction to Restoration" so become of fundamental importance neither for the factual knowledge nor for the predispositions of instruments for the operative activities, but because they show the expanse and variety of occasions, the specific methods and the instruments suitable for the culture and the experience of conservation. It is also proper that the graduate has an awareness of the building and group of buildings value and peculiarity because, with his specific skills in architectonic and town planning, he can be asked to work on the preliminary phases of a project, on surveys and inspections of the consistence and acceptability of the projects of new buildings and of architectural and territorial transformation. As it is said in the Charter of Cracow 2000 "the project, resulting from the choice of conservation policies, is the process through which conservation of the built heritage and landscape is carried out" (*annex definitions, g*).

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**Restoration Didactics in the Master of Science
in “Environment and Land”**

In the province of Cuneo, the detached seat of Mondovì of the II School of Architecture of the Polytechnic of Turin has been installed. This territory is of great artistic, historical and environmental interest and it is a qualified area where to investigate the matters of safeguard and conservation of the architectural heritage.

Studying this area from the point of view of restoration has been the occasion for a continuous cultural growth because it is rich of examples for the students, who can deal with the maintenance project of the landscape in the different implications and in different scales. Then, it is a privileged seat to experiment methodologies and deepening.

The results, synthetically exposed for samples, are a part of a conspicuous patrimony of documents and thesis available to the consultation and to create synergy among institutions.

The first year lab of the “master of science” has developed the conservation of the historical buildings in the double aspect of restoration of materials and selection of new functions. It is organized in an interdisciplinary way with specific contributions of “Theories and history of Restoration” and “Consolidation”¹, that applied to examples determine the critical and technical interrelations that characterize the efficacy of the maintenance project.

Its aim is that to allow the attainment of a methodological awareness in the choices of the conservation project running through the articulated phases of knowledge (historical information, survey, structural conception and techniques), of recognition and of intervention up to the definitive phase of the preparation of papers, including the problems connected with the actual use and the evaluation. Didactics is articulated in three phases strictly connected in order to give the students the tools and methods to face the themes of the maintenance of the architectural and environmental heritage: the knowledge-comprehension of the different components (materials, techniques and structural conception), the final choices referred to the restoration techniques and the new functions. In the first didactic period of the lab “Theories and history of the restoration” is taught. The lessons are about the origins and the bases of the discipline with reference to the value judgment attributed to the monuments from the Renaissance to the Enlightenment; they are about the theories and the realizations of restoration between XIXth and XXth century; the Italian protagonists of the historical restoration; the schools of architecture; the restoration charts, the laws about safeguard; the actual debate. Contemporarily the lab defines the general knowledge (the *Codice dei Beni Culturali* and the current laws, the knowledge project, the constructive techniques, the historical building site, the architectural restoration’s methodology, the adjustment of the architectural and cultural heritage, the themes of the recognizability and retractability and urban restoration) and the themes of the exercise. In the second didactic period, students are undertaken by the course of consolidation that deepens the themes of the comprehension of the disarrangement state characteristic of the traditional buildings (effort state and deformation, arcs and beams, slabs and plates, vaults and domes, loads to collapse’s calculation); the structural models and the static verifications; the methodologies of compatible interventions in comparison with conservative choices. In parallel, the laboratory analyses, through some examples, the methodology of specific interventions that are discussed in collective meetings where problems and deepening about the application of techniques of intervention are enucleated.

Till 2001-2002 it was active the final synthesis lab "Knowledge, evaluation and plan for the maintenance and the restoration of the smaller centres"²; it was an interesting experience yet concluded after the new organization of the courses in the bachelor and in the master of science.

From 1998-1999 the main topics were the little and middle town centres (the Palazzata of Vicoforte, the nucleus and roundabout of Rocca de' Baldi, 2000-2003³) and some portions of the cultural landscape.

The adjective "smaller", doesn't at all refer to the building qualities of those centres, but only to their dimensions. Actually many prestigious architects, engineers and artists worked there (Francesco Horologi, Ascanio Vittozzi, Giovenale Boetto, Francesco Amalfitano, Ferdinando Bonsignore, Alessandro Antonelli, Camillo Curly, Giovanni Schellino), dealing with buildings and places of high cultural quality, worthy of knowledge and evaluation.

These sites have been studied in their urbanistic structure and in their main buildings. Their complex founding stratifications witness the involvement in the ideation of personalities and professional figures fundamental in the transformation process and promoter of other enterprises in the Piedmontese territory. The Vicoforte Palazzata, its Vitozzian building site, and Rocca de' Baldi, nowadays partially depopulated town, because of the organization strategies of the territory.

Four thesis of graduates magistrals exemplify these topics related to the smaller centres (Rocca de' Baldi, deserted town that should be exploited as an open-air museum), to the infrastructures on the territory (Ceva-Garessio-Ormea railway line with the problem of the adjustment of the infrastructures and of a new use of the stations), to the territory system of the real farmhouses of Racconigi (investigated in its territorial values, in its architectures and in its building techniques) and to the monumental complexes (San Pietro's in Savigliano studied as a knot of the urban structure and from the point of view of the conservation of its surfaces).

An other aspect concerns the interdisciplinarity that in Mondovì has been particularly favourite by consolidate collaboration habits among teachers: the choice of common themes has produced excellent results both in the field of maintenance and in that of the analysis methodologies and intervention procedures.

The decentralized seats can subsist if they deeply take root, if they produce competitive professional figures (such as it is shown for our seat by the data and by the results both in the professional field and in that of the third level, Italian specialization schools and doctorates), and if they become a nucleus of search that is able to be a reference at a local, national and international level. In the past and recent exchanges with foreign university, students have shown a specific interest in discipline that in their countries are not activated. This synergy with different realities has produced cultural interchanges and interesting deepening.

University labs have found a valid support in the local Government, in the Institutions, in the archives and in the collaboration with the resident population. The presentation of the results underlines the scientific and didactic collaboration put to the service of the local communities and it introduces a virtuous circuit oriented to the conservation of the architectural, historical-artistic and environmental heritage that today can dispose of a rich data bank useful even for operative uses.

The knowledge finalized to maintenance and the proposal of the territorial exploitation (still deeply recognizable in articulated centres, in some portions of the land-

scape and in the old and recent wise masonry techniques), has ripen even through the master of science thesis that have set in evidence the interdisciplinarity as the essential condition for the project. Direct and instrumental surveys compared with the archivist and architectural data have constituted the essential support for the projects of conservation at different scales.

References

- 1 Prof. Ida Cametti has been teaching in the course of Consolidation for many years.
- 2 Teachers and professors of the labs are Maria Ida Cametti, Luca Debernardi, Patrizia Chierici, Laura Palmucci, Cesare Romeo, Gemma Sirchia, Corradino, Chiara Aghemo e Maria Grazia Vinardi, with the cooperations of the architects Roberto Maunero, Silvia Valmaggi, Igor Violino
- 3 Here are the titles of some of the thesis discussed: ALESSANDRO BORIGLION, Andrea GIOIA, *L'edilizia residenziale a Rocca de' Baldi (CN): villa Pennacchietti tra storia e conservazione*, a.a.2002/2003 Il Facoltà di Architettura sede di Mondovì, rel. Maria Grazia Vinardi, Laura Palmucci, Cesare Romeo; FRANCO MICCOLI, ILARIA ORTOLANI, *La cappella di S. Maria del Carmelo nella badia di S. Maria del Castello in Rocca de' Baldi: problemi di conservazione*, a.a.2002/2003 Il Facoltà di Architettura sede di Mondovì, rel. Maria Grazia Vinardi, Laura Palmucci; ALESSANDRO PESCE, FEDERICA INVERNIZZI, *Il tessuto urbano di Rocca de' Baldi: conoscenza e conservazione*, a.a.2002/2003 Il Facoltà di Architettura sede di Mondovì, rel. Maria Grazia Vinardi; MARCO TULLI, *Caratteri costruttivi dell'architettura storica di Rocca de' Baldi: problemi di conoscenza e di conservazione*, a.a. 2000/2001, rel. Maria Grazia Vinardi, Laura Palmucci, MARA DALMASSO, VALERIO DEGIOVANNI, LUCA MOLINERI, *Le opere d' arte della linea ferroviaria Ceva-Garessio-Ormea : problemi di conoscenza e conservazione /*, Tesi di Laurea Il Facoltà di Architettura del Politecnico di Torino sede di Mondovì, a.a. 2002-2003 rel. Maria Grazia Vinardi, Laura Palmucci; MARCO FRANCO, MICAELA MARINI, *Un museo a cielo aperto : l'isolato rurale a Rocca de' Baldi, problemi di conservazione e rifunzionalizzazione /*, Tesi di Laurea Il Facoltà di Architettura del Politecnico di Torino sede di Mondovì, a.a. 2004-2005, rel. Maria Grazia Vinardi; CHIARA RAVERA, *Il chiostro dell'ex monastero benedettino di S. Pietro in Savigliano : conoscenza e conservazione /* rel. Maria Grazia Vinardi, a.a. 2006; FABRIZIO PERRONE, *I cantieri e le tecniche costruttive delle cascate reali di Racconigi : problemi di conservazione*, a.a. 2005, rel. Maria Grazia Vinardi; MARIA ROSA GARIANO, ENRICA VASCHETTI, *I cantieri e le tecniche costruttive delle cascate reali di Racconigi : problemi di conservazione ;* a.a. 2005, rel. Maria Grazia Vinardi, LUCA BELLETRUTTI, LIA BOSCO, *Il territorio delle cascate reali di Racconigi : problemi di conoscenza e conservazione*, a.a. 2005, rel. Maria Grazia Vinardi, Il Facoltà di Architettura sede di Mondovì.

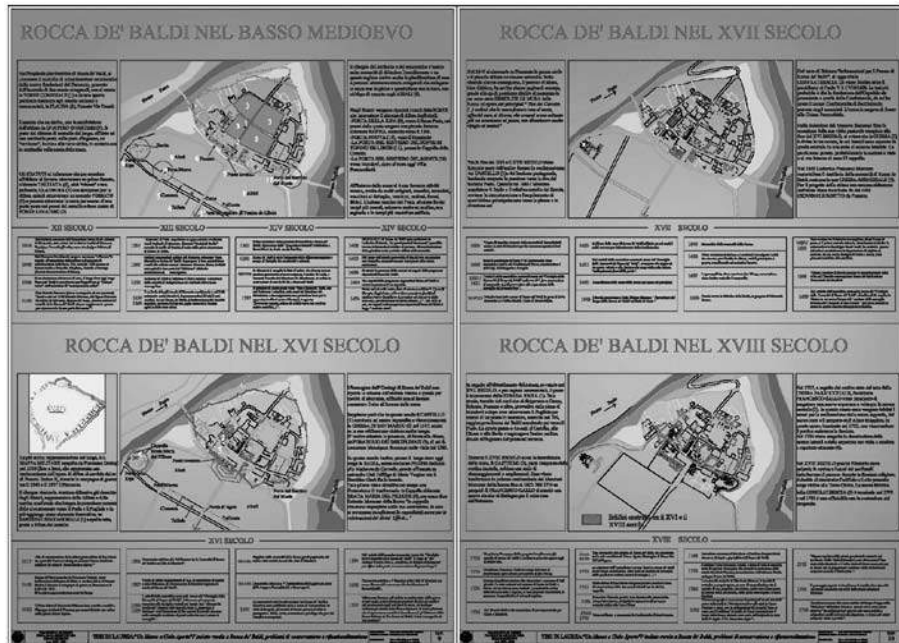
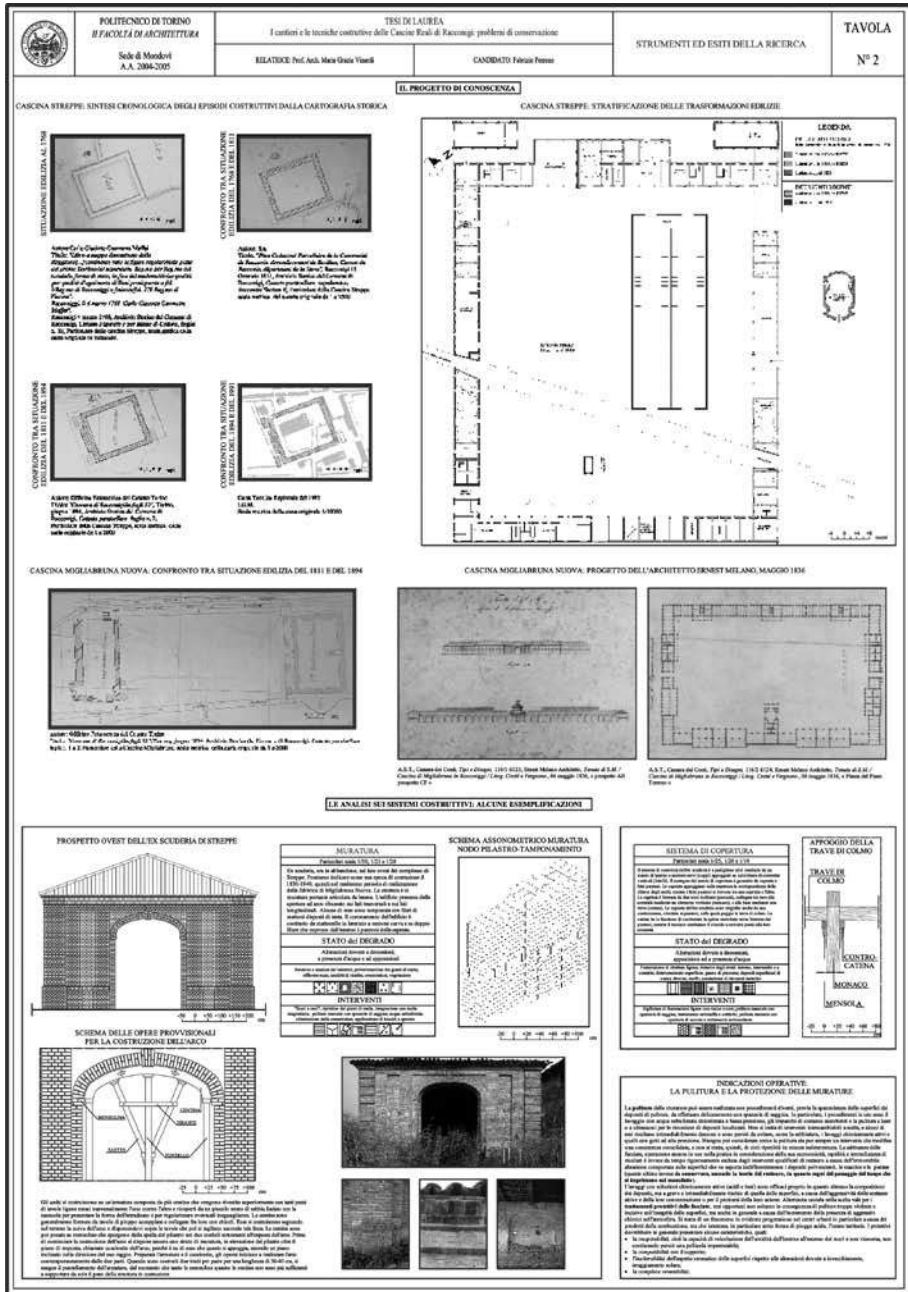


Fig. 1-2

MARCO FRANCO, MICAELA MARINI, *Un museo a cielo aperto: l'isolato rurale a Rocca de' Baldi, problemi di conservazione e rifunzionalizzazione*, Tesi di Laurea II Facoltà di Architettura del Politecnico di Torino sede di Mondovì, a.a. 2004-2005, rel. Maria Grazia Vinardi.



POLITECNICO DI TORINO
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LE OPERE DIVERSE DELLA LINEA FERRROVIARIA CEVA-GARDESIO-ORONA. PROBLEMI DI COORDINAZIONE E CONSERVAZIONE
 IMBARRIAMENTO DI GARDESIO (L. A. 1) - TRATTO DI OVESTRA PIA
 Progetto definitivo - scala 1:10000 - Stato 1/2

Autore: Prof. Ing. Mario Pavesi
 Collaboratori: Ing. Roberto Basso, Ing. Roberto Basso, Ing. Roberto Basso

Stato: 1/2

TAVOLA N. 3

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Autore: Prof. Ing. Mario Pavesi
 Collaboratori: Ing. Roberto Basso, Ing. Roberto Basso, Ing. Roberto Basso

Stato: 1/2

TAVOLA N. 3

LEGENDA

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POLITECNICO DI TORINO
SCUOLA DI ARCHITETTURA
 Corso Duca degli Abruzzi, 15
 10129 TORINO

LE OPERE DIVERSE DELLA LINEA FERRROVIARIA CEVA-GARDESIO-ORONA. PROBLEMI DI COORDINAZIONE E CONSERVAZIONE
 IMBARRIAMENTO DI GARDESIO (L. A. 1) - TRATTO DI OVESTRA PIA
 Progetto definitivo - scala 1:10000 - Stato 1/2

Autore: Prof. Ing. Mario Pavesi
 Collaboratori: Ing. Roberto Basso, Ing. Roberto Basso, Ing. Roberto Basso

Stato: 1/2

TAVOLA N. 4

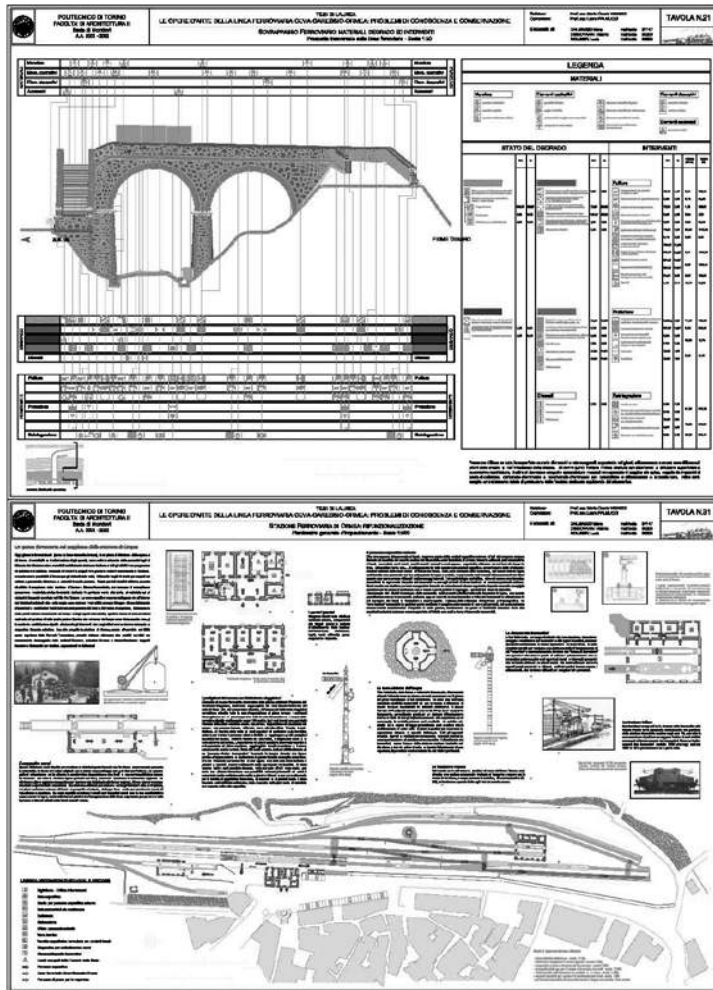


Fig. 5-7

MARA DALMASSO, VALERIO DEGIOVANNI, LUCA MOLINERI, *Le opere d' arte della linea ferroviaria Ceva-Garessio-Ormea: problemi di conoscenza e conservazione*, Tesi di Laurea II Facoltà di Architettura del Politecnico di Torino sede di Mondovì, a.a. 2002-2003, rel. Maria Grazia Vinardi, Laura Palmucci.

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Thinking while Doing, Doing while Thinking

Premise

Sometimes banal episodes are able to trigger off reflections and to arouse perplexities that go beyond simple verification of reality. I had just finished examining the work of some students when, unexpectedly, a former student entered the classroom: "Good morning Prof. I happened to be round this way and I've come to tell you I'm restoring a farmhouse in Piedmont!". Then he added, with the surprised and pleased air of a person who certainly did not expect such an epilogue but is clearly satisfied with it: "What you explained to us is all true... I am really doing it and it is exactly as you had us do it experimentally!"

The amazement on the young man's face concealed a lot more than a certain superficiality with which the university years had perhaps been faced. Doubts about the real utility of what was learned during the course, or the conviction that academy and work are two such different worlds as to have no connection with one another had perhaps caused, after the denial of reality, such surprise as to justify communication and sharing of the event.

Different teaching experiences

For some years now, I have had the opportunity to work, in the university sphere, with young people from different degree courses in which I teach, as a contract teacher, restoration in the various annual laboratories or studio classes, specifically the Monument Restoration Lab in the fourth year at the Faculty of Architecture (specialised degree course in Architecture), Architectural Restoration in the fifth year at the Faculty of Engineering (degree course in Building Engineering-Architecture) and the Monument Restoration Lab in the third year at the Faculty of Architecture (three-year degree course in Architectural Restoration). The circumstance of working on analogous themes in different courses makes it possible to compare constantly and on a significant sample of students (altogether around 150 every year) the potentialities, expectations and demands of young people belonging to different degree courses, with different training profiles, qualifying objectives and professional prospects.

Personal inclination, different background and work expectations together with the varying maturity of the students (aged 21 to 26), examined at different times in the course (next to last and last year), undoubtedly influence the perception of the course of studies and relative expectations. The age difference is perhaps the most significant discriminating factor: five years is not a little in relation to the level of maturity, awareness of one's own possibilities and capacity to criticize and make proposals on the part of the young people. No less fundamental is the different attitude of students still at the height of the educational phase in comparison to others that, attending the last year at university, are already projected into the working world and translate this projection into demands for greater concreteness in courses.

Nevertheless, despite the specificities linked to the different degree courses and the maturity of the single students, mistrust towards academic courses is generalized and, in some cases, such as to make people see practical working experience (students in the three-year degree course) or apprenticeship (students in the five-year degree courses) as more educational. This kind of attitude is quite widespread and many students see as 'more or less useless' teachings that do not seem to have a direct and immediate application in working practice. Judgments on the utility or otherwise of

a teaching course is subjective and varies on average depending on the training acquired and on those who formulate it. Indeed, it often happens that students at the Faculty of Architecture, particularly those in the three-year degree course in Restoration who are more geared towards operational aspects, consider the courses with specifically scientific contents (mathematical analyses, statics,...) useless in relation to their professional continuation. By contrast, students at the Faculty of Engineering consider as accessory courses with a specifically historical and/or theoretical content (history of architecture, theory of restoration,...) and 'only' effective for increasing one's personal cultural baggage but not decisive for their future profession. Such judgments are undoubtedly influenced by the different work expectations that students have because they belong to different degree courses and the work opportunities that they see as becoming concrete after the degree.

Relationship between knowledge-teachings and operativeness

Over and above the specific cases, in general one sees a bigger and bigger demand for "practical applications" and specializations, with the consequence that the most successful courses are those in which the student succeeds in clearly perceiving the possible application of what has been learned in the working field (surveys, computer science,...).

Faced with this request from students, the offer of courses increases. In the field of restoration it is not difficult to satisfy the demands for specialization: the fact is that numerous competences are required in the operational sphere and now many professional figures correspond to the types of multidisciplinary knowledge required. This makes it easy to offer teachings and contributions with highly specialised contents that put the students in contact with specific real problems. There also exists a parallel offer of 'extra-university' products (though these are often run or at least coordinated by university teachers), which is richer and richer and more and more diversified and, in some cases, constituted by highly qualified and qualifying courses. Thus there is an increasing number of professionals that acquire in the different sectors, in the academic sphere or in that of training and/or updating, even very elevated competences but, in application, there seems to be no growth in the capacity to use them as a resource for the conservation of the cultural patrimony.¹

I believe that university training has to focus precisely on the latter aspect: stimulating in young people an overall vision of the project and endeavouring to convey the complexity of the 'restoration' theme through progressive operations of analysis and above all synthesis between the single disciplinary contributions. So these are fundamental phases of comparison and reflection, common to different disciplines, in the search for an 'integrated vision of simple forms of knowledge'.

It is precisely in this direction that there move the recent evolutions in the field of neurosciences with the recognition of a new sphere called 'neurophilosophy' in which there are integrated forms of knowledge that originate both from the humanities and from the sciences. The new discipline, which is still developing, arises from the more and more frequent demand for comparison between and reflection on different disciplines for the purpose of verifying their methods and drawing attention to the evolution of the results of philosophical reflection and empirical experimentation.²

This is a difficult pathway that has to be nurtured with creative responses from institutions and educators in the attempt to overcome the classical divisions between disciplines. Besides, the latter only represent a method of subdivision introduced for dealing in a systematic and simplified way with questions relating to complex themes.

And it certainly cannot be denied that restoration is a complex theme.

This type of approach can more easily be enacted inside an annual workshop in which an attempt is already being made to find a balance between theory and professional practice, which is fundamental for training professionals who will constantly have to integrate judgment activity with technical-operational activity. However, it is not possible to depute to the workshop, as often happens, teachings and themes that should be preliminarily dealt with in specific courses. The fact is that workshop activity needs time not so much in order to apply what was learned in previous experiences but in order to formulate and work out thoughts able to organize the functional data and the theoretical intentions in an effective synthesis.

The challenge that awaits us today, according to Taylor, is precisely uniting the two demands (theory and practice) so as to theorize our practices and practise our theories³ but, in order not to risk rejection of complexity, it is necessary to proceed through little steps.

A teaching experience in the Monument Restoration Workshop⁴

The three-year degree course in Architectural Restoration was created to “train professional figures able to study an architectural organism, in relation to the context in which it is set, its origins and subsequent historical transformations, as well as to survey it, analyzing the characteristics of the materials that make it up and any alteration phenomena. Hence the specific competences of the graduate concern definition, preliminary to the project, of the actions serving to arrest phenomena of deterioration and upheaval of buildings and environmental contexts, to eliminate and contain their causes, as well as for technical direction of the connected technical-administrative and productive processes.”⁵ The analytical part is decidedly privileged compared to the planning part, although the students have to know all the elements of the project and to know how to work out its different parts. The competences of the ‘three-year course architects’ include “planning, direction of works, surveillance, measurement, accounting and payment relating to simple civil constructions...” (it is not yet clear whether this refers to ‘modest’ buildings or ones put up with ‘standardized methods’). Despite this, they cannot sign restoration projects in that these always presuppose a complex and never standardized planning method.

Within the degree course, the Monument Restoration Laboratory (studio class) is held in the last of the three years as a synthesis of what has been learned in the whole course. It is an annual matter, made up of 2 hours of face-to-face lectures and 5 hours’ workshop weekly.

During the studio class work some steps were made to:

- *Develop the critical sense*

Not a single teacher in the classroom but two with a peer relationship (not teacher and assistants) able to orient the students, though not necessarily in unison. In this connection, a shared idea of restoration and often not very many years’ work to-

gether are enough to have full accord in the choices to make. This system, which at first may disorientate the students, afterwards accustoms them to rendering choices problematic and to seeking their motivations.

- *Offer contributions with a specialised character*

Some of the hours of lessons (around 40%) were reserved for special seminars held by protagonists of restoration, not due to fame but to concrete and daily action in the territory. I refer to officials of tutelage bodies or the Council, professionals that more and more frequently interact with restoration planners (geologists, chemists, physicists, historians, archaeologists,...), to technical consultants of firms selling products for restoration but also to operators in the sector like entrepreneurs and restorers. The contributions were introduced and commented on inside the course so as to make explicit the subtle connection that inevitably exists between such different professional figures.



Visit to the building site of S. Bartolomeo del Carmine's Church with students and conservation professionals.

- *Favour opportunities for discussion and exchange on selected themes/problems*

The choice of the theme did not only take into account the essential aspects for being able to carry out the work (accessible buildings in a state of deterioration...), but also their placing in a restricted sphere, so that the students could find moments of comparison and compare the themes and problems with others. So, a small "piazza" at the edge of the old city of Genoa was chosen, with buildings around it presenting similar but different characteristics and problems.

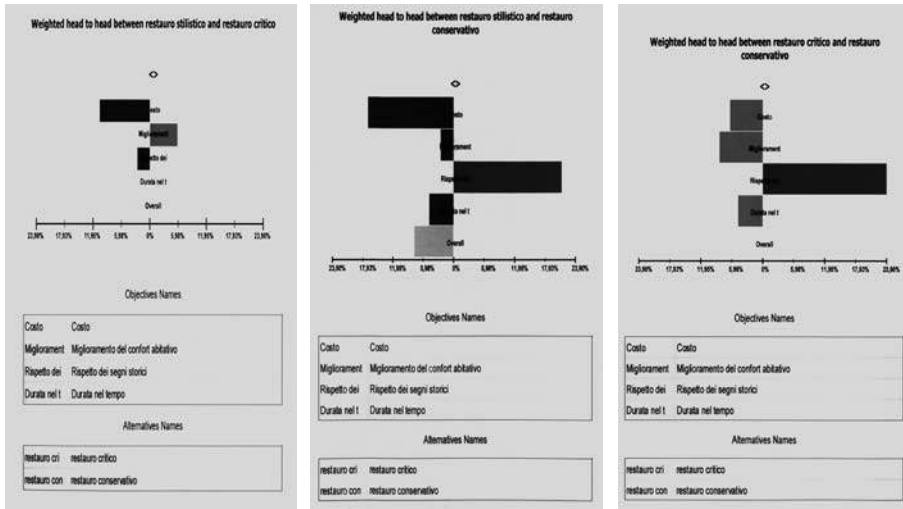


San Bartolomeo del Carmine street e San Bartolomeo dell'Olivella square, field study case of the "Studio class in Restoration of Monuments" within the Bachelor course in Architectural Restoration.

- *Accustom students to keeping the theoretical and practical levels simultaneously present*

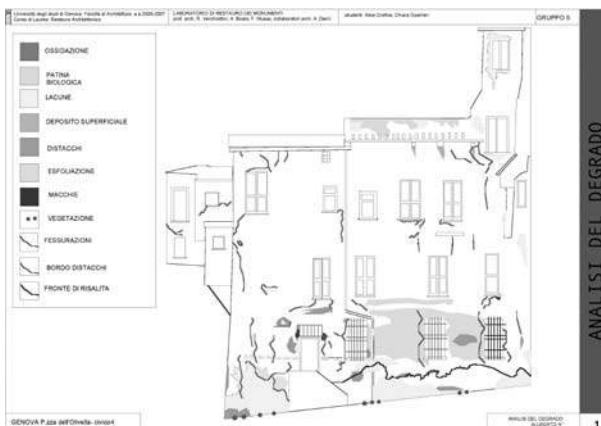
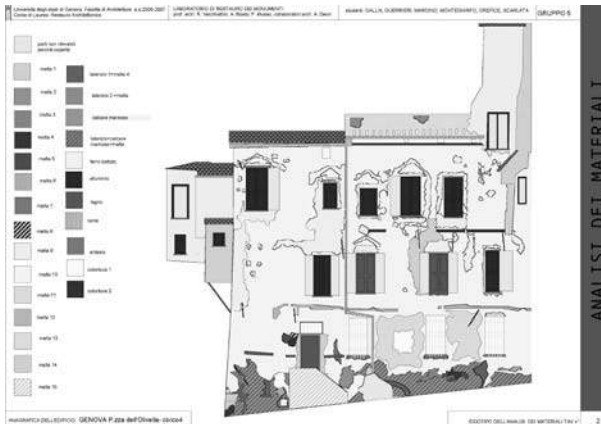
In the attempt to demonstrate to the students that a connection does not necessarily exist between the objective of the project and its practical realization, we tried (experimentally) to get the students to develop, on a single theme, 3 different projects, all having as their objective the conservation of the artefact. This served to make them understand, through direct experience, that conserving the material can conflict with conserving its form or the possibility of reading the historical stratification of the object or again the possibility of preserving its function. Reasoning in terms of results of the positions taken up and the choices made forces the students to shift continually between theory and practice, making them aware that different routes can be taken to reach very near objectives and that each has different effects. In addition, the need to develop 3 projects permits one not to be satisfied with the easiest technical choice but to look for valid alternatives, thus in-

creasing awareness of the fact that the technical dimension is never neutral but always oriented by the theoretical position.



Data elaboration for a comparison between the three developed projects based on the following parameters: cost, comfort improvement, safeguard of the archaeological signs and estimated lasting (software: "Expert-choice"). The comparison, executed only for didactic purposes, aimed to make the students reflect about the relationship between costs and benefits linked to any design choice - student: Martina Gallia.

- *Taking responsibility for the choices made and knowing how to motivate them*
 In the workshop, the job was subdivided as follows: during the first semester the work of analysis of the object was done as group work, while during the second semester the project was faced individually by each student. The students were divided into groups of 3-6. Each group had the objective of developing the analytical part of knowledge of the object (registration of the building, length measurement survey, photogrammetric survey, stratigraphical analysis of volume and detail, analysis of materials, analysis of deterioration, cracking picture...) on one of the buildings around the piazza chosen. In the second semester each students in the group chose a specific planning theme (for instance plasters and colouring, doors and windows, roofs, or the water disposal system) to be dealt with individually in 3 different conservation projects for which he or she had to compile all the necessary technical and administrative documents (technical report, specifications, evaluative metric calculation, list of unit prices, possible drawing of details, simulations). If on one side group work teaches people to work with others, which is particularly essential in our professional field, on the other side individual work also forces people to take responsibility and think independently, even those people who would naturally tend to lean on others.



Sample of study and analysis elaborations (materials and decay phenomena maps) – students: M.Gallia, C. Guerrieri, S. Maroino, E. Monteghirfo, A. Orefice, C. Scarlata

Note

The title of the paper quotes one of the fundamental motifs of a great contemporary musician, Luciano Berio.

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- 2 G. Lucignani and A. Pinotti (eds.), *Immagini della mente. Neuroscienze, arte, filosofia*. Raffaello Cortina Editore, Milano 2007.
- 3 M. Taylor, *Il momento della complessità. L'emergere di una cultura a rete*. Codice edizioni, Torino 2005, p. 299.
- 4 The Monument Restoration Workshop involved the collaboration of the teachers arch. Rita Vecchiattini and arch. Anna Decri.
- 5 From the presentation of the degree course published in the website of the Faculty of Architecture (<http://www.arch.unige.it>).

An aerial, high-angle photograph of a harbor area. In the foreground, a large, light-colored building with a central clock tower and a tiled roof dominates the view. The building has several windows with shutters and a balcony. Two long, narrow walkways with checkered tile patterns lead from the building towards the water. In the middle ground, a body of water is filled with numerous small boats and larger vessels. In the background, a city skyline is visible, including several tall buildings and a large industrial area with several cranes. The sky is overcast and grey.

Session 3

Who?

Keynote Lecture by

Herb Stovel

Heritage Conservation Program
School of Canadian Studies
Carleton University
Ottawa, Canada

**Challenges in Moving
from Architectural Conservation Education
to Heritage Conservation Education**

While this talk is taking place in a workshop bringing together for the most part schools of architectural conservation, its primary goal is to look beyond the world of architectural conservation, in order to link the latter to the larger world of heritage conservation. I am here suggesting the importance of embracing this larger context not just to improve links to other areas of conservation, but to more broadly attempt to situate the world of architectural conservation in a context which establishes its role and function. This paper will explore the value of this approach and also offer some ideas on how efforts to strengthen architectural conservation can move in this direction.

My thoughts on this derive from my experiences in post-grad conservation programmes in two universities (both inside and outside schools of architecture) and at ICCROM, the International Centre for the Study of the Preservation and Restoration of Cultural Property, an intergovernmental body devoted to strengthening training for all aspects of cultural heritage. I spent 8 years (1990-98) directing the graduate conservation programme at the School of Architecture, U. de Montreal, Montreal, Canada. There a programme founded in 1987 as the 3R (“Renovation, restoration, recycling”) programme in architectural conservation became by 1992 a programme in “Conservation of the Built Environment”. While in a School of Architecture, probably 50% of the students came from fields beyond architecture. I spent 6 years (1998-2004) at ICCROM; there, its 32 year old ARC (Architectural Conservation) course ended in 1998; it has been replaced by a series of interlinked thematic conservation courses touching all aspects of heritage management: from documentation to decision-making to risk prevention etc. From 2004 to the present, I have been directing a graduate heritage conservation programme in the School of Canadian Studies, Faculty of Arts and Social Sciences, Carleton U., Ottawa. This programme, initially planned within the Carleton School of Architecture, was moved to Canadian Studies in 1989, and embodies an interdisciplinary approach to conservation, one situated in the humanities, and which draws in both teachers and students from architecture but puts them together with those from many other fields.

Each of the schools – two national, one international - has moved in one way or another from an initial concern for architectural conservation, to a concern to place conservation education and training in a much larger context.

This paper explores its principal contentions by looking in turn at the following four areas:

- Why might it be important to link architectural conservation education to a larger framework?
- How can architectural conservation professionals adapt to the requirements of the big picture approach?
- Ongoing challenges to achieving effective architectural conservation.
- Key challenges in strengthening architectural conservation.

Lets look at each of these in turn.

Why might it be important to link architectural conservation education to a larger framework?

It is important to recognize that at one level, this change in emphasis only recognises the slow broadening of the focus of the field over the last 40 years. We have moved generally from a concern for “monuments and sites” in the 60s to a concern for “cultural heritage” today. UNESCO had begun to replace “monuments and sites” by “cultural property” already in the late 60s, partly as an attempt to give emphasis to the legal implications of the designation of property which expressed cultural heritage values. “Cultural heritage”, first used in the 1972 World Heritage Convention itself also gave way on occasion to the use of “cultural resources” in the 1980s (born in the desire of the era of sustainability to view cultural and natural heritage as finite resources which could be squandered and used up without sufficient care), and now, more recently, in many jurisdictions, to “historic places” to explicitly indicate the wide range of heritage typologies now being recognized. The contemporary approach to heritage is essentially integrated in conception, and can be defined to include tangible/ intangible, moveable/ immoveable, cultural/ natural, urban and rural aspects of heritage etc.

Another force propelling the contemporary heritage movement is the current preoccupation for context in decision-making . The recent ICOMOS General Assembly in China (Xi’an, China, 2005) was focused on setting. The Declaration of Xi’an on setting illustrates specifically the many ways in which context should be taken into account in the conservation world. Article one states:

“The setting of a heritage structure, site or area is defined as the immediate and extended environment that is part of, or contributes to, its significance and distinctive character.

Beyond the physical and visual aspects, the setting includes interaction with the natural environment; past or present social or spiritual practices, customs, traditional knowledge, use or activities and other forms of intangible cultural heritage aspects that created and form the space as well as the current and dynamic cultural, social and economic context.”

In the search for “big picture” approaches which emphasize holistic and integrated ways of seeing, architectural conservation has its place – but always in relation to a set of social, cultural and economic factors and circumstances.

And finally, it is important to recognize that no matter how well or how much the architectural conservation expert may study and learn, that individual is rarely in charge of the key decisions in the conservation process. The key decisions about when to initiate a project, at what scale, for what purpose and in what way etc. are not the province of the architectural conservator, or of the architect. Rather, those key decisions – concerning what? (what kind of project? What kind of approach?) when? (when will the project take place? in what sequence will different phases of work be carried out?) how? (what will be the methods? guiding principles? etc.) and finally who? (which professionals will be involved? in what relationships? with whom?) are generally made in administrative systems by planners.

In the contemporary heritage world, where emphasis has switched in the last two decades from action and intervention to structures to “management” systems which govern processes of change within structures and in the variables in context around the structure, it is planners who decide when there is a “project”, and how that project will be framed; planners create the legal, institutional and economic support frameworks which support the work of the architectural conservator.

This widening of concern for what constitutes the heritage – and for the context in which it is judged, analysed and cared for – suggests the importance for those involved in architectural conservation to find ways to situate themselves meaningfully within this emerging bigger picture approach.

How can architectural conservation professionals adapt to the requirements of the big picture approach?

Contemporary architects working with conservation can respond to the changing locus of decision-making by moving consciously to work within interdisciplinary, and inter-sectoral contexts, in order to place their expertise where it will have most effect. In this way, the potential contribution of architectural conservation is best recognized by partners in the conservation process and the conditions necessary for effective architectural conservation inputs well established for all.

Equally, the move from concern with “intervention” to concern for “management” requires strengthened involvement by architects and architectural conservationists begin with different community “actors” and “stakeholders” in various phases of the decision making surrounding the future of heritage resources. Architects working in these contexts must take on the “facilitation” and “advocacy” skills which can bring attention, support and understanding to the technical, scientific and analytical skills they may bring to heritage projects.

In order to move in these directions, architects and architectural conservators must recognize for themselves the benefits that immersion within this larger frame will bring them, and how to fit their skills into these frameworks. The emerging demands that contemporary architects involved with conservation must show themselves adept at handling are noted below:

- There is growing demand in the conservation field for “big picture” (holistic) approach focussed on managing change. For example, there is growing interest in the value of a “cultural landscapes” approach (not just treating cultural landscapes as another heritage typology but as a way of seeing or understanding) . This has brought about approaches to conservation at all scales including that of the building which are as concerned with sustaining the dynamic processes that produce landscape (or building) features, as the features themselves. This approach has acquired sufficient acceptance now that UNESCO for example has begun to rename “historic cities” as “historic urban landscapes”. This offers an opportunity to architects concerned with conservation to bring to bear their long established concern for sustaining use and function in buildings while maintaining features.
- There is growing demand for the skills involved in managing in contemporary conservation what may be understood as processes of transformation in buildings and cities. This involves a more detached philosophical approach, one in which the architect can situate analysis and planning for intervention within a perceived con-

tinuum of successive phases of change on a site or structure. Architectural theory – theory developed to underlie this design process well equips architects to apply this detachment to conservation work.

- There is growing demand for those able to build decision making frameworks around the elusive and subjective interpretation of significance. We have been living in the world of “values based conservation”, at least, internationally, since the Australian Burra Charter of 1979 made explicit the need to identify cultural significance as the fulcrum point around which all heritage sensitive decision-making needed to develop. Most major jurisdictions in both western and eastern worlds have acknowledged the need to imbed decision-making in respect for the heritage values of a place, in one way or another – in legislation, in national or regional doctrine, or in commitment to preparing significance statements for heritage buildings. This has become the status quo with the adoption by the World Heritage Committee of this approach ten years ago, and the commitment to prepare “statements of outstanding universal value” for properties on the World Heritage List, and for use in their management planning. Those involved in architectural conservation need to show that their well developed capacity to respond to defined architectural values can be extended to the definition and use of values defined in other areas- historical, contextual (environmental), social.

Ongoing challenges to achieving effective architectural conservation

Any review of recent efforts to improve architectural conservation practice reveals a number of challenges confronting those working with architectural conservation:

- Ultimately, the need to integrate concern for values in other areas than architecture requires that architects and architectural conservators develop skills in social sciences, in order to deal with subjective interpretation of heritage values. This may be a field that architectural conservators need to include in their basic training programmes.
- There is a need to confront the continuing failure of intervention based doctrine (e.g., the Vienna Memorandum, 2005) to improve decision making frameworks for managing heritage. The Vienna Memorandum, for example, born out of the desire to improve analysis of efforts to insert contemporary architecture within historic districts, returns to principles stated first in the UNESCO Nairobi Recommendation of 1976 on Historic Towns, articulating what considerations “appropriate” interventions might take into account, but not proposing a process suitable for fitting interventions within long term development processes. Architectural conservators need to be asking how best to articulate the modern principles of process oriented sustainable management, rather than just those that might apply to isolated interventions.
- There is also a need to confront the failure of the architectural conservation movement to link adequately with “sustainability” initiatives in contemporary conservation work. North America and western Europe have adopted “green” renovation standards which reward the sustainable operations of new and existing buildings, but give little credit to the contribution of traditional building systems to long term sustainability. The imbedded energy of existing construction materials and the

savings occasioned by the performance of traditional technologies, if recognized, can reduce the tendency of green initiatives intent on demonstrating operational sustainability to reduce the needless destruction of important heritage fabric and values. Architectural conservators need to be attempting to define systems for sustainability which take into account both the long term operating characteristics of the structures they adapt but also the inherent pro-sustainability qualities of these structures.

- There is also a need in the architectural conservation field to strengthen the ethical treatment approaches which have grown up around “appropriate treatment” for heritage structures, but not about professional responsibilities to the larger sense of heritage in the heritage management systems now emerging. This involves clarifying the focus of ethical responsibility of those involved in conservation work – the client paying for the intervention? the public and their interest in survival of heritage in meaningful ways? the heritage itself? In this larger framework of heritage definition, and broadly focussed heritage management, it is important that architectural conservators are able to clarify whose interests their efforts are meant to serve.

Key challenges in strengthening architectural conservation?

In conclusion, there are a number of key challenges for those involved in architectural conservation to pick up and integrate in any efforts to strengthen the place of architectural conservation in heritage decision-making. These are detailed below:

- It is critically important to bring architects and architectural conservators into contact with those from other disciplines and other sectors, and to work with them as equals in the decision making process. This necessarily involves efforts to place architectural conservation activity within a well defined, well balanced, fully interdisciplinary, inter-sectoral and integrated approach to conservation education and training.
- Equally, it is important to confront the degree to which the processes of engagement now open to architects and architectural conservators, prepare such professionals to act as “specialists” or “generalists”. Where once heritage professionals were called upon to act as “expert” specialists, today the emphasis has moved to involvement of such professionals as “generalists” capable of assisting the facilitation and negotiation of solutions suitable to all involved, including community stakeholders. Architectural conservators need to define their educational and training goals in terms of their capacity to act as generalists.
- Finally, it is important for architects and architectural conservators in defining their approaches and beliefs, to confront the nature (and existence) of a possible conservation/ restoration discipline in which they could situate their efforts. This question requires such professionals to ask a number of key questions:
 - Is there an emerging discipline of conservation within which architectural conservation might have a place?
 - What are the principal constituents of this approach? Is this approach (this discipline) set inside architecture? Or outside architecture, but inclusive of architecture?

- If these efforts are part of a newly building discipline, how will this discipline be defined? What are the core requirements for establishing a discipline? Is it enough to define shared ethics? Is it necessary to define educational qualifications for practitioners? Who will decide?

Final words

The broad conclusion of this paper is to suggest that efforts to improve the effectiveness of architectural conservation need to be rooted in recognition of the importance of linking architectural conservation methods and approaches to their appropriate place in the emerging inter-disciplinary heritage conservation field.

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**The Didactic Activities Carried out
by the Diagnostic Laboratories**

In the Faculty of Civil Architecture - Politecnico di Milano, the Triennial and Specialist bachelor courses can take advantage of the diagnostic Laboratories as a didactic aid. Equipped with suitable instruments and skills, they effectively help in writing conservation projects and reusing several scales: from the architecture to the territory. The *Diagnostic Laboratory for Conservation and Reuse of Cultural Heritage with the Observatory on Woodwork Preservation* of the Department for Architectural Design, and the *Laboratory of Materials Tests – Section “Masonry structures, stone materials, mortars, diagnosis for the Cultural Heritage”* of the Department of Structural Engineering.

Diagnostic Laboratory for Conservation and Reuse of Cultural Heritage, Observatory on Woodwork Preservation

The *Diagnostic Laboratory for Conservation and Reuse of Cultural Heritage*, constituted in 1998, aims to be an entity able to analyze the structural and material heritage, to indicate the most correct methodologies of intervention for the conservation and to verify its compatibilities of reuse.

Its field of interest, considering the word “heritage” in its wider meaning, does not refer only to the single buildings of historical-monumental character, subject to protection restrictions, but also to the buildings called “minor”, including the unused industrial patrimony, the constructions of the contemporary architecture and the cultural landscape.

The didactic activity, the activity of research and of services, that the Laboratory is able to offer, aim to the permanence of the heritage. The methods and the techniques applied guarantee guidelines for conservation project that don't allow to loose or subtract resources (demolitions, alterations and so on), but that understands, respects and exalts every positive values.

The research is conducted with both the traditional instruments of the disciplines of the architectural and urban conservation, and the innovative tools of survey and computer treatment of information (techniques of image rectification, hypertexts, territorial information systems - GIS -).

The research has therefore the following application fields: studies for preservation and conservation of cultural heritage and landscape; survey, diagnostics and monitoring of degradation phenomena and conservation techniques; basic methods of dating historical buildings (stratification of elevations, typology of wall constructions and building elements through time); archaeological conservation; territorial information systems for the management, with cartography database, to guide the conservation plans of cultural heritage and landscape; post-degree training and professional updating about conservation; museums and eco-museums.

The work of cultural Sensibilization is also developed through didactic books.

Therefore, the following activities are carried out in the Laboratory:

- support to the didactic activity of the Athenaeum;
- research conducted for institutions internally and externally or by agencies (public or private);
- coordination and possible development of courses finalized to the training and use of the instruments installed in the Laboratory;
- publications referring to the activity of study and research of the Laboratory.

The activity concerning didactics is carried out into the Laboratory in a properly equipped area. For three years a specific optional course "Diagnostics for Heritage Conservation" has been introduced into the "Specialist" course.

In particular, the Laboratory carries out activity of support to students and graduating people of the course of Conservation; to specializing students of the School for Monuments Conservation; to the students of the course of post-degree improvement and of 1st and 2nd level Master and then to the PhDs. Such activity is considered as an advising activity for students through assistance in the single phases of the working procedure.

As further support to the didactic activity, the Laboratory has also instituted (in 1998) a Fund for Archive of Didactical Works and Degree Thesis that receives the projects of the students of the following courses: Architectonical Conservation, Urban Conservation, Bases of Conservation, Theories and History of Conservation and the other courses held by teachers of Italian Scientific Disciplinary Sector, ICAR 19.

Today the archive (approximately 4,000 volumes, but increasing at every session of examination and thesis) can be consulted in the Laboratory that has immediately applied a database cataloguing patrimony documents.

The activity for third parties previews conventions and collaborations both with private and public agencies (Regions, Provinces, Municipalities, Mountain Communities, Consortia etc.) to the conditions indicated in the University rules.

Specifically the Laboratory takes care of processing indications for the conservation project that is expressed through more phases: study of the indirect and directed sources, metric and material consistency with the location of pathologies of degradation.

Such investigations, that use non-destructive diagnostic instruments of the Laboratory, graphically performed, highlight the procedures for the conservation project.

Recent studies, which aim to reading degradation phenomena and to define specific projects of conservation, have been dedicated to some architectonic and infrastructural monuments inside or outside Lombardy.

Among which: Brera Palace and Botanic Garden of Milan; Castle of Avio (TN); Convent of S. Michele Lonate Pozzolo (VA), Naviglio Grande of Milan, Fortification of Motteggiana (MN), Social Theatre of Bergamo, Church of S. Anastasia in Verona, Historical Garden "Villa Medici del Vascello" San Giovanni in Croce (CR), Palace of Cittadini Stampa in Abbiategrasso (MI), Quarter Iacp Regina Elena, now Quarter Mazzini, in Milan.

Moreover, detailed researches have been conducted relatively to the construction of Geographical Information Systems for the management of a very wide heritage and to the quality control of the landscape projects.

Among which: GIS predisposition for the Territorial Studies and Valorisation of the Oltrepo Mantovano Center and the realization of a Geographical Information System for the management of environmental restraints of the Direzione Regionale per i Beni Culturali e Paesaggistici della Lombardia (Regional Department for Cultural Heritage of Lombardy).

Such research activities have had an important influence on "Specialistic" courses and on the post-degree training, in particular with the promotion of University Masters and/or professional training, supported by the European Social Fund, on topics such as: special techniques for the project and the management of the conservation site; conservation and management of historical gardens and landscape (GIS).

The Laboratory also carries out its activity in connection with other Laboratories and Departments of Italian and foreigner Universities.

Inside the *Diagnostic Laboratory for Conservation and Reuse of Cultural Heritage*, the Observatory on Woodwork Preservation was established in 2000 in the Department of architectural design of the Politecnico di Milano.

The Observatory has originally had its preliminary goal in the constitution of a database/archives/information centre on publications in the specific field and mainly referring to the constructive techniques, the diagnosis, the conservation and consolidation of the wooden works.

A specific field of the archive has concerned and still concerns the progressive acquisition of iconographic and bibliographic material and the paper and computerized reproduction (if possible) of chapters referring to wood in historical books and documents. The archive collects in a systematic way documents, publications, etc. often distributed in the numerous libraries on the territory and make them available to teachers, researchers and students.

Besides the archive activity, an other important goal of the Observatory is the creation of a place of reference for contacts, information and documents exchange, at national and international level, with Universities, Agencies, Associations, Research Laboratories, Companies and Enterprises.

The Observatory supports the co-operation and/or promotion of conventions, studies, research, degree and specialisation thesis, stages and conventions. Such activities aim to experiencing and proposing new techniques for diagnosis, planning and restoration.

Moreover, among the activities already started and in starting phase there are: the creation of a xyloteque; a xylophagousteque; the construction of models of wooden structures for the didactics. Than the Observatory co-operates on one side to the didactic and research activities of the Department, on the other side it supplies services for private parties. The didactic activity is carried out in an organized and equipped place in order to allow the activation of institutional instructions for deepening the training through direct performance of experiments by students. The Observatory's goal is to train operators at several levels (post-degree training, 1st and 2nd level degree, specialization and PhD), able to organize and to execute inspections, diagnosis, advising activities in planning restoration and consolidation works and wooden structures. Such activities are put into effect through more phases: study of the indirect and directed sources, metric and material consistency with the location of the causes and the effects of pathologies and failures. The inspections and surveys, performed by graphical, photographic and descriptive elaborates, identify the more suitable procedures for the conservation and consolidation plan of woodworks. For that reason, non-destructive equipments for diagnostics are used which belong to the Department and are available in the Laboratory-Observatory. They are used to specify and to quantify the information obtained by the qualitative relief, in order to achieve restitutions more and more precise and scientifically controlled. The Observatory can also execute restoration work on wooden pieces, fixed furnishings and furniture, through own specialised operators inside the structure.

The deepened acquaintance of wood, working techniques, defects, pathologies and failures is indispensable for a correct approach to the operating phases of conservation and restoration. For that reason and in order to support the didactics, the

courses supply the basic acquaintances of anatomy, physiology, pathology of the wood, the main acquaintances of the instrumental diagnostic techniques applicable to works and wooden structures. The lessons have a theoretical and practical character. The structure is specifically as follows:

- Articulation
 - Morphology and functions of the wood cells;
 - Structure, main characteristics and elements of the cellular walls;
 - Angiosperms, Monocotyledons and Dicotyledons;
 - Macroscopic elements for the acknowledgment of the species of wood;
 - Physical and mechanical characteristics of wood (elements);
 - Relation wood-water;
 - Anatomical and shape defects;
 - Alterations and pathologies caused by living organisms;
 - Classes of biological risk and natural durability;
 - The objective examination:
 - Inspections, evaluations and technical reports;
 - The plan of the instrumental diagnosis;
 - The instrumental diagnosis:
 - Invasive techniques, not invasive techniques;
 - Surveying and monitoring techniques of climactic parameters and humidity of the wood;
 - Penetrometric tests;
 - Dendrochronological dating;
 - Endoscopies;
 - Load tests;
 - Innovative techniques of diagnosis (Acoustic devices, Tomography, etc);
 - Diagram-descriptive performances of the survey data.

Laboratory of Testing of Materials – Section Masonry structures, stone materials, mortars, diagnosis for the Cultural Heritage of the Department of Structural Engineering

The *Laboratory of Testing of Materials (LPM)* of the Department of Structural Engineering of Politecnico di Milano carries out experimental activities on materials and structures for research and didactical purposes, and on behalf of third parties. The activities refer to different sectors ranging from structures and structural elements, to chemical physical and mechanical testing of building materials. In addition to tests on concretes, bricks, mortars, steels, soil and rocks, the laboratory is equipped to carry out experimental testing on innovative and biological materials.

Among the activities on behalf of third parties, of great relevance is the certification of building materials for which the LPM is recognized as an Official Laboratory according to the law 1086.

The Section Masonry structures, stone materials, mortars, diagnosis for the Cultural Heritage, scientific responsible prof. Luigia Binda, has been collaborating for many

years within national and international contracts and researches on diagnosis, modelling and intervention techniques for the conservation of historical buildings.

The laboratory started to operate in the sector of diagnostic investigations in the eighties, when the experiences in conservation and refurbishment evidenced the need of suitable techniques for the evaluation of the constructive characteristics and the actual state of structural damage before any kind of intervention. The diagnostic phase is not only important for the choice of adequate solutions, but also for defining times and costs of the intervention itself.

Besides the direct experimental testing, the laboratory also supports the designing of the investigation phase, any time different and modelled on the particular pathologies of the studied monument, to be approved by the designer.

The most important equipments of this section, in addition to the complete chemical laboratory, are the following: biaxial testing machine, triaxial testing machine, complete equipment for sonic and ultrasonic tests, surface analysis equipment, BET, ESPI laser interferometry equipment, acoustic emission equipment, stereo-microscope, metallographic microscope, climatic chamber complete of UV rays, chamber for freeze-thaw tests, micro-durometer, laser profilographer for damage measurements, Kesternich saline fog chamber, complete in-situ testing equipment including flat-jacks, oscilloscope (sonic tests), anemometer, humidity and temperature measuring devices, sclerometer, bore-hole driller, endoscope, video-endoscope, video camera, thermo-camera, radar.

The research fields are briefly the following:

- Durability of masonry materials, protective and consolidant treatments (since 1978);
- Use of stochastic models for studying the durability of materials and structures (since 1980);
- ND and slightly destructive investigation techniques (radar, sonic, flat jack, endoscopy, etc.) for the diagnosis of masonry structures and the control of the intervention effectiveness (since 1980);
- Characterization of historic mortars for the preparation of new similar and compatible mortars for repair and strengthening (since 1990);
- Compression, flexion and shear tests on masonry specimens also sampled in situ;
- Experimental and theoretical study of the time-dependent and fatigue behaviour of massive masonry structures (towers, retaining walls, pillars, since 1990);
- ND investigation techniques through sonic, ultrasonic, flat-jack and thermographic testing (since 1994);
- Radar and sonic tomography (since 1996);
- Investigation and survey on historical centres for the study of seismic vulnerability, development of analytical methods (since 1997);
- Investigation on archaeological sites and conservation of monuments in the South Eastern Asia (in collaboration with Leric Foundation, since 2000);
- Supporting the didactic activity of the University, through visits and tutorials at the laboratory and in-situ, assistance and support to the research of final year students, PhD students, trainees.



Fig. 1
San Maurizio Church, Milan: diagnostic analyses of wood chorus.

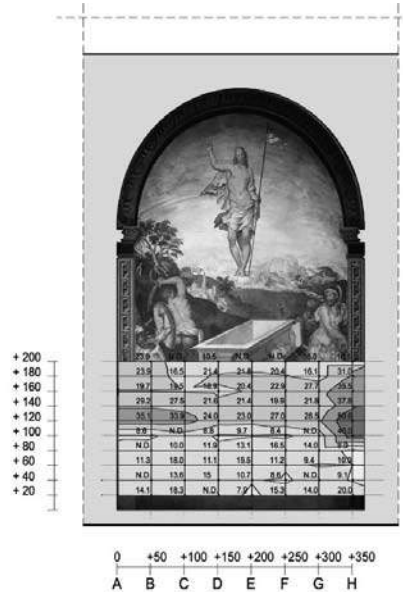


Fig. 2
San Maurizio Church Milan: distribution of the superficial humidity (frescoed chapels).

The tests carried out at the Laboratory Masonry structures, stone materials, mortars, diagnosis for the Cultural Heritage are mainly aimed to the chemical, physical and mechanical characterization of porous materials (concrete, mortars, bricks, stones and plasters) sampled from existing masonry walls and to the study of their durability towards the chemical, physical or mechanical environmental actions, so to suggest compatible materials for the restoration. Important are also the accelerated ageing tests: freeze and thaw, UV rays, long term and cyclic loadings.

The damage measurement on mortars, bricks and stones is also carried out, together with the control of the efficacy of repair techniques (surface treatments, grout-injection, etc.) though injectability and strength tests on virgin and injected walls.

The laboratory has set up guide lines on investigation methodologies and procedures and provides assistance in the interpretation of the results of experimental activities, putting the client in the condition to use them for an aware and correct diagnosis.

The complete procedure for in-situ diagnostic tests includes: survey and mapping of physical damage, stratigraphical essays, survey of the crack pattern, sampling of specimens, wall inspections and bore holes, single and double flat-jack testing, sonic radar and thermographic tests, measurement of water content, salts, sclerometer tests, measurements of surface damage in time, monitoring of cracks and environmental conditions.

The same procedures can also be applied for the control of interventions.

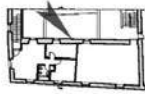


Fig. 3

Parravicini Palace, Traona (SO): termografica survey (reading of the heterogenous composition of the masonry: tamponade window).

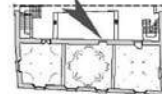
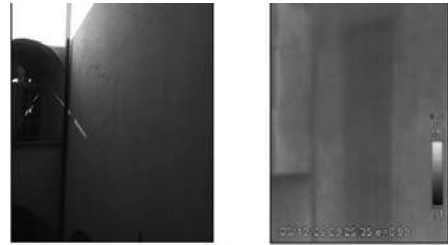


Fig. 4

Parravicini Palace, Traona (SO): termografica survey (reading of the heterogenous composition of the masonry: tamponade door).



Fig. 5

Observatory on Woodwork Preservation: consulting the "xilofagoteca".



Fig. 6

Exercise on polychrome wood in the laboratory.

In general terms, the investigation procedures on structures and materials must be able to define significant parameters for the evaluation of damage that can be used as input data for analysis and numerical structural controls.

Within the section, experimental research relatively to National and International Contracts and in collaboration with other research centres are mainly carried out, like: TNO Delft and TU, Delft (NL), BAM, Berlin (D), BRE, Garston Watford (UK), NRC, Ottawa (CA), University of Colorado (USA), KIK-IRPA, Brussels (B), University of Leuven (B), Torroja Inst., Madrid (E), LCPC, Paris (F).

Among the contracts already carried out the following can be mentioned: EC contracts on injection, repair and durability of brick masonry, on the use of ND testing (BRITE, ONSITEFORMASONRY) and on the effects of floods (CHEF), contract with the Cultural Heritage Ministry on durability of masonry, and the public and private Italian contracts: ENEL-CRIS, MM, Curia of Monza, Curia of Cremona, Cancer Research Institute, Prefecture of Syracuse, Cultural Heritage Office of Ravenna, Prefecture of Pavia, City of Milano, Avio Castle (TN). The research, carried out within GNDT projects "Vul-



Fig 7
In situ test: Pietà Rondanini (MI), endoscope test.



Fig 8
Laboratory test: grain size distribution (after separation of the aggregates from the binder).

nerability of historical centres and cultural heritage” (Umbria, Liguria, Toscana, Marche). application of The diagnostic investigations of the research group of the Laboratory Section Masonry structures, stone materials, mortars, diagnosis for the Cultural Heritage of the Structural Engineering Department have been carried out on a number of buildings, including: the collapsed civic Tower of Pavia, the bell tower of the Cathedral of Monza, the Torrazzo of Cremona, the partially collapsed Cathedral of Noto, the Cathedral of Syracuse, the Castle of Avio, the Castle of Pisece, the Altes Museum in Berlin, the church of SS: Crocifisso at Noto, the basilica of S. Lorenzo in Cremona, the basilica of S. M. Novella in Florence. Some examples are described in the paper by Anzani et al. presented at this Conference.

The didactic activity within the framework of the Laboratory of Diagnostic, addresses the students to the development of analysis and diagnosis of the state of damage and of the performances of the building in preparation of the design activity for a suitable and correct intervention.

Aim of the Laboratory of Diagnostic is that of set up the knowledge on the historical buildings useful to formulate the diagnosis on the state of conservation of the building, considering both the surfaces and the structures and to the choice of intervention techniques compatible with the structure and respectful of the architecture.

The student is led to the knowledge of the historical building starting from the building typologies to the recognition of the masonry structure, the structural elements and their functions, the materials and their physical and mechanical characteristics. An important part of the study in the geometrical and stratigraphical survey,

together with the research on archive documents, with the aim of defining the geometry and the evolution of the building since its construction.

As a further study, pathologies and structural settlements are examined through the material and damage survey, and the crack pattern survey.

The students are also given the possibility of forming knowledge on the in-situ and laboratory investigation techniques through their practical application, with in laboratory and in situ tutorials.

Anna Boato

DSA - Department of Sciences for Architecture
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**Archaeology of Architecture,
Restoration, Teaching:
“Why” And “How”**

What is archaeology of architecture?

Archaeology of architecture, or building archaeology, is a study sector dealing with historical knowledge of old buildings that still exist. As it is a form of "archaeology", the principal source of data used is the material one, in this case the building. To reconstruct its history use is made of: 1) a peculiar method of observation and analysis, for understanding of the constructive stratifications present (stratigraphical analysis); 2) a certain number of dating instruments (mensiochronology of bricks, chrono-typology of architectural elements, analysis of construction techniques, dendrochronology...) useful for placing the different parts of the manufactured article in absolute time and thus linking its vicissitudes to the history of man.

The archaeology of architecture was born and initially developed in an archaeological sphere, with the intent of connecting the buried patrimony, which can only be investigated by digging up the subsoil, with what still exists above ground (buildings in use or also abandoned buildings and ruins). The fact is that it was believed, above all for the purposes of study of the most recent civilizations (medieval archaeology), that a global vision (investigations in the subsoil, on the surface and on the part above ground set out in a systematic way) would allow more rapid and significant progress.

Subsequently the potentialities of the methods of archaeological investigation of the parts above ground was to attract the interest of architects, or, more exactly, of those architects that deal with recovery and restoration of historic buildings. Not everyone, it must be said, appreciated the way in which archaeologists sought to study buildings from the past and in some cases on the part of historians of architecture and restorers there was a true rejection of archaeology of architecture. Others, instead, began to cultivate it and to teach its methods. Thus it was that in the 1980s archaeology of architecture began to appear in Italian faculties of architecture.

Why teach it in courses that deal with conservation/restoration?

Existing buildings are real documents in relation to their own history. They are archives of signs which wait to be deciphered but can also be wiped out or rendered illegible by human action.

A second problem, of a technical nature, is knowing how the things are made on which one wants to act so as to avoid useless or incompatible actions.

Hence if it is true that in order to conserve it is useful to know, there is no doubt that archaeology of architecture too can make its own contribution.

Benefits of a technical type

- *Archaeology of architecture and construction materials.* By its very nature, archaeology of architecture attaches the greatest importance to the material aspects of architecture and knowledge of them, also technical. Thus it can provide the planner with a lot of operational information, when he is called on to appraise, from the technical point of view, the materials and the construction techniques used in a historic building. Archaeology, for instance, is able to furnish the demonstration of the long duration of a material or the technical success of a construction solution (test of time).

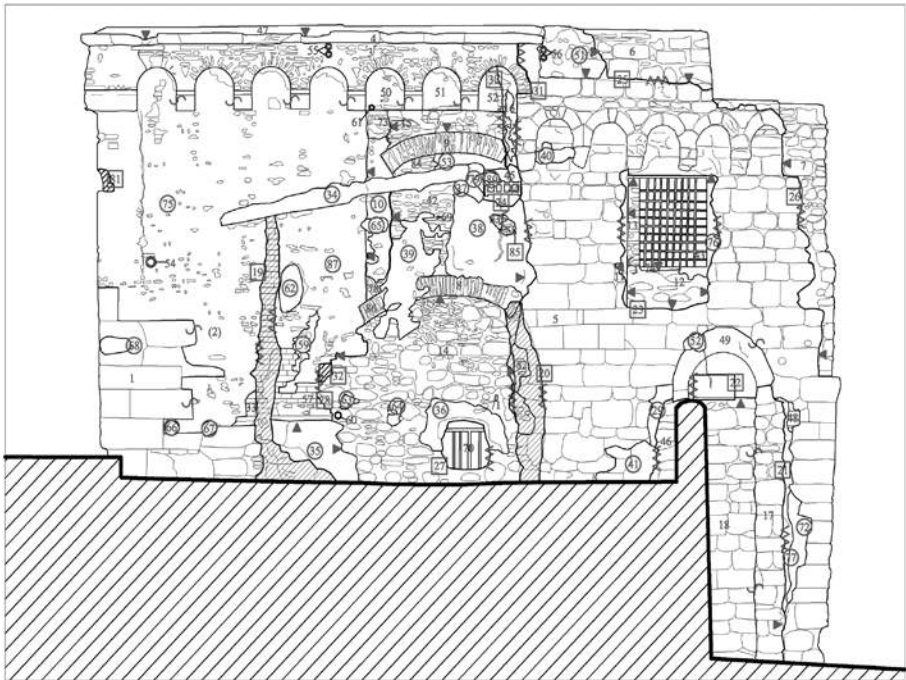


Fig. 1

Restoration project about the medieval "casa del Boia" (Genova), *Laboratory on Restoration of Monuments*, a.a. 2005/06, students Acquarone Marco, Calciano Pietro: a) west elevation; b) map of stratigraphical units.

- *Archaeology of architecture and analysis of deterioration.* The results of archaeological analysis can furnish some extremely useful elements for the evaluation of phenomena of deterioration in relation to time: they can for instance clarify whether a phenomenon of deterioration is connected to any specific constructive phases or covers the whole lifespan of a artefact, whether it is old or recent, whether it is previous or ongoing... Reconstruction of the evolution in time of a phenomenon of deterioration or upheaval is extremely useful for appraising its dangerousness and its probable development and deciding "whether" and "how" to intervene.
- *Archaeology of architecture and understanding of static behaviour.* Archaeological reading of the masonry structures of a building can contribute to a significant degree to understanding their present static behaviour, especially in stratified and complex situations. This allows one to choose the modalities of consolidation or the structural action best suited to the single case, avoiding standardized solutions, which are often very invasive, oversized and sometimes even self-defeating.

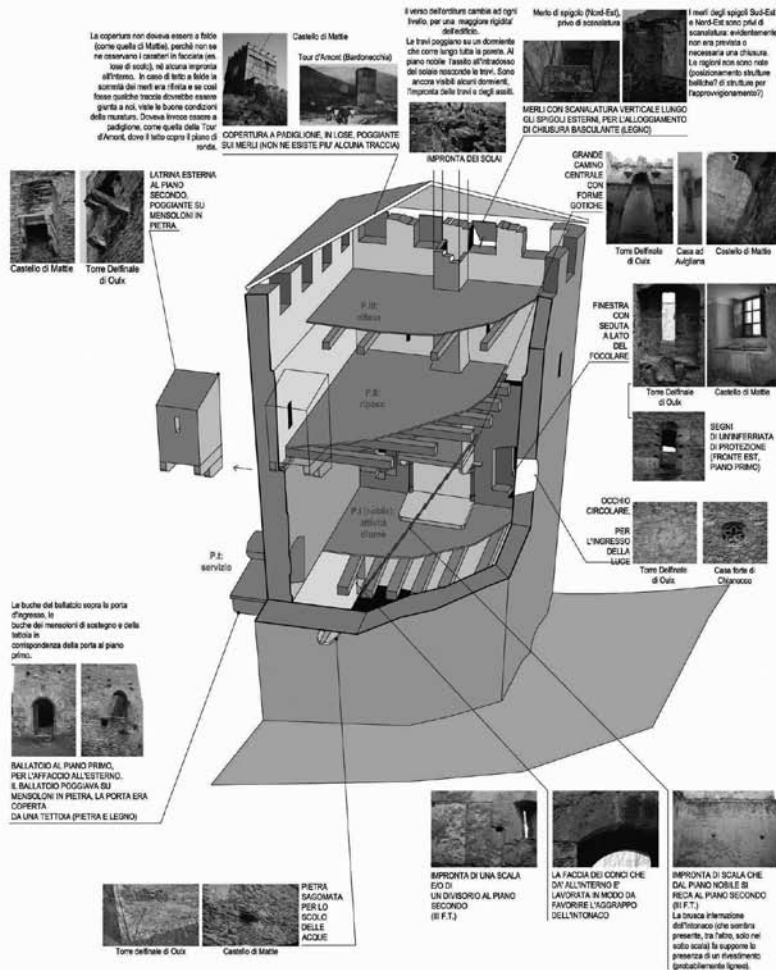
Benefits of a cultural type

Archaeology of architecture:

- contributes to a better understanding of the architectural object and its historical and cultural context;
- helps to appraise the choices and the results of a project. If the project and the actions are accompanied by an exhaustive work of investigation and archaeological documentation of the state existing before the action, of the novelties that emerged during the work, of what has been demolished and what has been conserved during the work, any observer can also formulate his or her own judgment on the basis of these data;
- furnishes the planner with elements serving to explain and defend his or her own choices, particularly those that have concerned the conservation or sacrificing of elements that are significant for historical understanding of the manufactured article, on the basis of the same objective data;
- underlines the historical consistency of old buildings and drives the planner to face up to the past, which can lead him to enrich the action with new and sometimes unprecedented design solutions;
- makes it possible to understand the importance that the stratigraphical signs and the material signs have for the archaeologist and to understand that the building is a book open on the past, which can be decrypted but is never decrypted once and for all;
- places the planner face to face with a problem that cannot be neglected and that concerns the destiny of all the signs and clues that the building to be restored bears in it. The fact is that every action on what exists can forever wipe out or hide or vice versa enhance the presence of the archaeological data: whatever decision is taken necessarily involves responsibility on the part of the person making the decision. The safeguarding of the apparatus of signs highlighted during the archaeological analysis could even become one of the cultural objectives of a project of restoration/conservation;¹



LA LETTURA DEI SEGNI



	Comune di OULX - TORINO Comune di Oulx - Torino	TORRE DELFINALE DI OULX Tesi di Specializzazione Anno Accademico 2003 - 2004 Oggetto della tesina: LA LETTURA DEI SEGNI	UNIVERSITA' DEGLI STUDI DI GENOVA FACOLTA' DI ARCHITETTURA SCUOLA DI SPECIALIZZAZIONE IN RESTAURO DEI MONUMENTI - GENOVA Coordinamento e Direzione scientifica: Prof. S. MUSSO Gruppo di lavoro: Arch. Chiara MANDINO Arch. Benedetta MURZIO Arch. Mariana TEIXEIRA	
	Coordinatore scientifico: Dott. A. AMBRO, Arch. A. SOATO, Arch. M. CORNADI, Dott. S. FOSBARI, Arch. G. GARIBOLDI, Prof. MAGGIORI, Prof. T. MANFROTTO, Arch. V. PIGNONNI, Arch. S. PISTOLINA, Dott. S. PICO, Arch. A. RISPINO	TAVOLA SE 00		

Fig. 2

The Tower of Oulx: historical reconstruction from archaeological signs and data (from the final thesis of the School of Specialisation In Restoration of Monuments, a.a. 2003-2004 - Authors: C. Hondino, B. Murzio, M. Teixeira).

- furnishes instruments and techniques for recording data that can compensate possible losses consequent upon demolition of parts of the manufactured article (where this is foreseen by the project), through adequate recording of the data destined to be wiped out.

How much is it taught?

Over twenty years have gone by since people in Italian Faculties of Architecture began to speak of how existing architecture can be studied through archaeology. In Genoa, probably the first Faculty in which these themes were introduced, the teaching of archaeology of existing buildings began in the academic year 1984-85, thanks to the presence of Prof. Tiziano Mannoni.

In 2001, about 15 years after that beginning, on the occasion of a publication that was being prepared in Mannoni's honour, I tried to get an idea of how much the teaching of this subject had spread in the different degree courses in architecture active in Italy. I wrote at that time "But what, today, is the situation of this 'discipline'? What interest does it arouse in the world of architecture? How much, how, and by whom is it taught?"² These were analogous questions to those that, in a manner extended to the whole teaching of conservation, are being asked today in the workshop organized by the thematic sub-network on conservation. At that time I attempted a (partial) survey among colleagues and a rapid reconnaissance in Internet sites. I now hope, thanks to the workshop, to be able to glean new information and opinions on the subject.

For my part I can illustrate what the situation of the teaching of archaeology of architecture is in the School of Architecture in Genoa and what relations this specific discipline has with that of conservation/restoration.

The Genoese situation. In the Faculty of Architecture in Genoa the teaching of restoration is on three levels: that of the three-year degree, that of the single-cycle higher degree course (five years) and that of the higher School of Specialization postgraduate course (Master after Master). In each of the three cycles the contents of archaeology of architecture are present, though with a number of hours and a weight that greatly vary.

In the *bachelor degree* (three-year degree course) this subject is already dealt with in the first year of studies in the teaching of "Construction Characteristics of Historic Buildings" (50 hours, 4 credits), which, with the parallel teaching of "Analysis of written and pictorial sources", constitutes the integrated course on "Tools and methods for the analysis of historic architecture." The objective of the course is to provide the student with basic knowledge and an efficacious working method so as to make him or her able to analyze any building or manufactured article of the past from a historical point of view. The same topics are then taken up again in the "Monument Restoration Workshop" in the third year, as an integral part of the whole analytical and diagnostic activity that students have to experiment with on their object of study.

In the *master degree* (five-year degree course), archaeology of architecture is only dealt with in one teaching course, that is to say the *Monument Restoration Workshop*, in the fourth year. The time that can be devoted in the Workshop to archaeological methods is greatly limited by the total number of hours available and by the quantity of different subjects that it is necessary to deal with. The fact is that the themes dealt with, to a great extent new for the students, roam from distance surveying to simplified digital photogrammetry, to analysis of materials and construction techniques, to diagnosis of the state of deterioration, to the design and writing of the technical and accounting documents necessary to it. It can be said, however, that for the student there is, at least, an opportunity to come into contact with the methods and instruments of

archaeology of architecture and, for those who desire it, to go deeper into its operational contents, though within the limits imposed by the architectural manufactured article that every student has chosen as the theme of restoration.

Within the *School of Specialization*, as it is not possible to take for granted any basic knowledge, due to the very different backgrounds of the students, every year a one-week “intensive course” is organized, devoted to “archaeology of architecture and the history of material culture.” Thanks to the recognized tradition of studies that characterizes the Genoa centre, in it there also participate students from the School of Specialization at the nearby Milan centre. The formula of the course, now a well-trying one, contemplates lectures on the different tools of archaeological dating, held by those people that, together with Mannoni, set up or developed these tools and therefore have direct experience of them. Case studies and some guided visits give an opportunity to get deeper knowledge of the interpretative and applicative aspects of the discipline. The Genoese students are then expected to experiment in their yearly practice and in the final specialization thesis regarding what they have learned in the theoretical lectures. The application work, thanks to continual contact with the lecturers and tutors of the School, becomes an opportunity for further in-depth examination and reflection.

“Archaeology of architecture and history of material culture” - intensive course
Schools of Specialization in Restoration of Monuments, Genoa and Milano (a.a. 2006/07)
organized by ISCLUM-Istituto di Storia della Cultura Materiale (Genova)

Genova, Faculty of Architecture, 7-11 may 2007

	9,30 -10,30	10,30 -11,30	11,30 -12,30	12,30 -13,30	14,30 -15,30	15,30 -16,30	16,30 -17,30	17,30 -18,30
Monday		S.F. Musso, A. Boato introduction	Anna Boato stratigraphy of standing structures		Anna Decri analysis of wall building techniques		Anna Boato stratigraphy of standing structures	
Tuesday	Daniela Pittaluga mensiochronology of bricks		Tiziano Mannoni principles, methods and instruments of archaeology		Rita Vecchiattini chrono-typology of architectural elements	Anna Decri visit: the “castrum” of Genoa		
Wednesday	Anna Boato stratigraphical and configurational analysis		Daniela Pittaluga case study: the “Galata quarter” in the harbour of Genoa		Roberto Ricci mortar analysis and datation possibility	Severino Fossati - Gianluca Pesce dendrochronology		
Thursday	Rita Vecchiattini stratigraphy of plasters		Emanuela Sibilla Thermoluminescence (TL) and radiocarbon (C14) dating		Gianluca Pesce archaeology, material culture and materials engineering	Daniela Pittaluga colour and urban identity	Michele Camurati case study: the aviary of palazzo del Principe	
Friday	Anna Decri archaeology and written sources	Tiziano Mannoni architecture from human point of view		Anna Decri archaeology and written sources	church of S. Bartolomeo dell’Olivella: in situ archaeological observations			

Fig. 3
Lessons of “intensive course” in building archaeology.

Teaching modalities and learning difficulties

Providing preliminary knowledge. The teaching of archaeology of architecture requires a certain amount of knowledge of the constructive materials and their behaviour, modalities of workmanship, assemblage and placing of architectural materials and elements, construction techniques and building yard practices, and the static behaviour of manufactured articles... If this knowledge has not yet been acquired, it will be necessary first of all to fill this lacuna. This basic knowledge is necessary for being able to recognize and interpret what is observed in real buildings.

Boosting capacities for observation. There are too many ways of building to think of being able to know them all, but each person can build up his own personal pathway

of exploration once he or she has acquired the ability to observe, to organize and to interpret the data that the “material source” offers us. Theoretical knowledge can be boosted through direct observation of objects. Photographs and drawings help to enrich the theoretical lectures through exemplifications, but it is a good thing for the student to have opportunities to observe real objects as they are. The fact is that refinement of the capacity for individual observation is essential for being able to conduct any archaeological analyses. For this reason classroom lectures, in my opinion, should always be backed up with practice. This is true not only of the teaching of archaeology of architecture but also of a lot of the subjects that contribute to forming a conservation technician or planner (surveys, diagnosis of deterioration...).

Teaching the analysis tools proper to archaeology. Subjects proper to the discipline are those regarding the different dating tools previously mentioned. These are often tools that in order to be applied in a particular geographical context require preliminary researches for the creation of databanks or reference curves. Therefore it is important to teach both how to build up these databanks and how they are used if they are already available, explaining what it is up to the user of the tool to do and what instead pertains to the expert applied to for possible analysis.

Using the acquired knowledge. In this case too it is useful for people personally to experience the data collection phase, because even the apparently simplest operation (measuring bricks for dating analysis) can fill a person with doubts or induce him or her to commit clumsy errors. In these cases direct experimentation helps to memorize the operations to be performed and to be aware of what to take care over, much more than simple oral or written instruction can do.

Learning to investigate. However, teaching a person to conduct an archaeological research is above all the teaching of an investigation method. The object of study and its description, however accurate, are not enough: questions and reflection are needed. On this aspect of the discipline too, theoretical lectures can be held, and case studies can be illustrated, but direct personal efforts are surely useful for improving the learning and for understanding better how to proceed.

Managing the analysis and synthesis phases. The difficulty of a subject and the effectiveness of its teaching can be appraised on the basis of the results obtained, but it is not easy for the teacher to proceed in an objective way to such self-evaluation. I will therefore simply observe that the difficulties met by the students in the application phase are mostly linked to the passage from the level of analysis to that of synthesis. This can especially be noticed in the students in the three-year courses and higher degree courses, while the greater experience and maturity possessed by those in the Specialization School make this passage less critical.

Indeed, it is observed that analysis often predominates, as if simple application of an analytical procedure to its object of study was enough by itself to furnish meaningful results. People therefore endeavour to make maps or to draw stratigraphical diagrams, without however asking themselves questions and without having reflected on the possible conclusions. All the time that the student devotes to the archaeological investigation in the year's work is thus spent on preliminary operations and on learning methods of codification of information, without real interpretation of what is catalogued and observed being attained.

In other cases, instead, the exact opposite happens. A student endowed with a greater spirit of observation and a more fervent imagination tends immediately to jump to conclusions, without realising or accepting that these must in any case be supported by rigorous data collection and by an explanation of the data that is equally rigorous and well founded. In both cases we are talking about surmountable difficulties, which only become evident when the student tries personally to conduct an archaeological analysis and which can be obviated with the help and guidance of the teacher.

Problems and questions. As can be deduced from what has been written so far, I am convinced that the teaching of archaeology of architecture cannot be teaching with a purely theoretical character, but requires practical exercises and direct contact with real buildings. However, this clashes with some problems:

- often the basic notions still have to be acquired, which takes precious time away from the subject. What preliminary teachings and what preliminary preparation would be desirable in order for appreciable results to be achieved?
- it is not always easy to find accessible buildings that lend themselves to teaching experimentation. The fact is that real buildings are often too complex and stratified, above all for students in the first year of the course.
- the time required for conducting a complete archaeological analysis is long. In courses like the Restoration Workshop it is not possible to devote to this subject the time that it would require, either at a theoretical level or in the year's work. What are the students left with from such compressed and simplified teaching?
- the number of students per course is often high and their capacity for independent work is frequently poor: how can we manage the teacher-student relationship?

But the question to which I believe it would be necessary to devote the greatest attention is the following: how can we make the analysis phase interact with the project phase and how can we teach the importance of knowledge?

Notes

- 1 Cf. TORSELLO, 2005.
- 2 BOATO, 2006.

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**Conservation Studio Studies
at the Tel Aviv University School of Architecture
Documentation, Conservation and Planning
in an Historic Environment**

Not even one of all the institutions of higher education in Israel, offers a bachelor program and degree in the conservation of the built heritage.

At the Tel Aviv University's School of Architecture, as part of their third year studio studies, students are given the opportunity to participate in "the studio for the conservation of the built heritage". This course is the responsibility of Architect Sergio Lerman and myself. The name of the studio is: "Documentation, Conservation and Planning in a Constructed Historical Environment".

To us, this seems like a possible way to achieve regional reconciliation and the possibility of a shared life with Israelis and Palestinians one beside the other. That process begins by one getting to know the other. Knowing the other's culture, will in turn, lead to respect for their culture.

We cannot know the others without learning their language, past and cultural heritage.

Acknowledging the other's culture as equivalent to our own will make possible the process of building the interpersonal relationships that comes before reconciliation for a better future in the region.

We have no magical political solution for the problems associated with the Israeli – Palestinian conflict in Palestine. Furthermore, we do not presume to propose any solution to the problem of the Right of Return for those multitudes of Palestinians that lost their homes and were cut off from their natural culture. All that is in our possession is the methodology for the research into the Palestinian built heritage and the possibilities of its conservation.

Knowledge of the Palestinian culture and the built heritage might bring architecture students at Tel Aviv University, closer to a better and more sensitive level of understanding when tomorrow, they will plan for different communities in, historical areas. We propose a methodology for the study of conservation, combined with the study of chapters in the truncated, local Palestinian culture, which is here among us and has been ignored entirely until now. It is obvious that with greater understanding of the Palestinian cultured heritage, there will be a greater need to conserve it.

Conservation is linked to knowledge of the past; the analysis, understanding and appreciation of that past. In a complex geo-political situation such as ours, it is very rare that we find architecture students involved in the study of Palestinian culture and its conservation. The belief that guides us is that through the gathering of information and its study, we are able to look history straight in the eye; without aggression and without guilt. Through this learning process, it is possible to understand the course of events, not only from the tales told by the victor. It is also possible to learn to appreciate the tales told by the vanquished. The vanquished regain their self respect, when we study their past and preserve their traditions in an attempt to integrate them into current life. This is the standpoint from which it is possible to examine the subject of conservation, through study and research into the built environment, with all its different levels and traditions and to achieve intelligent planning that will give expression to the heritage of each different community.

For those unwilling to ignore the past, dealing with it is not easy in the reality of the city of Tel Aviv – Jaffa and dealing with the planning from the conservation point of view is by far more difficult.

Usually, when architecture students begin studying the planning of any study project, they are asked to conduct a short research project on the area in which they are supposed to make their mark. This is the source of their effusive creativity and the current fashion that influences them. Differing from regular architecture exercises, in conservation projects, students are asked to invest their greatest efforts in study and documentation.

It is easier to think of Tel Aviv as a 100 year old city and plan within it accordingly. It is more difficult to deal with Tel Aviv – Jaffa, the three thousand five hundred year old city and interfere by making planning proposals in this complicated, sensitive place. We must remember that the city of Tel Aviv was founded upon a number of Jaffa suburbs established at the beginning of the 20th Century as part of Jaffa's exit from within its walls at the end of the 19th and the beginning of the 20th century.

With the growth of pragmatic Zionism, large waves of emigration to the Land of Israel, the establishment of new settlements and the expansion of existing settlements; Tel Aviv chose (and continues to choose today) to become an independent body, completely cut off from Jaffa and such was achieved by:

- A. Deleting the past by tearing down buildings and entire Arab neighborhoods.
- B. Ignoring those chapters in the history books that explain the development of the Palestinian people.
- C. Neglecting and ignoring the last remains of the buildings that still obstinately jut out above ground level and once belonged to that defeated culture that has been almost completely obliterated.

“White” Tel Aviv has woven itself a new and different historical tale, well turned and adjusted to present day needs.

In most instances, conservation of the remnants of Palestinian culture provides an “authentic” backdrop for the purposes of tourism and trade. It has no connection with their real past and the values that they still represent. Often, this conservation is an accusation against the Palestinian cultural heritage when faced with its representatives living here today, who are those same refugees who remained behind to watch others expropriate their property and culture.

The city of Jaffa reached the peak of its urban, economic, social and cultural development in the 1930s. After the Arab uprising of 1936-1939 the old city of Jaffa began to be destroyed. It began with “Operation Anchor”, which was the British plan to repress and control the activities of the Palestinian national movement.

The destruction continued during the 1948 war and was part of all the other events of the “Nakba”. But the most damage to the old city of Jaffa, its historical tapestry and ancient houses, was wrought by the State of Israel and the Tel Aviv Municipal Authority after the establishment of the Jewish State. In hindsight, a number of reasons have been given for this destruction:

The Archeological Reasons – Jaffa is built on an ancient Tel or mound: Layer upon layer of ancient cities dating back to the Bronze Age and continuing throughout human history. In the name of the science of Archeology, it was made possible to tear down most of the city built in the 18th and 19th centuries, for the purposes of archeological digs. By the end of that process, we were left with no orderly scientific research and no

better understanding of the history of the place. What we did have was total destruction of the Casbah and a complete change to the old city's topography.

The Political Reason – The destruction of the buildings was considered a means to physically prevent the return of refugees – the owners and residents of those houses. Thereby, the risks embodied by the Right of Return were substantially reduced, as was any need to deal with the problem.

The Sanitation Reason – The destruction of the old houses of Jaffa was an easy and highly absurd solution for the need to reinforce the houses and ready them for human habitation in terms of the installation of those infrastructures and technical systems that did not exist in ancient Jaffa.

The Tourism Reason – The establishment of an “authentic” space for people to meander through, with a Mediterranean atmosphere, rich with gardens, abundant, carefully nurtured flora and impressive views of the sea in the direction of the city of “white” Tel Aviv. All of this was the backdrop for commercial interests and entertainment businesses, which the area was designated to contain.

The result, which we live with today, has not improved life for any with interests in Jaffa and therefore it must change.

Extensive study of the ancient Jaffa Tel and the documentation of its history was carried out over many long years of research and during a number of semesters, work was carried out with students. At the end of this work, there was documentation and a database covering the reality before 1948 and the transition between “Jaffa the Bride of Palestine” and the current situation in the old city. We have worked on the planning of proposals for rehabilitation, conservation and development of the old city of Jaffa in a completely different manner.

Recently, we decided to take an interest in another facet of urban life associated with the culture in Jaffa – the well houses called “Bayara” in Arabic.

Well houses are simple, agricultural buildings found in Jaffa's many orchards and gardens. With the city's accelerated development, the well houses were turned into luxury living quarters for many of the city's richest families. Those families invested great talent and very considerable sums in the construction of these estates. Moreover, the agricultural pathways between the orchards served to link the houses to the city center. In time, these pathways became the streets in the south eastern parts of the city of Tel Aviv.

Today, many of these buildings are abandoned ruins or they are used for industry, as workshops or as storage sites and these uses do them no good. Over the years, most of the well houses have been damaged and not a single house is on the Municipality's list of the city's world heritage sites designated for conservation.

What do these buildings signify? What values can be elicited from well houses? What new purpose can they serve and for whom?

The Conservation Studio seeks to provide answers to these questions.

After research and detailed documentation of the historical well house buildings, from their different architectural, urban, technological, social and cultural aspects, the students talk to the people in the communities now living adjacent to the building

and they investigate any possible connections between the people and the ancient buildings.

These links between the people in the area and the historical buildings, usually lead to the first meeting between the building and its new neighbors, who have an ardent thirst for more knowledge about the building.

Planning is the obvious next step forward. Planning the building for the use of the community as it is conserved.

The abstract of the syllabus listing the Studio's program and the work required from participating students are as follows:

Conservation Studio

Documentation, Conservation and Planning in an Historical Environment

Architect Sergio Lerman Sergio

Architect Amnon Bar Or amnon

Introduction

The Conservation Studio constitutes a broad introduction to the architect's task in a built historical environment, which is in the most part, a very challenging environment in cultural, economic and architectural terms.

The Well Houses – the "Bayara" to the East of Historical Jaffa

The Studio shall be involved in researching the well houses (bayara) created during the 19th century in areas to the east of the ancient city of Jaffa. Those houses still remaining today are principally in the depressed neighborhoods in the south east of the city and are they not designated for conservation.

Study of the well house phenomena in general and the selection of a building for intensive study will make possible the planning and conservation of these buildings and their conversion into a magnet for the rehabilitation of the areas surrounding them, which to date, have not exploited these historic buildings to the advantage of those neighborhoods.

At the Conservation Studio we shall try to view these fascinating historical buildings as a lever for urban renewal and the development of the neighborhoods that surround them.

None of the historical buildings have been in their original use since the 1940s and the vast majority are destined to be demolished and forgotten. These buildings constitute impressive cultural and architectural evidence of the unique culture in 19th and early 20th century Jaffa and therefore, their decisive influence on the development of Tel Aviv.

During the semester, special emphasis shall be placed on the following:

- The historical identity and different cultural heritages in the city of Tel Aviv – Jaffa.
- The architectural heritage as a message from the past about a better future.
- Research and study methods for the constructed historical environment.

- Conservation and its inclusion in urban and architectural planning.
- Conservation science.
- Documentation and research into buildings with cultural significance and their social context.
- Planning conservation and the conversion of historical buildings for new uses.
- Solutions for community needs through the rehabilitation of historical buildings and their use for the public good.
- The presentation of the well houses' cultural heritage to a wider public and to the planning authorities through a comprehensive exhibition summarizing the students' work, including work done previously and the preparation of a catalogue and an internet site accessible to all. A day seminar devoted to the subject.

Studio Requirements and Students' Obligations

The Studio shall comprise three exercises:

Exercise 1

Study and research into the well house phenomena as part of the development of the city of Jaffa; from the beginning of the 19th Century to the beginning of the 21st Century.

The exercise shall begin with an obligatory tour for all Studio students and will then move on to the gathering and organization of all the existing information gathered and studied to date in previous student research. It shall then be presented to the students for further research, documentation and presentation to the public and the planning authorities. As a whole, these materials shall serve as the basis for the preparation of a plan for the conservation of the well houses as a cultural phenomena – specific to the city of Tel Aviv – Jaffa.

Exercise 2

Selection of a building and getting to know the building and its environs

Preparation of architectural research and documentation work – The history of the well house SElected by the students.

The issues to be considered during this exercise:

- Research and historical documentation of the development of the well house selected by the students.
- Research and architectural documentation of the selected building (including measurements and photography).
- Research and engineering survey of the selected building (including building materials and technologies).
- Research and conservation survey of the selected building.
- Understanding of the wear processes in the building and the efforts to stop their advance.

Exercise 3

The dialogue between remains from the past and dreams for the future.

Planning for the selected and documented historical building for the purposes of its conservation and use in its present and future environment.

- Program and planning ideas – The program shall be given by the course instructors immediately at the beginning of the third exercise.
- Adaptation of the program for the existing historical building and the demands for changes and additions made by the local community – Adaptation of the program shall be discussed in the Studio, with the obligatory participation of all Studio students.
- From the planning program to initial architectural planning.
- Authentic conservation in planning.
- Planning of the additions and their adaptation for the conserved building.
- Integration of the planning and conservation into overall municipal planning.
- Gathering of program information from previous Studio students and its organization for the exhibition and the catalogue.

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**Teaching Of “Restoration” at School
of Civil Architecture of Politecnico di Milano-
Doctrine Contents, Teaching Methods
and Perspectives**

Teaching “restoration”: balances and perspectives

Landscape and architectural heritage safeguard and preservation involve, especially in Italy, many issues an architect may face.

It is widely known that in recent years our sensibility toward cultural heritage has grown: new goods have joined the number of historical and architectural heritage (spontaneous architecture, rural buildings, historical centres, industrial archaeology, contemporary architecture, gardens, cultural landscapes); a new interest has spread upon the material culture of building and dwelling, and therefore, towards the preservation of the buildings different historical periods and of the traces of human activities carried out therein.

Consequences have followed not just in the teaching of restoration, but also in the teaching of architecture tout-court.

The amount of qualities and quantities of the heritage we're concerned in, brings forward the need for connect heritage restoration and management topics with territorial planning and the handling of economical resources.

Thus, it is a matter of different approaches towards the intervention upon architectural and landscape heritage: these form a meaningful system only if understood in their relation to each other.

An extreme consequence of this new approach brought the awareness of the fact that all territory is landscape, as there aren't just “beautiful” landscapes to be preserved and “ugly” landscapes to be left to themselves; everything is cultural landscape, as long as it is seen with the eyes of anthropological research, thus being able to read the sings man has left upon the territory, or those he recognizes and understands as his and Nature's history.

Any visible sign, left by man or recognized through his aesthetic or scientific experience, is thus potentially interesting. It seems this brought us (and should furthermore bring) to important consequences in the teaching and the practice of “restoration”, or, according to our previous speech, “preservation”.

One of the cornerstones of preservation disciplines is the need to maintain the unity of methodology and approach for each kind of element undergone to intervention. All this is about historical and archival research, diagnostics, metrical, material and degradation survey, issues on preservative and re-employment projects at different levels, but also concerns the active search for social consent towards the new needs of preservation.

Obviously this consent should not be sought after in a generic public of citizens, but mainly amongst operators, and in our case, amongst architects.

That's the reason why today, in our point of view, every architectonic discipline needs the formation of a widespread consent towards preservation issues, that is to say towards different problems which arose from the widening of the concept of monument. Obviously not an uncritical and sectarian consent, but aware and persuaded.

That couldn't have not a relapse on the training of young future professionals of the field and on the relationships between the different areas of interests that form the architect's profession.

It must be remembered that an opening to sciences and techniques is as well a must, since the handling of goods and information is greatly aided by computer science, and physics, chemistry and biology may give interesting contributions in sim-

plifying or even transform into routine diagnostics procedures which at this time are employed exclusively in extraordinary conditions.

Similar considerations underline the fact that preservation disciplines today are involved in the making of cities and landscapes, since -as everything is potentially cultural heritage- it's evident that restoration, or the project upon an existing heritage to be preserved and taken into account, is involved. This could displease somebody, especially those who would rather prefer to have free hands (for ideological or economical reasons) but it seems a logical consequence of this reality.

In the beginning the teaching of Restoration in our schools of architecture was a specialised discipline which often posed a problem inside architecture classes: since architects are qualified by law to intervene upon bounded buildings it's a compulsory teaching, but normally it's just tolerated and sometimes hindered: if it's true that intervention upon the pre-existent cannot be disregarded, it's also true that professional and academic interests towards the already-built involve every analytical and designing disciplines practiced inside architecture courses.

Today the problem consists mainly in a meeting between different restoration disciplines, which should get out from the "Indian reserve" they were confined (or in which they self-confined themselves), and other design disciplines:

What we should all pursue is a meeting place upon a common architectonic project in which the attention for historical, landscape and natural values annexed to the territory will all be evenly considered and ruled with a new awareness of what could be lost if one of the above was forgotten, remembering them all without thoughtlessly losing anything.

There could be many allies, especially amongst those involved with environmental compatibility, respect of minorities, natural resources and biodiversity upkeep, amongst those who refuse an acritic globalization, etc... All those issues are highly compatible with those practiced by preservation disciplines because they are issues, and disciplines, that pay attention to what already exists and take into account differences, recognizing it as a resource, and a limited one.

Thus we think we should reformulate the restoration disciplines' strategy of presence inside architecture courses, pursuing also opportune collaborations and contaminations with other designing disciplines, besides the necessary autonomy derived from the specific problems of preservative projects.

A non hyper-specialized method of teaching should be defined, trying to make students experience the complexity comparable to the realities of the profession and research, at least during some design workshops and especially during the final examination.

Actually even the best degree elaborates have limits, normally caused by a mono-disciplinary approach derived from the direct experiences made inside a single course: these works lack multi-disciplinarity, the synthesis of different disciplines of a real architectural project. It should be said that this problem arises in every discipline qualified to lead to final examination, including architectural and urban design.

Obviously, reaching a full co-operation without hegemonies or subordinations between different design disciplines isn't that easy, neither is enough to mention the problem in order to find a solution: too many years of separations and convenient autonomies make it difficult to meet around the same table of discussion with the same training program in mind, especially if we have to deal with a great number of stu-

dents with different levels of preparation. Still we need to start to turn the wheel in that direction, knowing it's just the beginning but willing to play the game. We're at the first moves, and maybe, in a few years (hopefully not decades), we'll be able to come to some conclusions and verify our progresses and faults.

Many think we should look towards the promotion of an orientation upon the already built inside the specialistic degree in architecture.

What we've just said should touch the training of every architect, but this could be a simpler option, involving those teachers and researchers in different disciplines who agree with this approach. We shouldn't try to found a degree in Preservation of Architecture, but we should include the issue of intervention upon the already built in a normal degree course, paying to it more attention than we are normally used to.

The problem we are facing isn't much to found new courses with more teachings about history of preservation, it's about involving every traditionally employed discipline in working upon the already built, not just paying attention to preservation issues but also to building re-employment, eco-compatible rehabilitation, energy sparing, attention to the natural, physical and historical context of our actions, and to its value of finite resource.

We shouldn't forget that actually in Italy 2/3 of building investments point to the existing heritage: from ordinary maintenance to rehabilitation and conservation, from the recovery of diffuse heritage to more complex interventions; it should also be remembered that these investments are bound to grow, it should be enough to think about the heritage built since the first post war and during the '60, and also to the great problems posed by industrial and services dismissed areas.

Doubtless in the near future architects will more frequently face the issues of intervention upon the already built, and they will better behave if their training in this field will be adequately developed, from analysis and project capabilities to diagnostics and survey, from preservation and recovery techniques to insertion of new elements in already built structures, to the handling of historical centres recovery plans and up-keep of landscape heritage.

During his studies it seems very important to us that a student faces not just a preservation project, but also the issue of practicing architecture in an historical context to be preserved, in a consolidated urban tissue to be rehabilitated, in a building to be re-employed to new destinations.

But it also seems important to imagine a course of studies in architecture enabling the student to make at least one direct experience in diagnostics and to get acquainted to the general knowledge of architectural works, to their vicissitudes and to their deterioration phenomena, consciously employing the most significant technologies actually available. Thus the activation of one or more didactical laboratories (partially portable) is necessary, giving the students the chance to employ adequate instruments to survey, diagnostic, graphic and cartographic representation, and heritage cataloguing.

This also means making available school-yards to put in practice the acquired notions.

How these wishes crash against the problem of actual human and economics resources is already known. But it seems that a few small steps in this direction could and should be made, and those provided with more awareness should move first,

even if forced to get out his own shell, or to pay a price in term of time to be reserved for the school, or finally to be led to revise consolidated teaching practices.

Restoration disciplines in the Politecnico di Milano's faculty of Civil Architecture

A try in the above directions has been made during the planning of the study courses promoted at the school of Civil Architecture, even with a lot of open problems and difficulties, especially regarding the definition of the contribution that Restoration disciplines could give to the training of an architect who, in a land rich of witnesses of the past as is Italy, is going to face during professional practice prevalently with the existing.

Those two tri-annual study -courses activated at the faculty ("sciences of architecture" and "architecture of buildings"), being aimed towards the formation of a professionals able to absolve every aspect of an architectural project, give great place to the issue of preservation, upkeep and handling of historical buildings.

From the first year of study of the triennium (1st level degree) to the last of the specialised degree (second level) the student is guided to face issues and works more and more complex, up to the design of the new for the ancient.

The student gets in touch with restoration issues during the first year during the course named "*Principles of architectural heritage conservation*". Teaching in this course is a complex task: to upset the common and (not just by the mass-media) widespread logic of "back to the ancient splendour", to make understand how the already built heritage doesn't just identify with the so called "monumental buildings", to teach to observe the complex and stratified nature of the existing, to free oneself from prejudices, to learn to respect the signs of man impressed upon matter. Not a dogma, but an help to approach to the existing buildings with respect; to point out the vicissitudes that brought to the knowledge that every witness of the past is a witness of material culture, to the widening of the concept of "monument", to the need to preserve the diffuse heritage planning a correct project of preservation and use.

Bringing theories into practice is demanded to the Workshop on architectural conservation, the second step in the learning curve of the school, compulsory for second year students.

This workshop is designed to give students those tools needed in order to accomplish an intervention upon existing buildings, starting from survey up to the setup of the yard. Survey methods (geometric, material, deterioration pathologies), but also the main non-destructive diagnostics techniques, applied to a real case-study, show how "listening" to existing building isn't just a theory but also a real professional opportunity.

During the third and last year, students deepens into the subject by means of optional classes which deal with theoretical issues or peculiar themes within the discipline.

Further deepening is offered during the stage period, where the student, leaning to instrumental laboratories referring to the teachers of the discipline, is allowed to have a professional experience in the field (restoration survey, study of various materials and deterioration pathologies, census activities, working in existing researches for 3rd parties). This perspective is especially interesting for those students who will not

continue their studies with specialised courses, since the vocational training activities undergone, draw the scenario and competences for flanking the planning of interventions, in this case upon already existing buildings, which concerns junior architects.

Similar during the three years, these courses of study differ in the didactical plan for the specialization degree (Architecture and Building's Architecture).

The course of study in architecture provides an optional restoration laboratory the student can follow during the first and/or the second year. Thanks to the knowledge and the know-how learned during the first three years, students face in this laboratory issues concerning the design for existing buildings, confronting conservation instances with those of architectural new design. Whenever convergences are possible, working themes are purposed in co-ordination with the two disciplines, offering the students the chance to have a taste of a complex and articulated designing experience, thanks also to thematic deepening offered by a wide number of optional classes, from historic centres preservation to diagnostic projects, archaeological conservation, material upkeep and methods and techniques for conservation.

The final products of the biennium laboratory, integrated by the contributions given from optional disciplines applied to the same working theme, often end up in a consistent part of the final examination project.

The course of study in Building's architecture provides a two years teaching in methodologies and techniques for conservation, made up by different modules, aimed at the integration of the different disciplines that concur to a conservative project. During the first year the class faces an exercitation chosen following the issues purposed by the workshops of the course of architectural design, the knowledge of the object of study from the point of view of restoration, diagnostics, survey and interior design. Those studies provide tools for the design of the new upon the existing that will be faced during the second year, during which further deepening concerning structure consolidation and installations for historical buildings.

In both courses the final project can deepen different approaches. In case of restoration, works developed with teachers can be wholly presented during final examination.

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**Conservation of Architectural Heritage:
The Maintenance Culture
in the Education Process**

Maintenance culture as a conservation strategy

Maintenance is the process that aims to guarantee the efficiency in time of heritage. Since the concept of “efficiency” evolved in time, in a sustainable development process, the mediation between the requirements of the users and the safeguard of the heritage’s identity is acceptable.

It’s now well known that the control of decay and obsolescence processes have to be integrated in the design action in order to satisfy the users exigencies and to guarantee the identity of buildings.

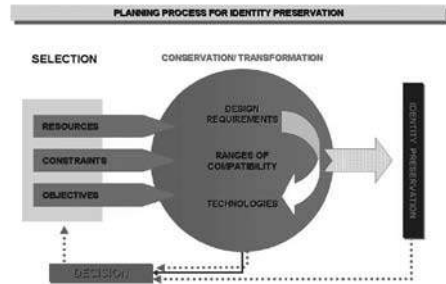
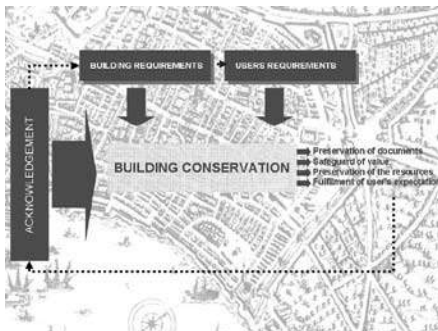
The actual cultural scene recognizes that conservation and valorisation of the building heritage have a specific role in guaranteeing the identity of an urban space, through the control process from the phase of knowledge of the building, to the realization of the design, and the control of the building’s life cycle.

The role of technology is to convert the analytic phase into the design phase, creating a link between critical knowledge and practice with the aim of a constant search of a balance between conservation and transformation, to maintain over the years the functionality, the characteristics of quality, the efficiency and the cultural, social and economic value of the building system.

The conservation in terms of capital is the key element to ensure that the next generations will be able to meet their needs, at least the same needs the present generation fulfills, and have equal opportunities.

The above involve a careful and continuous action of conservation/maintenance/management in time of the natural, handmade, human and social capital.

The field of application of the maintenance activities in the complexity of the current urban scenario is heterogeneous both in the property nature of the heritage (historical building, monumental, contemporary, publishes, private, etc.). that in the context demands. This results in the need to elaborate diversified criteria for priority in the intervention attribution results.



The approach to the conservation process as an integrated action among different levels of competences, derives from the need to define the practical choice according to sustainable development and the vanguard guidelines both on the scientific point of view and the operational one. It is inborn in the concept of sustainable development the difference between research, experimentation and praxis in order to promote processes of synergy and reciprocal support for a balanced development between economic and social areas.

The transition from the conservation idea as the set of the activities oriented to the physical restitution of architectural heritage to a concept of maintenance as a strategy for a sustainable development suggests today various approaches for:

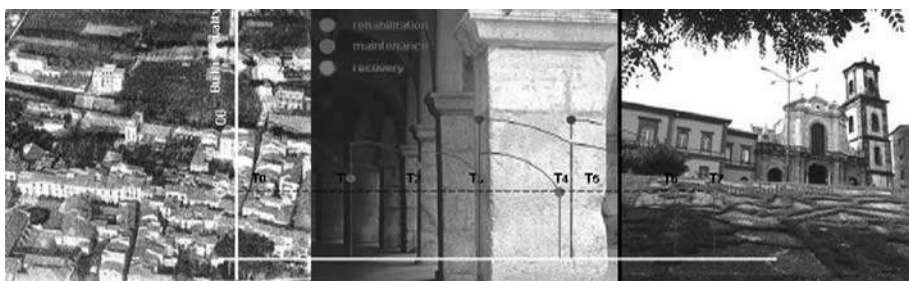
- conservation of the resources
- safeguard of the environment
- control of the management costs and control of the total costs
- a new market and to guarantee continuity in demand

The challenge of Technology has been oriented to construct a theoretical corpus which clears the meaning that reliability and maintainability assume in their declination on the existing built heritage. The definition of new requirements has been developed through the experimentation on the compatibility of the techniques and the effectiveness of conservation actions.

The necessity to preview and to program the quality of the actions, in order to guarantee the adequate management of the natural resources and crafts and the control of the life cycle of buildings, requires, today specific tools in programming, planning, in the realization and the management of the activities on the existing patrimony, in the fields of:

- heritage conservation
- control of the buildings management and natural heritage
- location of more effective strategies for the recovery
- control of the process plan/performance/management
- appraisal of the available resources

From these reflections the integrated management in conservation process fits in a *multiscalare* structure, differentiated between limited urban sections and the built system, in which the Information System, can be characterised.



Teaching activities

The education objective is to allow professional figures to interpret, define and govern the processes of maintenance and management with high quality checking in the life cycle of the built systems; this means to verify the efficiency of buildings and to keep constant their value in order to promote sustainability.

The training must aim to the increase of professional competence with high degrees of effectiveness, which act together in the recovery and maintenance planning and managing the intervention process.

This need arises in compliance both with the community laws and the national and local reality in the building sector, where the heavier demand for specialised competence asks for effective answers.

The final output is the demand of specific competence to prevent the degradation and obsolescence, to face these problems in a scientific way by coordinating interventions and by optimising the human, material, social, cultural and economic resources.

In a scenario of physical transformations of the building fabric, the exigencies of conservation require an action of coordination interventions and the control of the total quality of the interventions and their durability.

This phase of the building maintenance integrates the others approaches related to conservation of architectural heritage and represents the link between *decision* and *action*, it promotes a “new one” type of project, aimed to the qualitative improvement on the basis of simulations, forecasts and optimization of the interventions.

The objective of the formative aims to make the future operators able to plan tools of organization of the managerial activities and maintenance and check the interface between the users and the tools.

Such professionalism is referred to operators in the building and environmental rehabilitation segments, able to plan the management and the maintenance of the built heritage.

To face such a demand, teaching activities have been oriented towards methods and tools for the control of the rehabilitation process of buildings at different level of education:

- University Education (*Technology in Building Rehabilitation*);
- Master Course on *Building and Urban Maintenance and Management*;
- PhD Course on *Building and Urban Rehabilitation*.

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**Thoughts on the Teaching of Restoration:
The Preservation Project Today**

Evolution of a School and restoration teaching

A personal opinion as to appropriate teaching methods and themes, formed on experience acquired at the Restoration Department of the Faculty of Architecture of Florence, should I believe be capable of outlining those areas where there have been the most developments (in compliance with contemporary concepts) in our own learning process. This process has trickled down and left its sediment on our way of recognising and studying space and indeed time, respectful of History and its meaning it enhances our knowledge of constructions and individuals which we then pass on to future generations.

To revisit the genealogy of our own training background is, I believe, one way of picking up the threads and rediscovering how a *method* was devised, developing gradually over time and how it gave birth to the foundation of a School.

The creation of a space which is both tangible and yet abstract, where restoration skills and knowledge can prosper, a place where institutions and professionals in the preservation sector can be involved, inevitably leads one to the work of Piero Sanpaolesi, who founded the University Institute in 1960.

At the time Sanpaolesi *"pointed out how important it was to take stock of* (from the critical, scientific and operational points of view) what had been built during previous centuries by different nations. This, he said, would promote *a crucial debate at international level on restoration criteria and methods*, and help establish the limits of what would be considered acceptable restoration work, identify outstanding problems, indeed how many there were and how they should be tackled and studied in further detail ... *so as to finally do away with the empirical, subjective and essentially intuitive and oral dimension detected all too often in cases which could hardly be considered to be of secondary importance"*¹.

Some thoughts on the method and the decisive role of an international debate on the ideas and avenues explored in the teaching of this subject are reflected in the works and writings of the next generation, Sanpaolesi's successors, who believed that Florence was also a well placed vantage point from which to observe a boundless cultural landscape.

Sanpaolesi launched appeals elsewhere and underlined the *"brave awareness of some and those who asserted their own freedom as well as that of others"* thereby highlighting the need to tackle the subject upfront and be capable of experiencing its evolving processes. The ways and means acquired with knowledge must be updated in a responsible manner, as should the tools which are part of the decision making process required for *the choices leading to the building of a restoration project*.

In his lengthy discourse on restoration there is a structural assumption which ties the restoration method and actual work to be done to the question of authenticity, loyalty and honesty of the restorer in recognising the sense of history in a construction, as a type of palimpsest to be preserved with the great precision which can only come from feeling totally at home with the materials and life of the construction. This in turn can be linked to many of his comments on the pitfalls inherent in the gap between theory and practice in restoration. He was in favour of "analytical precision in measurements as well as essential tests to be conducted by thorough research into the "visible information" provided by the building itself. Likewise the sequence of the various construction phases and the different "interpretations" contained in the

present form of architectural construction were also to be studied along with their preservation problems and the potential causes of deterioration"²

Sanpaolesi's wide-ranging interpretation of what was meant by the culture of restoration, the requirements of preservation and his ceaseless work in a variety of different areas, gradually broadened the spectrum of preservation and extended the responsibilities of the architect-restorer to cover a much vaster domain. Cities, surrounding areas and landscapes were all analysed at alternate moments in time in a variety of ways: as theoretical concepts, on the basis of the material in them, according to the conveyed perception of a single entity formed by a series of stratified places and spaces, and in terms of the criteria and measures which would enhance their preservation.³

Another concept stemming from some of Sanpaolesi's later writings is the need, in the training of the architect-restorer, for complementarity between theoretical learning experience and that gained on the ground, especially by inspecting the actual site. *Special emphasis is placed on the role of the architect as a coordinator of the various types of technical knowledge required for the project and used at the actual restoration site.* The architect must also ensure that the preservation measures taken are consistent and compatible with the historicised construction.

At this juncture I should stress the considerable continuity in the work carried out by the Institute. It recently became "Dipartimento di Restauro e Conservazione dei Beni Architettonici" (Department for the Restoration and Preservation of Architectural heritage)⁴, in that it wishes to express the will and indeed show its ability to elaborate further on identified themes and problems by updating techniques, concepts, restoration methods and references in the framework of an on-going and essential exchange of different experiences and knowledge.

This is hardly the place to describe in detail the considerable workload shouldered by the generation which had Sanpaolesi as their mentor and who incidentally were actively involved in the debate and in restoration activities at the highest echelons. I do believe however that some reflection is appropriate for those issues facing the third generation of teaching staff who find themselves in an academic and professional world undergoing rapid change.

I will do so by summing up some of the critical issues mentioned in the Sanpaolesi code: *the question of the method, the importance of exchange at international level, knowledge of the materials used and research on degradation; the role of the architect-restorer as guarantor of the quality of the restoration work and the actual preservation achieved, preservation institutions operating in different places and at different levels.*

This summary is linked to how one should convey concepts and forms when teaching, so that they can be used to identify-if not indeed pre-empt-preservation requirements as they arise. In this way trainees are taught how to tackle the real world both culturally and technically. In this context, I would like to emphasise the central role played by the restoration project: it is a variable sequence of actions, conceptual processes, forecasts and critical visions which pass on to the future, historicised buildings and places to be preserved with deep respect for the past and full awareness of the present.

The restoration project, today

Having explicitly endorsed and referred to the precepts of the School (I will elaborate on this later and explain how both form and substance can be brought up to date), When teaching how to run restoration project we teachers must bear in mind that we are constructing architects and only subsequently dealing with the restoration of different types of architecture. With their considerable understanding of the passage of these varying architectural themes and how complex these are, future architects can explore the direction taken by an extraordinary course (albeit strewn with obstacles): the road pointing to what their role is in the preservation of what exists here and now.

Those teaching restoration and restoration projects must undertake, *vis-à-vis* themselves and the School, to constantly renew their communication instruments and their highly critical references to topical issues so as to foster on-going teaching experimentation and constant monitoring of the real conditions as they will arise in the working lives of our future architects. This essential undertaking will, I believe produce results which will be even more fruitful for the culture and practice of restoration, if related to research areas which, although potentially quite different from each other, are discussed amongst academics from different countries thereby hopefully achieving an exchange of critical and sometimes collective views.

The present and near future of young architect-restorers all over the world is becoming increasingly distant from conditions, methods and timescales established in offices where critical reasoning prevails and dictates the construction of the architectural project. It instils in the teaching process first and subsequently in the professional process of each one of us, a feeling of conceptual wealth which anticipates and guides one in the decision to be taken and in the subsequent drawing up of the project. New subjects and forms of professional organisation absorb more and more of the working lives of our young graduates, depriving them of two of the most important parts of our profession, responsibility and passion. Their work is reduced to a sophisticated and hasty computerised operation in which each one invents and improvises his or her own conservation practice. Teaching students about the responsibility of the architect-restorer depends to a large extent on carefully conveying the importance and the exact role of the restoration project as a vehicle used to preserve what exists but also to safeguard the professional profile of the architect working on the project.

As for passion, this cannot be taught as such, but one can revive its genes by reiterating that a restoration project is tantamount to knowledge and respect, technical precision, using one's vision, critical creativity as well as a contemporary and detailed study of space bringing together the culture and poetry of times distant from each other. Students should also be reminded that a restoration project is unique, both in terms of the general approach and building details and that this uniqueness is what binds the place to the person restoring it. This is expressed through the discoveries, revelations, watchful and caring affection as well as feelings aroused by signs, including one's own. Such are the factors which explain and give continuity to the life of matter and individuals. It should also be said that restoration is a creative act, because apart from constantly acquiring technical skills and the on-going search for exchange with a variety of disciplines and people with different training, there is also a ceaseless quest for new solutions, innovative ideas and "compatible inventions" (often quite different even in the same restoration theme) in and outside the construction or the

area to be restored. Likewise, critical exercise and the use of one's imagination should be natural pre-requisites in establishing the appropriate relationship between old and new.

Our ability to take the present into account can be one possible antidote for a tendency to downgrade the complex nature of the task we voluntarily give ourselves when we undertake to work according to the specific rules and procedures which we are defending today. The various phases which can determine how effective these are require a broad and open debate, as far removed as possible from irritated entrenched positions in an unrealistic bid to turn the clocks back. Opening up to proposals to cooperate with other types of teaching can give rise to effective synergies and transmit knowledge which is essential for future preservation operators. This operation is successful if the synergies reiterate the role of the architect-restorer as a guarantor, director and as the alpha and omega of the project options. For all of this to happen, it is essential that the training cycle impart the appropriate skills, in the right sequence to enable students to manage a credible and efficient dialogue and ensure technical co-ordination. It is important that the university courses provide the instruments required for comprehension and practicing increasingly complex ways of drawing up restoration projects, in full compliance with standards and laws. These courses must also lay the foundations needed if our future architects are to be able to exert proper control over the work done which must be top quality; this in turn will ensure equally high quality levels for the restoration site as well. All the more reason to look more carefully into the finer detail of the new and complex range of courses on offer, as well as the experience and opinions of an enlarged university world, at least in Europe. This I believe is a crucial stage because it provides a bouncing board in terms of a critical comparison of experience which in turn can lead to proposals, but even more important, the creation of a genuine international network of ideas and the *creation of the European architect-restorer*. Here are some ideas to be aired by a broad spectrum of people, referring specifically to practice and project content. They hark back to the concepts highlighted at the beginning of this paper and gleaned from the genesis of our teaching, dove-tailed with the requirements and consequences of the present and connected to what we were taught about the need to devise a method and to gradually update it.

The importance of comparison at International level

Reminding our students of the importance of exchanges of views at international level has become second nature to us as teachers and in the profession. Concepts and modi operandi must be constantly checked and updated in order to further specify the role of the architect and the restoration teacher in a chaotic and bewildering world which uses the definition of restoration, restoration jargon and even its rules for operations which have nothing to do with preservation. Moreover if a programme is to provide adequate preparation in preservation to European architects, it must be able to rely on regular and committed availability on the part of the Schools to exchange views on ideas for programmes and self monitoring of the workplace. The role of this type of peer review is far from negligible for *drafting the actual restoration project*, devising representation techniques during the preparatory phases of the project and deciding on the documents to be included in the actual project. It is also useful in determining

different types of teaching and, considering knowledge will be acquired on the basis of a European review of content, the presentation of laws, regulations and restoration planning will be equally important.

Knowledge of materials used and degradation assessment

The approach adopted in storing the knowledge acquired concerning a building or historicised places (especially data relating to the complex nature of the materials, structures and technology, or information gleaned from in-depth historical studies, hands on analyses, measurements, diagnoses, non-destructive investigations, the pooling of experience, data and information on the properties of the instruments and control methods) can be decisive in that the collection and use of the data can help set up common data banks and coordinated research programmes, thereby furthering the technical skills and cultural knowledge of the institutions, the academic staff and the students. This in turn would favour a veritable exchange of ideas and persons at European level. This could be a first and *extremely important international stock-taking exercise covering all the materials which to all intents and purposes constitute a restoration project.*

The role of the architect-restorer as guarantor of the quality of the work carried out and the actual preservation of the site

As already mentioned, the task of the architect is not just confined to the definition and the subsequent detailed drafting of a restoration plan. He or she must also coordinate the various phases of the operation as well as the different technical and scientific specialists working on it who all contribute to finding the appropriate solutions for the project.

I believe that right from the beginning of the architect's university career, he or she should acquire the knowledge needed to control and guide project ideas and other aspects which will one day be put into practice by technical experts from different backgrounds (eg. technical plant engineers). In this way a restoration and technical culture will develop and enable them intervene and establish the criteria, practical arrangements and materials. All of these must meet preservation and legal requirements, and yet foster technological enhancement which in this instance is to be regarded as added value for the preservation project. Within a multi-disciplinary restoration project, the principles of preservation and restoration should lead to guidelines governing all the individual tasks to be accomplished for the project. No one activity should prevail over these guidelines. Such training activities (to be planned by *Italian and foreign universities and post-universities*) require a fully fledged open debate which will bring back to restoration culture and practice, many architectural activities concerning buildings and land which were sacrificed in the name of technological innovation and offered up on the altar of History, This should also show how, by throwing open the debate and exchanging information at international level, *restoration culture can ensure quality control over the transformation of sites and protect their past and present identity.*

Land preservation requirements- research at different architectural scales

There are many issues related to teaching courses and projects concerning land and landscapes which are complex and difficult to identify. The study of changes which have occurred to an entire area require that the culture of restoration construct new coordinates, for each scale, item of information relating to an object and method used to collate the information gathered. All of this must be accomplished alongside the constant review of experts from other specialties such as structural and hydraulic engineering, geology, chemistry of materials, geography and cartography, history and document research as well as diagnostic imagery. Hence the need for consulting all parties, be they in an urban or a rural area, concerned by a landscape or a building complex, open spaces or buildings which are still in use or derelict, rural areas or waterways etc. They must all be involved in identifying the right approach to a project and help determine all the minutiae which are an integral part of the area and help to interpret it "from within". All of this helps work towards the identification of a site. On the basis of this one can then work on a number of intervention possibilities and eventually towards *the restoration project for the area as such*. International exchange is decisive because there are- and there could be even more - areas for common research which can be conducted while fully respecting the specific aspects which are characteristic of the identity of a place. This research can focus on a number of different aspects such as concepts, investigation tools, and the causes of degradation. 'Europe consists of a great variety of different areas, all unfortunately are affected by varying degrees of the same environmental, anthropic and social degradation problems. A restoration project concerning a particular area is a testing ground for the culture of restoration: It has to show that it can move in authoritatively and deal with the negative transformation of community property with the tools of preservation which include innovative proposals and acceptable substitutes. Any area is a resource and not just a non distinct place available for reckless expansion. Nor is it a hap-hazard sequence of places, rather a consistent system of environmental and settlement relations containing the rules for preservation and change.

Notes

- 1 *2a Mostra internazionale del Restauro monumentale*, Catalogo Guida, Venezia, Palazzo Grassi, 1964, p. XIII, quote from G. Cruciani Fabozzi *La difficile eredità di Piero Sanpaolesi: appunti per un bilancio di quarantacinque anni di vita dell'Istituto di Restauro dei Monumenti dell'Università di Firenze*, in ANAFKE n.50/2006 pp.208-223
- 2 G.Cruciani Fabozzi, *ibidem*. Many of the themes developed by Sanpaolesi are found in "*Discorso sulla metodologia generale del restauro dei monumenti*" del 1973, and were subsequently dealt with by Giuseppe Rocchi, who took over the chair after '76, in a publication entitled "*Istituzioni di restauro dei beni architettonici e ambientali*" published by Hoepli in 1985
- 3 The themes of preservation and restoration in urban and non urban areas, and indeed more recently the theme of landscapes, were included in the teachings and field trials conducted by some of the teaching staff at the Institute, including Marco Dezzi Bardeschi, Francesco Gurrieri and Piero Roselli who was the first to take on a course called "Urban Restoration", inaugurated in 1982 and subsequently run by Osanna Fantozzi Micali. Related subjects range from the study of dispersed settlements and land use, rural buildings and historical roads to industrial archaeology. The scope was further extended by Giuseppe Cruciani-Fabozzi who

included the preservation and conversion of ancient, modern and/or abandoned building complexes to be used for new purposes as well as experience in managing a restoration site. Our Department currently runs a number of Project oriented Restoration Workshops, courses of Monument Restoration, Restoration of Parks and Historical Gardens, Urban Restoration, Archaeological Restoration, Restoration of Modern and Contemporary Architecture Theory and History of Restoration, Diagnostics courses, Historic Building Consolidation, Restoration sites, Construction characteristics of Historic Buildings, Preservation of Museum Architectural Heritage, History and Technology of Photography, History of Art and the History of Gardens and Landscape.

- 4 The new Department currently directed by Carlo Alberto Garzonio, was set up in 2002 The Laboratory for the study of stone was reopened in 2004, also directed by Carlo Alberto Garzonio

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**Contents and Way of Teaching of
a Course in Restoration
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The awareness, that there were, and still there are several ideas about how we can focus our attention and care upon the architectural heritage, is the supposition and leading thread of my restoration teaching in Venice.

The first content of teaching is not a *single idea* - mine, or the one of a certain school - that immediately excludes any other possibility but, on the contrary, the consideration of even deeply different theoretic points of view about restoration, together with those results which coherently express the actual planning capability that can be related to these different positions.

My teaching aim is the proposal of the plurality of ideas about restoration as a spurring wealth and a choice, and not as a ground for confusion or conflict, requesting to take sides since the beginning. I think a course in restoration must not set out to a cultural proselytism of a single idea, treating any other ideas as evil, but it must be the place where students are provided with the means fit for making proper choices, openly showing different positions.

Our aim is making students aware that a conservative choice is not an apriori automatism, nor an imposed-by-the-teacher trend, but it is a result coming out of a process of growth during the project, in which the peculiarities of an ancient building are put in comparison with the possible solutions that the different ideas of restoration are able to offer and that are objectively exposed.

The choice of certain theoretical lines is then a foundation that the students themselves – in the project - are searching and building as result rather than a starting-point.

In order to limit the risk of arbitrary decisions, or of the so-called “case-by-case”, i.e. a position each time trying to escape from any doctrine reference, we propose a process - or rather, a method - which cannot rule the whole project but that first supplies with a knowledge growth, and then defines the executive development, leaving the central point of the link between knowledge and trend-choice free.

The first part of the project concerns the comprehension of the piece of work and aims at knowing and describing its building, material, figurative and spatial “features” ... and the “character” on the whole or, as Sanpaolesi affirmed, the “*personality*”. It is also addressed to identify and describe the “needs” of the piece of work, that is what it is necessary to keep it living on, from a structural, material and maintenance point of view; it has consequently to give rise to somehow fixed conservative and preserving measures.

As a conclusion of this first phase, we are able to focus the different possible restoration “expectations” the piece of work is raising among us and in the society: how we are expecting it to change, for example becoming like it was once, or not to change, once it were restored; if we want it to express its being in the past, or the changes along time, or rather, its continuity, if we want it to show the will of deep renewal engrafted into the ancient part, while receiving a new use that we deem compatible.

This particular interlacing – features of the piece of work and whole character, its conservative needs, our restoration and use expectations – let us read the piece of work as a restoration “case”. It is a structured reading, hence a reading method, that has by one side to make us aware of the peculiarities of the piece of work and of the layout character-needs-expectations; on the other hand it lets us recognize one or more specific “themes” in it, and look for those restoration cases which have already given these or similar themes a proper solution.

The library of the carried out restorations is not only a useful reference casuistry, but it induces to recognize in each of them the pursuance and result of a *certain idea* of restoration, relating to a *certain case*, and then to estimate, following the issues, the actual capabilities to solve *that case* presenting thematic affinities with the piece of work we are dealing with.

We want to develop a personal critical ability in the student, by driving him to analyse the fulfilled restorations, in order to weigh the issues through some leading principles, inevitably related to one or more ideas of restoration; and to support the idea of the restoration doctrine as a place where ideas and experiences can be compared, rather than sophisticated techniques and abstract theories; in short a contemporary cultural expression which every intervention can share in.

We name "cultural project" the application of the different possible solutions to the piece of work we want to restore, picturing in our mind more alternative projects for it, the critical evaluation of their results and, finally, the motivated choice of one of them or of an even innovative compounding of them; the "cultural project" is the final moment of the first phase of the project and the beginning of the second one. Therefore it is an "argued project" enunciating and describing the fixed goals and the main ways it is intending to reach them, which are justified adopting some theoretical principles and values, and not other ones; so it becomes the manifest and program of the restoration project, that has to be developed through a coherent use of means, techniques and languages. Therefore it is a theory which is drawn into the heart of the restoration project and consciously assumed as an ideal strain, which all operational choices are inspired to.

An even temperate compliance to a certain idea of restoration through the solution it is able to offer, is considered as a final moment – never as an initial point – of the process, so that this idea becomes a project result, rather than an apriori decision, and therefore it can be deeply rooted in the project itself, fecundating it.

Pluralism of ideas means, on one hand, pluralism of means and chances – because ideas are shown as project necessary instruments, and not as ideologies -, on the other hand, it means managing the conflict among contrasting ideas, in order to reach an argued choice.

The discontinuity between knowledges and project just lies in this choice, that cannot be lead by a method, but only supported by an experienced procedure: I think it is didactically due to state as an hazard the passage which is necessary to reach the project, a passage that is not contemplated by the method. One can try to reduce the gap between knowledges and decisions, first by clearing the ground through different forms of knowledge and then addressing the intervention techniques by proper protocols, but it is impossible to remove this gap. It is the moment when we must take charge of the expression of our way of thinking about the piece of work and of setting our creativity on it. This responsibility must be consciously exercised, declared and argued, and it has to be placed within an ethical view.

The emphasis placed on the "cultural project" during the didactic training, as a synthesis of ideas and first definition of choices, aims at stressing the idea of restoration as the development of a thought about the piece of work and its destiny, pointing-out how conservative techniques and innovative grafts must prove their own coherence and functionality toward this idea, attending upon it and fulfilling it; therefore, every

physical action has to be considered as the result of a thought, of an expressed and controlled intention, and every act is seen as a conceptual charge bringer.

Therefore, the restoration project, that is the central axis of didactics, is presented as that place of management of several conflicts between ideas and different requirements, and where an agreement between techniques, ideas and needs is pursued, finally finding a solution.

The project is therefore the place where decisions are taken after an open and *responsible negotiation* among the conflicts, in the light of the peculiar character of the piece of work, of its conditions and needs, of our expectations and those ones of the society.

We don't feel up to propose a method for the management of conflicts, but just a negotiation procedure allowing to face them and whose very issue is the project.

As a corollary of this didactic setting I suggest two considerations. The first one deals with the great importance of an effective, not celebratory spread of the restoration works which are carried out in Europe and in the world, conveying also their supporting ideas as well as the images of the restored pieces of work and the description of the adopted techniques.

Such reviews as the Spanish "Loggia" can contribute to a wider spread of an articulated European restoration culture. Within the course in Venice, I present several restoration interventions - of my own or of other architects - with their project conception process and main results.

The second consideration concerns the necessity for the theoretical elaboration to keep on and receive new impulse, even – but not merely – starting from some new points of balance and synthesis that some fulfillments can bring to the debate, and that therefore take a worthiness as research and experiment cases; this is necessary to keep the relationship with the contemporary culture alive, which restoration is part of.

Therefore teaching needs a frame made of always renewing ideas and productions, in order to avoid the risk of perceiving restoration as an old and iterative culture, which is not extensive and unable to follow the course of time, or just functional to some kinds of tourist performances.

Once it is inserted into the architect's training, and then into his peculiar activities, restoration has to be able to suggest and improve its own, specific project faculties.

One of the most frequent question we are often submitted, especially by our colleagues who are teaching architectural design and composing is: which are, if they exist, the peculiar project faculties of restoration? We must be able to answer effectively, even if the question shows a bias, as if restoration couldn't project anything because it doesn't create any new forms, and therefore it is not a project but only an automatic sequence of analytical and conservative techniques.

The point is not the defence of the pride of restoration or of our operative and scientific field, but we have to be able to explain, first to our student, why it is a project faculty which expresses itself by preserving and not a granted and minor activity in comparison with more prestigious ones.

Creativity in restoration lies in the motivated choice of a particular compounding of permanences and changes which are necessary to let an architecture live on being and looking the same as it was; it particularly leads to hone, in regard of it, the language – materials, shapes, colours and textures... - of the new elements, both integrations of lacking parts and structural devices or new functional equipments. The language is

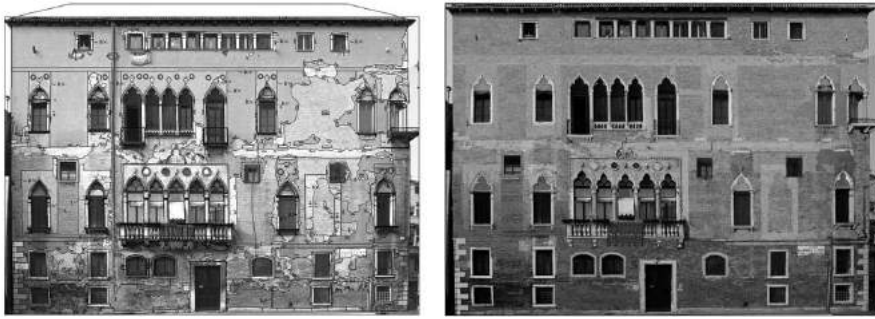


Fig. 1-2

The signs on the façade of Palazzo Gritti Badoer in Venice are the object of a stratigraphic lecture which allows the interpretation of the different constructive phases. Basing on this knowledge, the choices of the restoration project are represented through a realistic photographic simulation. The project aims at re-moving the main parts of the rests of the plasters dating from late Eighteen century in order to recompose the gothic asset of the façade, accepting the complexity of the occurred transformations and conserving their traces and surfaces.

Integrated Architectural Laboratory for Conservation, a.a. 2006-2007, Prof. Francesco Doglioni – student’s exercise by: di Stefano, Interlandi, redone, Venturi.



Fig. 3-4

Here the attention aims at capturing, through direct observation, the existing relationship between the historical constructive modes and the structural diseases that afflict them. In the unveiled foundations of this house in San Fosca’s rio in Venice, it is possible to observe two big timber crossed planks which the building is based on. It is also visible the structural disease implying the detachment and rotation of the ashlars, at the base, and the subsequent formation of a discharging arch within the super incumbent masonry.

Laboratory of Restoration, a.a. 2005-2006, Prof. Francesco Doglioni – student’s exercise by: Gazzi and Quaranta

an instrument with which we can measure and plan the distance between the piece of work and its integration – in term of difference until the complete separation, discontinuity and renewal – or, on the contrary, a total approach, up till harmony and continuity.

The language processing that restoration requires, employs the architect's capabilities, but it also leads and bounds his creativity, through a peculiar purpose; that emerges also in the conservative treatments of the piece of work, such as the surfaces different cleaning levels and the maintenance renewals. As a matter of fact restoration is partially an *interpretation* or *re-interpretation* of the piece of work, as well as a *transmission*, and it thus requires the development and application of this interpreting ability, that is not taken for granted in those ones who only aim at planning new architectures. Moreover, planning in restoration also means ruling and addressing techniques, selecting among them in respect of what the piece of work needs.

The purpose of a reflective planning, made of little acts and attention toward the sense of things of the past, is a sort of antidote against the mirage of architecture as a *star-system*, because it brings the student to humility and to a conscious realism.

The development – in the student's mind – of an autonomous ability of contact with the materiality of the building and with the signs it's bearing, is at the same time a goal and a mode of teaching.

Recognition and description of the building peculiarities of the architectural object and its links to the local culture through the time; surfaces stratigraphy and interpretation of the building-and-transformation process, study of the long-time behavior by means of the analysis of the deformation and cracking process, and the study of the signs of material decay: these are the different cores of learning, that are theoretically developed and then applied by the student to his individual theme of exercise. They want to build up the strongholds for the care of the building substance, and the knowledge basis for the development of different thematic components of the conservative project, that is the pursuit of structural stability, of maintenance and efficiency, but above all of letting the building maintain and express its own peculiarities, averting the risks of homologation or radical transformation.

Teaching the capability of *looking at* and *regarding* the built architecture and its long-time behavior is, as Laughlin Kealy said in Genoa, one of the contributions that restoration can give to the architect's education. This should conveniently happen soon enough, that is before the student could receive a regardless teaching *imprinting*. It could be too late if we offer these base means of watching at the end of the education process, because we could find a person who is sure to be already able to watch and regard and who is no more interested in learning.

From the point of view of didactic formation, the practice of stratigraphy has a lot of merits. Among which there is the direct relationship we can establish with material, a training to recognize the signs of a certain building and transforming culture on the material of architecture, an argued rating of meanings and setting of relationships, the responsibility in dealing with traces.

Therefore it is a gym that, beyond any actual use of knowledge issues in the project, prepares student to recognize the peculiarities of materials, in order to identify differences and links and that develops the awareness about the meaning of the testimonies of the past; thus it contributes to create a willingness to observe, in the future architect, and an independent belief and conservative will, an essential basis for any restoration project.

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**Teaching Planned Conservation
at the Faculty of Architecture**

Teaching planned conservation to enhance an idea of tutorship different from restoration.

A particular case of didactic experience that I would briefly underline, has taken place within the works of the Laboratory for the Restoration of the Monuments, which has been developed during the third year of the Restoration Degree's Course, in the academic year 2006-2007, here introduced by Rita Vecchiatini, whose contributions I suggest to look at for fitting in the course and for a several number of acute observations about it.

Learning to project a conservative intervention: a particular standpoint

A kind of Laboratory like this takes place during the whole course of the academic year, with a weekly frequency and several working hours with the teachers directly in the yard, so that a continuous didactic interaction and a refining of the objectives "during the work" can become possible.

It can be necessary, in fact, to fill some gaps or, more often, to stop and deepen what is already known at a theoretical level but not yet dominated on a practical level.

The institutional goal is to "provide to the students information and instruments, conceptual and operative, necessary for acting consciously over the existing buildings and, in particular, over the architectural heritage that is under a tutorship."¹

Previous courses have been chosen in order to fill a baggage with knowledge that is needed for developing this laboratory, turning to be the edge point of the whole educational path.

First months of the course have been dedicated to the study of the context, while only in the final part of the work, students have been required to concentrate on a single aspect of a more general project of intervention to produce all the elaborations needed to execute in practice their ideas.

It is plan to see that such an unbalancing in the use of time as regards the knowledge of the subject is already a cultural choice,² having as a background the eloquence of the material data and the extreme attention as regards the capacity of passing through contents inherent the historical built. With the conviction that a widespread housing should be an object of tutorship, at least cultural if not legal. But how can all this be translated into a plausible project of intervention today?

The theme of the Laboratory

The object chosen as theme of the year regards the subtle limits between quality and loss of quality, between maintenance and restoration, between care and indifference.

It is about the facades that face a rather isolated little square in the historical centre of Genoa, no visible historical and artistic values (yet theatre of social events of a certain relevance), but meaningful as regards the quality of the context, which is determined by the dignity and the harmony usually expressed by a stratified historical centre. This mainly depends on the quality of the building know how, like knowing how to use materials and checking the formal effects, colours, surfaces that, if continuously set under care and if using compatible materials, would therefore not be lost.

Planned Conservation

As for the final part of the course, regarding the drawing up of a project, some scholars have welcomed the proposal for composing a planned conservation program, following some of the modalities expressed in the guiding lines of the Lombardy Region,³ even if in a simplified way, fitting the didactic dimension and their theme.

The proposal of this idea as a possible intervention line comes out to meet the already known ascertainment that a regular maintenance would bring the building to have a relative equilibrium that would help not to have to occur to any kind of restoration, which would always be much more invasive and consequently bring the risk to lose materials and historical understanding.

This kind of intervention, on the other side, is correspondent to the way it used to be usually made, at least up to the end of the whole XIX century.⁴ When facing the slow decay of the materials (and this slowness is when a building has been built under the right rules) one takes care and under control of all the apparatus built just to resist to the destructive action of the degrading agents. When, furthermore, the critical stage, the one that could bring an extended damage, comes close, one should act promptly to give the system its efficacy back, and the result would be more easily economic and harmonic, in some way more sustainable, therefore, and less substitutive.

This teaching seems to be, also, particularly fit for scholars that, as attending to a first level course and not being able to be qualified to project at the end of the course, will be more probably called in to develop works of support to the same project, to the work yard or as counsellors for the estate owners.

Some points of arrival

The didactic value of this experience seems to us to be significant: the expected result, in fact, is to give an idea of the evolution of the degrading time's phenomena and to set the works for an efficacious and economical logistic as regards controls and verification to be reiterated from time to time.

As a matter of fact, to do this it is necessary to have clear ideas about the materials and the nowadays degrade, and also about its future development. Which is one of the objectives of the course.

Therefore, a time planning for the systematic observation of the individuated weak points has been required. That means, being able to value diagnostic instruments, their efficacy and fitness, from case to case. This is another goal of the course.

Reiteration of the diagnostic inspections is perhaps the most difficult step to be estimated, but it is also the only way for us to keep under control the conservation state of the several components of the building.

The attempt to study the costs of this form of preventions and minimum intervention – through a specific and preventive diagnostic – has also set in light as much as how planned conservation does not cost more than a restoration.

As for the exit of this didactic experiment, we tend to believe that it should be enlarged and deepened, brought to a wider sample of students and to face more complicated themes, as request, in practice, of the time factor in the restoration project.

Preparing a control system planned in time (like a "logical-analytical construction"⁵) helps the complexity of the values regarding the historical buildings' qualities to be

perceived, and the need for delicacy in each intervention, which every time risks to alter that untouchable balance made of authenticity, harmony and history.

Notes

- 1 Cfr <http://www.arch.unige.it/did/l1/restauro/terzo0607/labrestauro/corsopagprog.htm>.
- 2 And a specification of the degree course, as expressed by R. Vecchiattini in its contribution
- 3 The theoretical issue of prevention - better than cure, has been held since '70, for ex. Urbani in Umbria, Monumentenwatch in Netherlands. In these last years some countries have tried to put in practice this issue (cfr *Planned conservation in the historical and cultural heritage*, Milan 2003, Lombardy Region). Italian laws for public buildings have introduced the obligation of Planning Maintenance (cfr law Merloni and ss) for specific intervention, but the aim of the law is now applicable to the whole building.
- 4 Cfr A. Boato – T. Mannoni, *Reconsidering degrade for a true maintenance: agents, actions and causes*, in Science and cultural estates "Reconsidering maintenance: Researches, projects, materials, techniques for taking care of the built subjects", 1999 p 49ss...
- 5 Cfr V. Pracchi, *Conservation planning: indicative methods for the prevention activities*, in Planned conservation cit... In which the frontlines between the logic of conservation planning and that of a slow falsification are clearly stated...

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**From the Analyses to the Project:
Experiences of the Restoration Laboratory
Bachelor three years Course
in Architectural Restoration**

Educational target

The Restoration Laboratory provides teachings that are very specific for the professional profiles that are attending the three years Architectural Restoration bachelor course.

After graduating these architects will participate in restoration projects, they will be assigned parts of them, often they will be requested to transfer the results of their work to other colleagues, or they might finalize activities that they did not initiated themselves. They will be unlikely to manage by themselves a whole project from the diagnostic initial phase up to the building yard, at least as junior architects. For this reason they will need the skill to be effective and efficient in technical communication and interaction. They should provide clear technical descriptions, giving a robust structure and the right level of detail. They must be able to analyze and criticize the information they receive, the completeness, the consistency, they must ask the right questions and integrate themselves what they cannot obtain in other ways.

These issues have been granted high importance in organizing the laboratory, that is divided in two different sections:

- during the first period the students develop the diagnostic analyses of one site
- in the second period they work on a different site for which diagnostic analyses are already available; in this second period they are required to complete the design and project phase, with a project report, the map of the interventions, the tender document, the estimate of quantities.

This organization of the Restoration Laboratory was experimented for the first time in year 2005-2006 and the results were excellent. Most students passed the examination during the summer session with full marks. Moreover the project realized by the students will be permanently exhibited in the "Osservatorio Civis", inside the S. Maria in Passione church that was the target site for the first phase of the course.

The course organization tried to teach and explain:

- diagnostic phase (which ones? how? how many? what is the target? what are the costs?)
- the need for a synthesis of these analyses (which are the relations among them? how to read them together? what are the consequences of not correlating them?)
- how important is a good communication of the results, how to translate them in useful items for the project phase?
- why diagnostic analyses are important for the restoration yard project (what analyses are mandatory for the project? what is the relation between diagnosis and restoration? how the same input data may lead to different restoration projects?)
- identification of the target of the restoration project: style, utilization, economics
- evaluation of the specific problems and the opportunities of the building
- how to elaborate a restoration project that combines these targets, problems and opportunities.

Laboratory description

The first part of the course was about the monastery of S. Maria in Passione. It was a single subject for the whole class; each working group was assigned a part of the building to be analyzed.

The choice of a single site provided more opportunities to follow the work of the students on the site. Group works received collective corrections, allowing each group




Object	Specific features	History of past restoration projects	Current usage, conservation state	Laboratory perspective
<p>S. Maria in Passione monastery, downtown Genova</p>  <p>Urban context (city center). XIV-XVII century</p>	<p>very interesting for archaeological analysis variety in materials, construction techniques, degrade phenoms</p> <p>suitable to different elevation techniques diagnostic techniques on-site may be applied</p>	<p>Several projects, few interventions 1948: minimal actions (dangerous parts destruction, other parts consolidated, belltower top part restored, few urgent intervention on decorations).</p> <p>'70 years: first plans for restoration and reuse of this zone. Hypothesis of usage by the university, together with the requalification project of S. Silvestro area nearby.</p> <p>'90 years: "temporary project" zone protection as an archaeological park (removal of ruined parts, structural consolidation of ruins, protection against atmospheric agents).</p>	<p>Archeologic park, managed by Civis organization Decay of materials and structures</p>	<p>The object offers "...chances for a project..." (comment from Bruno Gabielli, one of the designer of the '90 years intervention)</p>
<p>Valle Christi, monastery, Rapallo</p>  <p>Rural context. Medieval, abandoned between XVI and XIX century</p>	<p>interesting for an integrated restoration project including new constructions</p> <p>structure with stone in sight</p>	<p>begin XX century: belltower restoration.</p> <p>1949: Ceschi restored walls and major chapel. Fillings and integration of a new part.</p> <p>1971: colonic house restoration.</p> <p>'90 years: A. Pucci project: general organization of the area, consolidation of ogival arc in transept.</p>	<p>Sometimes used in summer events Materials degrade</p>	<p>Project required: structures consolidation and proposal of adequate usage</p>
<p>Villa Serra, Genova Cornigliano</p>  <p>Urban peripheral context, very polluted. XVIII-XX century</p>	<p>problems of restoration of plastered surfaces (a very common problem indeed)</p>	<p>1787: architect Tagliafichi designs this Villa for Serra family.</p> <p>1951: Genio Civile (Civil Engineers) restoration: reconstruction of reinforced concrete floors, changes in internal volumes, stairs zone remake, roof remake, the "loggia" on north side is rebuilt, slate sheathing on the north side.</p> <p>1978: extraordinary maintenance (external plaster restoration, restoration of terrace parapets, terrace impermeabilisation remake, stairs and frames restoration).</p> <p>1997: Sovrintendenza Beni arch. Makes a request for restoration and conservative renewal.</p>	<p>Material and structures decay</p>	<p>Project required: intervention of prospects</p>

Fig. 1

Details about the different objects.

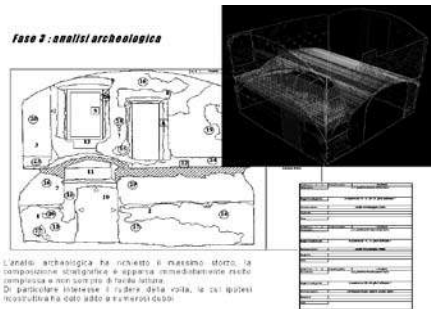


Fig. 2-4

Abstract of "Lavoro del Laboratorio di Restauro – Analisi diagnostica del sito S. Maria in Passione", authors: G. Caruso, M. Cupello, A. Cerone.



MAPPATURA DELL'UMIDITÀ: nella tabella sono evidenziati i valori di umidità rilevati con l'umidostato. Come si può notare la composizione mista della muratura determina sbalzi nei valori registrati in zone contigue. La concentrazione dei valori più elevati nella fascia medio/alta della muratura dimostra che vi è infiltrazione di umidità dall'alto, dovuta all'esposizione della zona sovrastante (campanile).



	1	2	3	4	5	6	7	8	9
L	28+1	19	20	21	19	11	-	26+1	25
I	28+2	28+1	28+2	20	14	11	-	28	28+2
H	28+2	28+1	28+1	28+2	14	-	-	28+1	28+2
G	28+1	28+2	28+1	19	11	11	-	28	19
F	28	28+1	21	22	22	12	-	26	28
E	20	28+2	28+2	17	14	12	-	18	21
D	28	16	22	22	17	12	-	28	19
C	28+2	20	28	22	26+1	12	-	22	28
B	22	12	28	18	28	11	-	21	28
A	28+2	28	19	19	28	14	28+1	-	-

Valori bassi:
0 - 15

Valori medi:
16 - 19

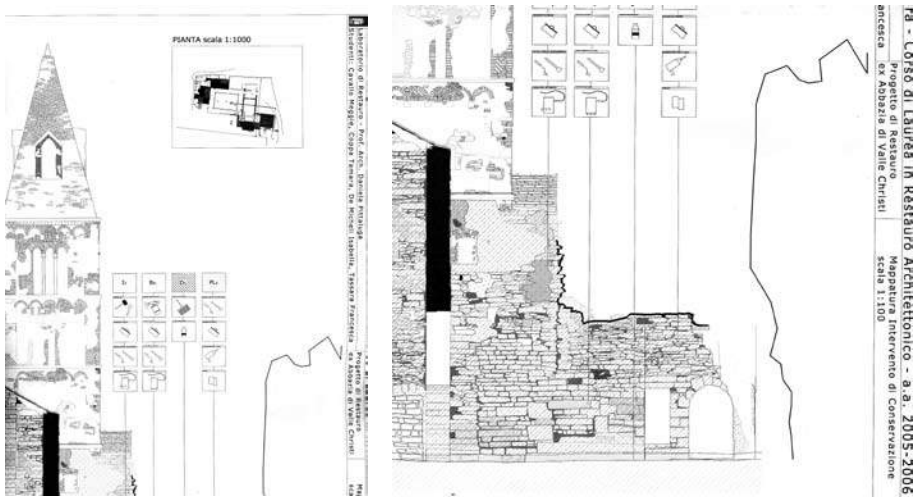
Valori elevati:
20 - 60

La rilevazione dell'umidità sulla parete sud-ovest non è stata riportata perché i valori risultavano nella fascia dell'umidità fisiologica.

STUDENTI : Brusco Manuela, Ferraris Angelica, Ornis Elisa, Pasquale Chiara.

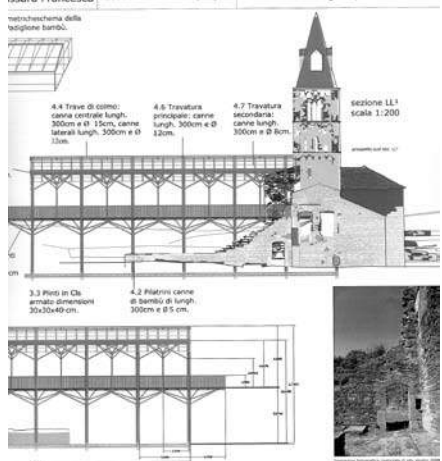
Fig. 5-6

Abstract of "Lavoro del Laboratorio di Restauro – Analisi diagnostica del sito S. Maria in Passione", authors: M. Brusco, A. Ferraris, E. Ornis, C. Pasquale.



Università degli Studi di Genova - Facoltà di Architettura

Corso di Laurea in Architettura
 Laboratorio di Restauro
 Prof. Arch. Daniela Pittaluga
 Studenti: Cavallo Meggie, Coppa Tamara, De Micheli Isabella, Tassara Francesca



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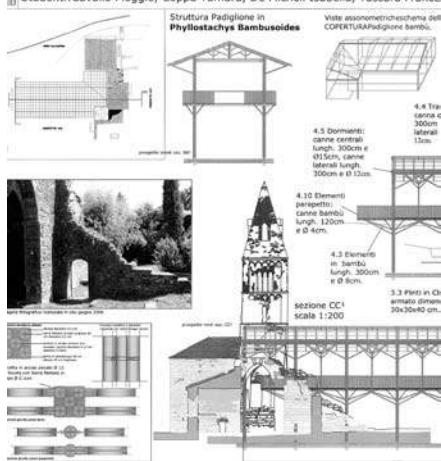
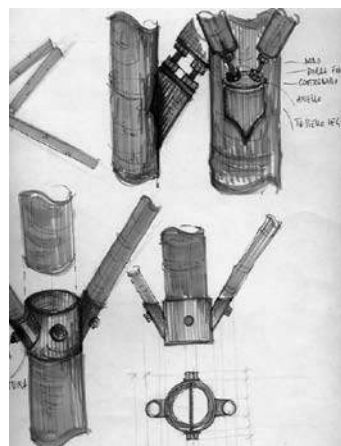
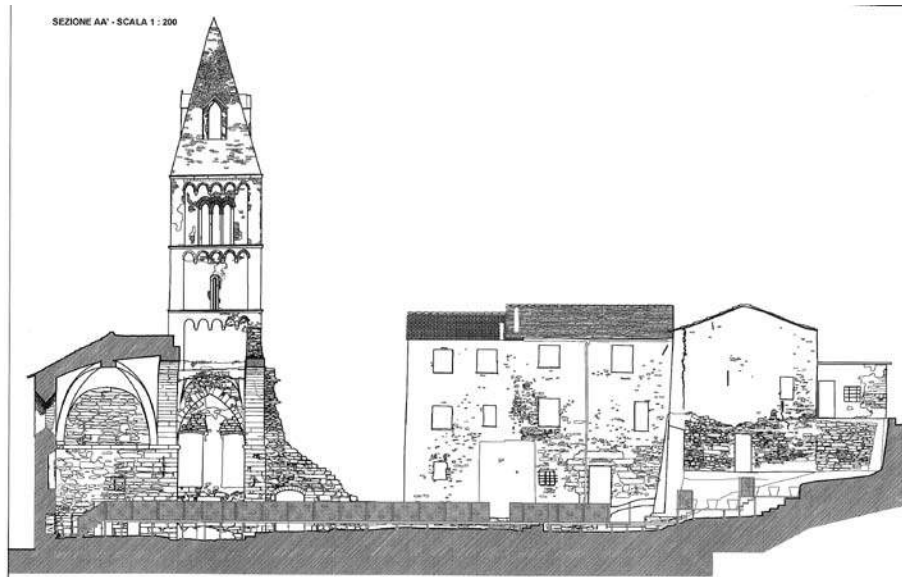


Fig. 7-11

Abstract of "Lavoro del Laboratorio di Restauro – Progetto di restauro del sito valle Christi", authors: M. Cavallo, T. Coppa, I. De Micheli, F. Tassara






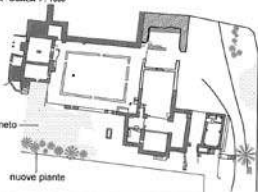


<p>Le passerelle sopravvolute rendono accessibile il sito al pubblico durante tutto l'anno; sono provviste di ringhiere parapetto, rampe per i disabili e scale per raggiungere agevolmente le zone erbose e i servizi. La larghezza netta del camminamento è 120 cm minimo, la pendenza non supera il 7,5%, l'altezza massima raggiunta sul livello del terreno è di circa 90 cm nell'abside.</p> <p>I materiali proposti, acciaio zincato a caldo per la parte strutturale e legno trattato per la pavimentazione, sono stati scelti per la loro durabilità, facilità di messa in opera (o rimozione) e impatto visivo.</p>	<p>PIANTA - SCALA 1 : 1000</p> 	<p>PERCURRENZE</p>
<p>Le carnie, che inizialmente dovevano dividere il sito dall'adiacente campo da golf, hanno trovato un ambiente fin troppo favorevole e hanno occupato gran parte della zona sud-ovest minacciando di invadere anche il chiostro. Tale vegetazione potrà essere sostituita da piante di eucaliptus lungo il confine con lo sport club e accanto alla zona dei servizi. Il prato potrebbe, a fine lavori, avere bisogno di integrazioni, le graminacee adatte a climi umidi come la distychia glomerata, formano manti erbosi piuttosto resistenti a rustici che non hanno bisogno di frequente manutenzione.</p>	<p>PIANTA - SCALA 1 : 1000</p> 	<p>VEGETAZIONE</p>
<p>Inizialmente si era cercato di inserire nel progetto una struttura prefabbricata a gradoni; questa soluzione si è rivelata inattuabile a causa della conformazione del terreno. L'appoggio a terra di passerelle e terrazze sarà quindi costituito da piedi muniti di bussole di regolazione dell'altezza che compensino eventuali pendenze, differenze di quota e cavità della superficie d'appoggio. I telai, costituiti dai sostegni verticali e dai profilati prefabbricati saranno assemblati in sito, dovranno essere il più possibile leggeri e sottili ma dovranno avere un sistema di irrigidimento/controventatura.</p>	<p>PIANTA - SCALA 1 : 1000</p> 	<p>STRUTTURE</p>
<p>Il bagno chimico è stato posizionato in questo punto allo scopo di un'agevole manutenzione e pulizia grazie alla vicinanza della strada carrabile. L'illuminazione è stata scelta con lo scopo di non realizzare impianti permanenti. L'utilizzo di lampadoni ad energia solare con pannelli fotovoltaici integrati permette un risparmio dal punto di vista energetico e soprattutto la loro messa a terra tramite picchetto (senza cavi) rende possibile la loro rimozione nel periodo di non utilizzo del sito come teatro all'aperto.</p> <p>Per quanto riguarda l'illuminazione del policoncreto sono previsti dei riflettori.</p>	<p>PIANTA - SCALA 1 : 1000</p> 	<p>IMPIANTI</p>

Fig. 12-13
 Abstract of "Lavoro del Laboratorio di Restauro – Progetto di restauro del sito valle Christi", authors: V. Biagiotti, M. Brusco, A. Ferraris, E. Ornis, C. Pasquale.



Fig. 14

Abstract of work of "Laboratorio di restauro, aa. 2007-08", Chiostro di S.Bartolomeo della Certosa (Ge) of Barberotti M., Marchini C., Rosselli A., Stano P. "L'analisi dei materiali evidenzia rappezzi in matla cementizia in diverse parti del fronte; in particolare è stato individuato un intervento intorno al bolzone capochiave (primo elemento a sinistra). L'intervento dall'analisi stratigrafica risultava posteriore all'esecuzione della muratura. Questa evidenza ha fatto sorgere alcune domande: Si è intervenuti sulla catena in un secondo momento? Vi erano problemi statici? Perché solo in quel punto? Questi interrogativi hanno di fatto reso necessaria una ulteriore indagine sul posto allo scopo di esaminare con precisione se l'intradosso delle volte del portico al piano terreno fosse interessato da lesioni ed interventi...."



Fig. 15

Abstract of "Lavoro del Laboratorio di Restauro – Progetto di restauro di villa Serra a Cornigliano-simulazione degli interventi di restauro", authors: A. Carradore, E. Oliveri, M. Sotgiu, C. Tacchi.

to focus on its specific building zone while remaining aware of what was happening in the zones beside, above and below, with a combination of direct experience, teacher review and inter-group informal discussions. This laboratory is one of the first strong experience “on site” in the curriculum studii of these student, and this organization allowed them to watch and watch again at the same building from multiple perspectives, consolidating their attitude toward outdoor direct activity.

For the second part each group could select between two possible targets: the Valle Christi in Rapallo and Villa Serra in Genova Cornigliano.

In the second part of course there are two different targets because, in this way, there are more subject for different discussions: restoration of ruins, new function in historical building, consolidation structures and materials, problems of conservation plastered surfaces...

This solution generated collective discussions on very different design issues: the restoration of a ruin and the functional reactivation of a “villa”, stone walls consolidation and plaster covered surfaces, etc.. At this further stage of their training students were able to learn also from the experience of groups working on a different site.

Also, as more groups were concurrently working on different solutions for the same problem, students had a direct experience and global discussion of how different project results (in terms of aesthetics, economics, functionality, ...) originated from the same original situation.

Conclusions and notes on this experience

Thinking to my course, I try to teach giving to the students *“..un’attitudine generale a porre e a trattare i problemi...e a collegare i saperi e dare loro senso”*.¹

The first diagnostic phase of the first part of the course included on-site analyses, synthetical diagnostic reports, and suggestion for the design phase. As Grimoldi says *“Non serve insegnare ad escludere, occorre insegnare a riconoscere”*.² The observation and reasoning skills developed in this phase allowed students to be more conscious of the objects to be restored in the second design and project phase. As a result they produced restoration projects that were on average more “aware” of the object themselves.

“...Che per ogni problema esista sempre un numero infinito di soluzioni logicamente possibili è un fatto di importanza decisiva per la filosofia della scienza. E’ una delle cose che fanno della scienza un’avventura estremamente eccitante, rendendo inefficaci tutti i metodi solo di routine. Richiede che gli scienziati facciano uso dell’immaginazione e di idee ardite, anche se l’una e le altre devono sempre essere temperate dalla critica e dai controlli più severi”.³

Another important issue has been the systematic confrontation with the project targets, that were often recalled during collective work presentations and review of the second phase. Different possible restoration techniques were compared, analyzing the positive and negative consequences they would have on the restoration and confronting these again with the original targets in a trade-off perspective. This discussions deepened their perception of these relations and it proved to be a further stymulous at their creativity. As Popper says, for each problem an infinite number of locigal solutions do exist, and this is very important as it makes science a very exciting adventure; pure routine work is inadequate in scientific exploration; fantasy and inno-

vative ideas are needed, still tempered with critics and rigorous verifications. But, at the same moment, *"...ogni progetto deve misurarsi con il "perché" dell'azione, oltre che con il "cosa" e il "come". Competenza, responsabilità e rigore sono presupposti irrinunciabili dell'impegno progettuale, costituiscono condizioni necessarie per il suo svolgimento: necessarie, ma non sufficienti..."*⁴.

Notes

- 1 Cfr. E. Morin, "La testa ben fatta. Riforma dell'insegnamento e riforma del pensiero", ed. Raffaello Cortina, Milano, p.15
- 2 Cfr. A. Grimoldi, "Cosa si pensa e insegna sulla conservazione e il restauro? E perché?", comunicazione a questo stesso congresso.
- 3 Cfr. K.R. Popper, "Il mito della cornice. Difesa della razionalità e della scienza", ed. Il Mulino, Bologna, 1995, p. 144.
- 4 Cfr. communication at this congress "Metodo, procedure, protocolli" by Paolo B. Torsello.



Session 4

***When
and to What Extent?***

Keynote Lecture by

Carolina Di Biase

Department of Architecture and Planning
Polytechnic of Milan
Campus Leonardo
Pole of Mantua
Italy

**When and to What Extent do we Teach
Conservation/Restoration?**

The questions asked by this workshop and the date of this meeting inevitably recall a prominent figure and particular circumstances that I would like to remind our participants about. A hundred years ago, Camillo Boito (Fig. 1) came to the end of his teaching career at the School of architecture he helped to found and had directed, in the Istituto Tecnico Superiore, now the Politecnico di Milano. For over forty years, Boito educated students of architecture. The profession of architect was itself, in some ways, his creation: an architect had to have a profound knowledge of history and be a talented designer of structures; his mission was to address – from the artist’s standpoint – the huge and still unresolved challenge of inventing the “future style” of modern architecture, and consequently the future face of cities.



Fig. 1
Camillo Boito, founder of the School of Architecture in Politecnico di Milano.

A further, relevant competence that set architects apart from engineers – an emerging and omnipresent profession in Boito’s day – was the study and analysis of monuments, and planning restorative action (Fig. 2, 3).

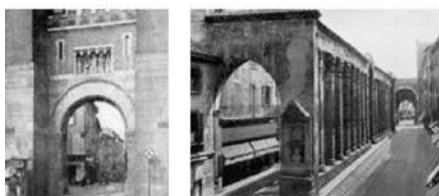


Fig. 2
Porta Ticinese in Milan, restored by Camillo Boito (1861).

Fig. 3
Palazzo Franchetti in Venice, the new stairs volume added by Camillo Boito (1882).

The programmes of the last two years of the course organized by Boito provided for studies on building restoration plus the lectures he personally delivered on “major examples of medieval architecture”: for much of the 19th century these were in fact the subject of important restoration projects and they also provided models for civil architecture, for key contemporary public buildings. Boito’s objective, in late 19th-century

Italy was that the formative background and the clearly defined profile and social role of the architect should share a grand and all-embracing vision.

Boito, the “patriarch of Italian architects” and an acknowledged leading figure of restoration, thus set in motion a study tradition that is now part of the DNA of Milan’s schools of architecture. And this despite the continuous changes – introduced at an ever faster pace in recent years – that have affected conditions, forms and content of teaching, and notwithstanding the unstoppable growth in the number of students.

With specific regard to restoration, the passionate and meticulous study of monuments and the skill applied to exploring their secrets, ages, defects and problems are undoubtedly one side of the Boito legacy. Still today they endow architecture of the past with great significance, made culturally more profound by revealing aspects of buildings’ lives and roles. Also thanks to Boito’s heirs – with Gaetano Moretti and Ambrogio Annoni foremost amongst them – restoration studies in schools of architecture established firm links with the Regional Offices for the restoration of monuments in which they both worked (now the Government Departments for conservation of the environmental and architectural heritage), and with heritage conservation policy.

Boito, moreover, made restoration a “science”: the artist-architect also became a physician-architect able to assess buildings’ state of health, their structural deficiencies and the deterioration of materials. We all recall his famous call for help from chemistry, and his references to the more invasive techniques of surgery, to apply in the most extreme cases.

In the School of architecture, in 1920, Ambrogio Annoni was following in the footsteps of his great teacher and he introduced, on an experimental basis, a two-year course on “Organisms and forms of architecture”. It became compulsory in the Faculty of Architecture set up in 1933, and kept this title until 1938, when its contents were divided between two separate subjects: Stylistic features and Construction features of monuments. During that period, Annoni was teaching History of art and architecture, and Survey and mapping of monuments, in other words, all the then preparatory subjects for restoration. Gaetano Moretti, meanwhile, took on all the programmes addressing Architecture and Composition, and covered the subjects of “Restoration of monumental buildings” and “Conservation of historic buildings and their harmonious role in the development of modern cities”. In 1934 Moretti left the faculty of which he had been Head. The following year, Annoni had obtained his *libera docenza* - authorizing him to teach – for “History of architecture with particular regard to the study of monuments”. Supported by this authorization, in 1938 he defended the motion presented by Gustavo Giovannoni to the 3rd Convention of architecture historians, which reiterated the essential role in Italy’s faculties of architecture, of the discipline of Restoration of Monuments. After World War Two, when Italy was faced with the huge task of rebuilding its bombarded monuments, the practice of restoration enjoyed a new florescence. But from the very outset, restoration as a discipline and its classification, wavering between composition and history of architecture, encountered difficulties which defined its future outcome, as very recent circumstances have shown.

What now divides us from Boito and his direct heirs, and not only in Milan, is the different scope attributed to the concept of conservation. Over 30 years ago in Milan the choice was made to regard restoration as signifying conservation, thereby taking on board the principles set down by John Ruskin, William Morris and Alois Riegl: conserva-

tive intervention was consequently aimed at preserving buildings in their entirety, with all their material and cultural richness. It is on these premises that our teaching is based.

It is far from easy to describe the teaching model followed in our Faculty of Architecture and Society, and the role ascribed within this model to the teaching of restoration. Currently yet another reform of the tertiary education system is in progress and the picture is not yet clearly defined.

Like the rest of the Politecnico, our faculty has adopted the so-called 3+2 degree programme: three years of basic, preparatory studies that are completed with a first-level, bachelor degree, and two years of studies for a second-level, master degree, intended to take the architect's training to a higher level.

In recent years, in the first-level degree programme for Science of architecture and for Environmental architecture, teaching in the sector of restoration has consisted of one compulsory course worth 8 credits, on "Design fundamentals for historic buildings": it is divided into two parts, each earning 4 credits, and students take the subject in their second year (Fig. 4). The first part is an introduction to the discipline, the history of restoration and theoretical and legal aspects of conservation, right up to the present day; in the second part, entitled "Construction features of historic buildings", particular emphasis is placed on analyzing traditional architecture, but the course also takes in 20th-century buildings and construction materials. The students enrolled on the course are expected to be familiar with the many complementary investigation tools: these allow them to determine the periods of construction and alterations, practical techniques, use of materials – also considering building traditions in their specific local contexts – as well as forms of deterioration and their possible causes (Fig. 5). The course also addresses existing installations in historic buildings, to evaluate their possible re-use and upgrading.



POLITECNICO DI MILANO FACULTY OF ARCHITECTURE AND SOCIETY

FIRST-LEVEL, BACHELOR DEGREE

SCIENCE OF ARCHITECTURE

2° year **"Design fundamentals for historic buildings"**(compuls. integrat. subject, 8 credits)

- "History of Restoration" (4 credits)
- "Construction features of historic buildings" (4 credits)

3° year **"Deterioration and diagnostics of historic building"** (elective course, 5 credits)

FIRST-LEVEL, BACHELOR DEGREE

ENVIRONMENTAL ARCHITECTURE

2° year **"Design fundamentals for historic buildings"** (compuls. integrated subject, 8 credits)

- "History of Restoration" (4 credits)
- "Construction features of historic buildings" (4 credits)

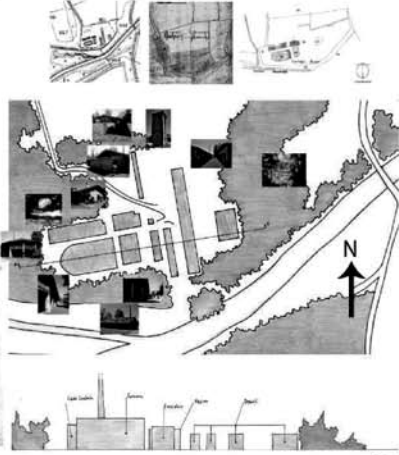
Fig. 4

The first –level degree programmes for *Science of Architecture and Environmental Architecture*, in Politecnico di Milano, Faculty of Architecture and Society.

INQUADRAMENTO TERRITORIALE scale 1:25.000 e 1:10.000



Contestualizzazione, estensione fisica ed analisi



Cenni storici e funzione della Fornace



La fornace di Corno Giovine è oggi l'unica rimasta in piedi in lombardia lombarda poiché a seguito dell'industrializzazione la produzione di mattoni con metodo artigianale venne assorbita al suo interno, nei suoi pressi dalla competizione contemporanea. Questa struttura è per questo un importante monumento storico, presente dal Ministero dei Beni Culturali come testimonianza di una realtà ed una cultura che si estinguerono e che ha permesso la trasmissione e l'evoluzione più recente.

Costruita nel 1802 per risolvere i problemi di approvvigionamento delle campagne la Fornace venne progettata e realizzata nella sua struttura e nella sua destinazione d'uso. È composta da un complesso di edifici per il trasporto, una per il consumo, un'area per la produzione di mattoni, un "fucinatoio" per la formazione dei mattoni ed infine un proprio "spaccato" che consente di osservare il processo di cottura della ceramica.

Il funzionamento della fornace fu particolarmente affidamento sul metodo di cottura con cattedre individuali, da un lato costituito di fucinati e su banco d'opera e sistema a terra e banco caldo. Vi era la partecipazione di un unico artefice di lavoro ed a volte anche l'assistenza di un altro nell'opera per il controllo della produzione per mezzo di mattoni senza smaltina monodirezionale della spugna (ossia una e sospesa alla fornace per mezzo di cavi) spinti da dentro (una volta sopraggiunti) e fucinati (una volta fucinati) per mezzo di bastoni ed a martelli. Da qui il principio di trasporto manuale: erano le parietali e il secondo piano della fornace, in modo da accendere le parti superiori: pezzi in attesa della cottura al fine di evitare l'impedimento. Questo tipo "spaccato" di mattoni era completamente secco e si collocava all'interno dei forni e dei forni a banchi del terreno sottostante una disposizione di case per permettere la penetrazione di calore per tutta la profondità del camino. I mattoni venivano allora cotti separatamente da un mezzo di mattoni cotti, che venivano poi stati disposti ad ogni metro di camino. Invece la struttura che consentiva così il primo piano veniva bruciata il calore sottostante di fucinato e cotto e veniva alimentata, come tutti gli altri mattoni, dalle fornaci. Le temperature elevatissime da due gruppi di mattoni fucinati, alimentati a carbone e disposti ad ogni lato della muratura centrale del primo piano della fornace. Questi due gruppi venivano separati ogni 2-3 giorni, alla sezione di carboni succumbenti, in una sezione tutta la lunghezza della fornace, per poi ricambiare tra loro. Il fucinato era fucinato a fare separatamente, considerando il suo uso 2/3 volte il calore del mattoni, consentendo il calore all'interno dei fucinati e quindi il ridotto tempo di giacimento della culla. A questo lavoro partecipavano solo due uomini, di grande padronato del mestiere, che si alternavano ogni 12 ore e passavano la maggior parte del tempo all'interno della fornace in un ambiente molto caldo che durava fino a fine. All'interno del fucinato, la fornace veniva alimentata dall'ingresso delle bruciate, che consentivano un'ottima cottura, facendo un viaggio d'aria molto lento.

In seguito si convenne che cambiare l'alimentazione da carbone a gasolio avrebbe ridotto i tempi di cottura e la qualità e la durata senza modificare di conseguenza, anzi si sapeva però prevedere che questo nuovo metodo avrebbe esposto la qualità dei mattoni e probabilmente la loro durata. Anche questo fu uno dei motivi che portarono al fallimento della produzione della fornace. Il metodo, una volta scelta che i mattoni dovevano essere trasportati senza tempo per essere fucinati in attesa di approvvigionamento della fornace. Da qui nacque così la camera in gruppi di case e poi trasportati senza lunghi di distanza dal prodotto.

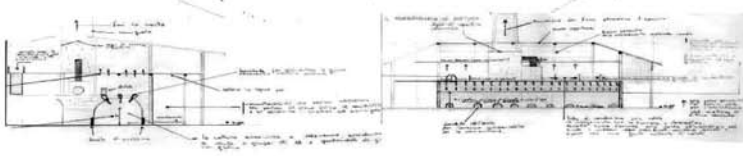
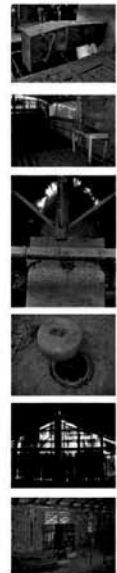
Chi che progettava l'aggiornamento e i costi di questi mattoni (100 lire italiani contesa) fu il baron marchese Carlo della Rocca, successivamente il marchese paragoni di Milano in mano di Carlo di Rocca e la lavorazione artigianale che impiegava maggiori fucinati ed un fucinato che impiegava maggiore calore.

Il gruppo che lavorava alla fornace includeva, insieme a tutto il materiale complementare di un fucinato che impiegava tutto la giornata e che includeva fucinato fucinato e cotto. La fornace era quindi un'attività che durava tutto il giorno e che includeva fucinato e cotto. La fornace era quindi un'attività che durava tutto il giorno e che includeva fucinato e cotto.

La fornace era quindi un'attività che durava tutto il giorno e che includeva fucinato e cotto. La fornace era quindi un'attività che durava tutto il giorno e che includeva fucinato e cotto.



ANALISI FUNZIONALE spaccato assommetrico e sezioni descrittive



FORNACE DI CORNOGIOVINE: CONTESTUALIZZAZIONE E ANALISI

POLITECNICO DI MILANO

FACOLTA' DI ARCHITETTURA E SOCIETA' ARCHITETTURA AMBIENTALE A.A. 2006-2007
CORSO DI CONSERVAZIONE DOCENTI: ALBANI FRANCESCA PETRACCO FLORIANA

BARNINI LINDA 200362 BETTIO ANDREA 20244D



Fig. 5
Survey and analysis of an old brickwork (Design fundamentals for historic buildings, *Environmental Architecture*, bachelor degree).

Lastly, knowledge of stratigraphic techniques serves to introduce the temporal dimension into restoration projects: a building's '*materia signata*' – as Edoardo Benvenuto liked to define it, in other words, materials marked by the hands of men – is thus perceived as an essential element of the project, and preserving it is an imperative condition for conservative intervention.

An elective course entitled "Deterioration and diagnostics of historic buildings" completes the formation of students interested in exploring further both experimental aspects of research on traditional materials, and connections between the manifestations and causes of their deterioration.¹

In the Faculty of Architecture and Society master degree is organized with a choice of study programmes (Fig. 6): *Architectural and town planning design*, *Technological*



POLITECNICO DI MILANO FACULTY OF ARCHITECTURE AND SOCIETY

SECOND -LEVEL, MASTER DEGREE
ARCHITECTURE

Architectural and Town planning design

- 2° year "Restoration studio" (compulsory, 12 credits)
- "Restoration design" (8 credits)
 - different disciplines (4 credits)

Technological and structural design

- 2° year "Restoration studio" (compulsory, 12 credits)
- "Restoration design" (8 credits)
 - "Architectural design" (4 credits)

Interior design

- 2° year "Restoration studio" (compulsory, 16 credits)
- "Restoration design" (8 credits)
 - "Architectural survey" (4 credits)
 - "Buildings physics and comfort systems" (4 credits)

Architectural landscapes and environmental systems (parallel course in English)

- 2° year "Architectural and environmental heritage studio" (compulsory, 12 credits)
- "Restoration design" (8 credits)
 - "Landscape design" (4 credits)

Rehabilitation of Built Resources (parallel course in English)

- 1° year "Diagnostic studio" (compulsory, 16 credits)
- "Diagnostics of historic building" (4 credits)
 - different disciplines (12 credits)
- "History and Theory of Restoration" (compulsory course, 8 credits)

- 2° year "Restoration studio" (compulsory, 16 credits)
- "Restoration design" (6 credits)
 - different disciplines (10 credits)

Sustainable architecture design

- 2° year "Town planning restoration studio" (compulsory, 10 credits)

Fig. 6

The second –level degree study programmes, *Architecture*, in Politecnico di Milano, Faculty of Architecture and Society.

and structural design, Rehabilitation of built resources, Interior design, Architectural landscapes and environmental systems. A new study programme, Sustainable architecture has been recently introduced. Until a year ago, all the programmes involved a compulsory Restoration studio worth 10 credits (7+3), the 3 credits accounted for alternatively by disciplines within the restoration sector such as Consolidation of historic buildings or related subjects such as Chemistry of restoration. Following the introduction of ministerial decree 270, the Restoration studio (12 or 16 credits) will be composed with specific contents in each study programme.

The purpose of the restoration studio is to prepare a project. The relative activities are carried out during one semester, generally the third semester of the two-year professional course, which coincides with winter when working on-site becomes more difficult.

Studio activities (Fig. 7) involve, on average, 40-50 students at a time and in each case teaching is organized along similar lines, with classroom sessions and exercises conducted in the field. Content tends to vary according to the objectives of the different study programmes: priority may be placed either on environmental and landscape aspects of conservation, or alternatively on the scale of the buildings, or their interior design. The subject of analysis and project planning may therefore be a building, or a part of a city or a land area. Students are expected to examine the tools and preliminary exploratory method for the project suggested during the lessons, in order to reconstruct – on a general level at least – the history of the context, places and buildings (Fig. 8, 9). They must then come up with a precise investigation programme, so they may subsequently single out and describe the deterioration problems and strategies devised to combat them. In preparing the restoration project attention must be paid to the legal and normative framework as well as to preservation and safety provisions, especially in the case of buildings intended for public use, where matters such as comfort, climate control and installations, and accessibility are also very important.



POLITECNICO DI MILANO
FACULTY OF ARCHITECTURE AND SOCIETY

“RESTORATION WORKSHOP“ (40-50 students)

- classroom sessions
 - exercises conducted in the field
- **investigation programme** (history of the context, places and buildings; material features; constructive techniques; stratigraphic mapping; deterioration problems; ...)
- **type of intervention** (structural consolidation, maintenance of finishings and possible additions, insertion of new installations, introduction of new architectural elements on different scale)
- **normative framework** (comfort, climate control and installations, accessibility, ...)

Fig. 7

Restoration studio activities (master degree, *Architecture*).

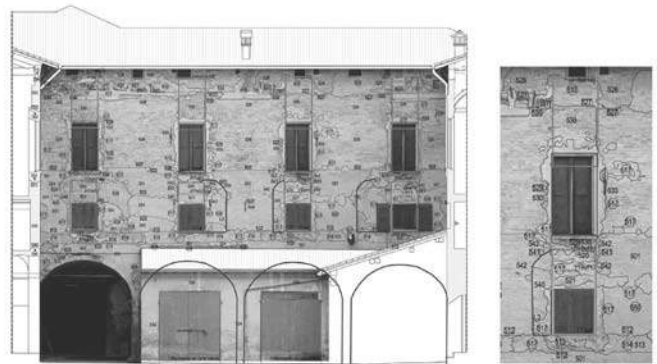
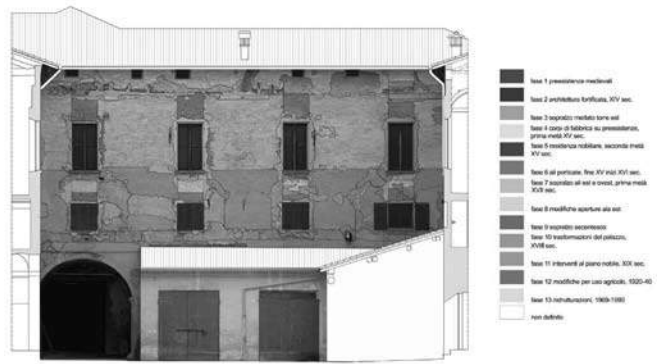
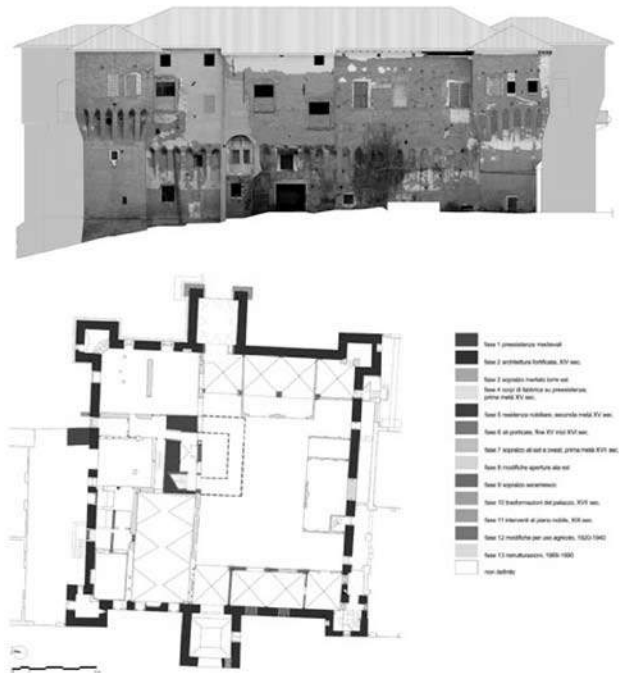


Fig. 8-9
 Spilamberto, Rocca Rangoni, stratigraphy mapping (Restoration studio, master degree, Mantua Campus).

The students learn to consider issues related to the preservation of existing structures and materials while working on the design of new elements and structures. Comparing the two, they arrive at choices as to type of intervention: structural consolidation, maintenance of finishings and possible additions, insertion of new installations, introduction of new architectural elements on different scales.

The study programme Design and rehabilitation of built resources offers a more targeted approach to design applied to the built environment: it comprises a compulsory subject of Theories and history of restoration; a diagnostics studio in the first year of the master degree course, and a second-year restoration studio where related projects are developed. Under this same programme first-year master degree students can take a course of in-depth study of restoration theories and history².

The Faculty of Architecture and Society also offers a course of study on design related to the built environment, at the Mantua campus of the Politecnico (Fig. 10) – and this is where I myself do most of my teaching. Mantua is well-known for its history and its heritage of outstanding architecture and urban planning, as well as for the features of its territorial context. These characteristics make it a place of special interest for research and experimental studies aimed at safeguarding a precious cultural legacy which, as elsewhere, is increasingly at risk. In the formative sector restoration therefore has an essential role to play.



POLITECNICO DI MILANO FACULTY OF ARCHITECTURE AND SOCIETY, CAMPUS MANTUA

**FIRST-LEVEL, BACHELOR DEGREE
SCIENCE OF ARCHITECTURE**

2° year **“Fundamentals of conservation of historic buildings”**(compuls. integrat. subject)

- “Theory and History of Restoration” (4 credits)
- “Construction features of historic buildings” (4 credits)

3° year **“Tools and methods for research on historic building”** (elective course, 4 credits)

**SECOND -LEVEL, MASTER DEGREE
ARCHITECTURE**

1° year **“Restoration studio”** (compulsory, 16 credits)

- “Architectural restoration” (8 credits)
- “Consolidation of historic buildings” (4 credits)
- or
- “Deterioration and diagnostics of historic materials” (4 credits)
- “Architectural Survey” (4 credits)

2° year **“Culture and history of conservation of built environment and landscape”**
(elective, 4 credits)

“Consolidation of historic buildings” (elective, 4 credits)

Fig. 10

The first -level and second-level degree programmes in Politecnico di Milano, Faculty of Architecture and Society, Mantua Campus.

In the second year of the first-level degree in Science of Architecture there is a course on "Fundamentals of conservation of historic buildings"; it is made up of 8 credits, 4 for Theories and history of restoration and 4 for Construction features of historic buildings³. The master degree includes studio activities (Fig. 11, 12) that, in the first year, account for 10 credits and are organized in three sections with 30/40 students each. The credits earned are: 8 for Architectural restoration and 4 for Consolidation, in two of the three sections, and Deterioration and diagnostics of historic materials, in the third and last section.

In the second year there are two elective courses worth 4 credits: "Culture and history of conservation of the built environment and landscape" and "Consolidation".

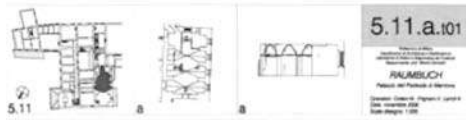
For the master degree track permanent lecturers cover 16 of the total 36 credits assigned to restoration studio, while two research fellows handle 8 more. The remaining 12 credits are covered by staff under contract, including an expert from the Government Department for conservation of the environmental and architectural heritage. Here too compulsory courses are taught by full professors. It is evident from the way full faculty members are distributed that greater importance has so far been attributed to restoration taught within the master degree course.

Exercises are carried out with the help of the Laboratory of Analysis and Diagnostic Evaluation of Historic and Modern Buildings which is used particularly by final-year students preparing their theses (for instance for analysis of microclimate and installations, with preliminary assessment of the state of traditional materials, timber roof framework, and finishings).

When we analyze teaching results, a limitation has frequently been noticed. Because of the gap separating studio activities from what is taught in the three-year degree course to very large classes, students are usually insufficiently conscious of the links between basic knowledge and its application. It consequently becomes necessary to return, at least in part, to subjects and methodologies already covered.

Now that study programmes are to be re-examined in the light of ministerial decree 270, we proposed a more effective solution to faculty staff members. The integrated subject of Design Fundamentals for Historic Buildings, currently pursued during the second year of the three-year course, could be turned into a first-level restoration studio. These design activities would be more limited in scope than the experience gained by master degree students; however, objectives and method would be clearly apparent. The programme teaches students to identify techniques and different construction periods simultaneously present in a building, as well as materials used and their state of deterioration. It could be integrated with a preliminary restoration project designed to preserve the materials of traditional buildings. This activity could be supported by in-depth seminars and by study and application of novel consolidation, cleaning and protection technologies. There is also room for more explicit synergy with other courses, particularly those addressing architectural investigation, and with the electives on restoration subjects, as well as with internships. Steps such as these would make the whole "fabric" of acquired knowledge easier to identify, and its end purpose would be clearer.

It would also mean studio activities in the first year of the master degree course could deal with more complex issues, connected with statics and with new uses of buildings. The master degree studio could also deal in a more systematic way with



5.11

5.11.a.101

RAUBLICH
 Mantua del Podestà e Ragione
 Dal numero 258
 Febbraio 1971

5.11 - I semigraditi C' sulla parete A e B' - I semigraditi della prima campata della parete A mostrano l'esistenza di un'antica finestra monofora con arco a tutto sesto, oggi tamponata. Nella mappa del 1871, tuttavia, si evidenzia l'esistenza storica dell'apertura rinvenuta grazie alla termografia e rappresentata chiaramente come una porta, e non come una finestra: si deve supporre quindi che essa fosse stata modificata e che venisse a mettere in collegamento diretto la sala 5.11 con un bastione esterno. I lavori già permessi da tempo di collegare le stanze 5.13 e 5.23 senza passare per il locale 5.14, che era dedicato il corpo scala che deve accedere ai piani superiori e rifinire, in modo da semplificare i percorsi.

La demolizione del battente, avvenuta nel 1971, ha permesso agli esecutori (Grazzini - Vico) di ricostruire l'antica apertura monofora come si vediamo oggi, individuandone in particolare il basale e la parte inferiore che probabilmente erano stati difesi quando fu creata l'apertura sul battente rivestito nella parete del 1871.

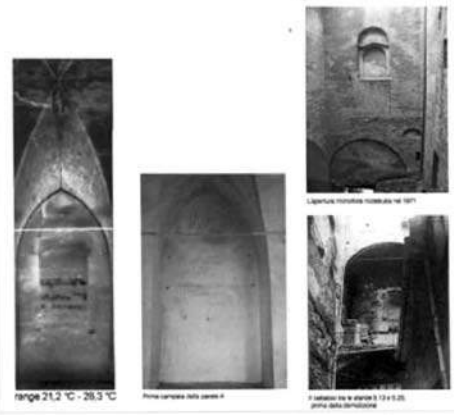


Fig. 11
 Mantua, Palazzo del Podestà, analysis from Raumbuch or rooms book (master degree thesis, Mantua Campus).

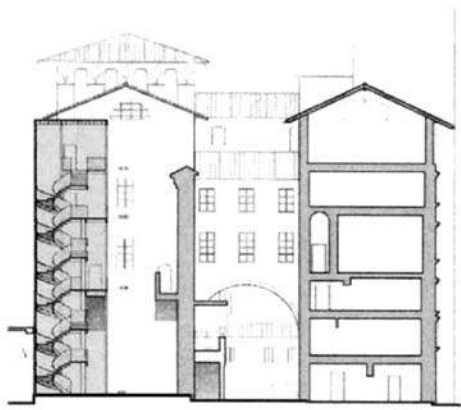


Fig. 12
 Mantua, Palazzo del Podestà and Palazzo della Ragione, preliminary feasibility studies: in red or yellow the new volume containing the stairs (master degree thesis, Mantua Campus).

study and conservation of late 19th-century and 20th-century architecture, with its iron and reinforced concrete buildings.

Lastly, the revised educational programme should introduce a parallel course on Design and rehabilitation of built resources, taught in English and offered mainly to foreign students.

After the master degree, a further course in the field of restoration is offered by the two-year School of specialization in monument restoration, which prepares graduates for professional practice; alternatively, studies can continue with a research doctorate in Conservation of Architectural Heritage.

I won't talk here about the objectives and programmes of the PhD in Conservation of the architectural heritage (see a selection from seminar activities posters in fig. 13): Professor Alberto Grimoldi who coordinates the programmes mentions them in his report included in the proceedings of this meeting.

I'd like to say a little more about this School for specialist in restoration of monuments (Fig. 14), which was founded in 1989 at the Politecnico di Milano by Amedeo Bellini, who still directs it today. It operates alongside the already existing schools in Rome and Naples. The initial intention was to open a single school in association with the Politecnico di Torino and the Università degli studi in Genoa. However, bureaucratic constraints and a short-sighted and limited legislative provision prevented the plan from materializing, and each university went ahead on its own. These same constraints stopped the Milan school from having a name that clearly indicated its objective, which is: to train technical experts with the cultural background and competencies needed to address the problems of transforming the historic built environment, both buildings and urban landscape, irrespective of their monumental qualities.



Fig. 13
Posters of Seminars held at PhD in Conservation of Architectural Heritage.

All this with the aim of doing everything possible to preserve formal features, to keep original materials intact, to maintain the plurality of meanings that the built environment encompasses, in other words, with rigorous respect for historic stratification.

In 18 years of activity the School has awarded its diploma to about 150 architects, most of whom exercise their profession in the conservation sector, either in private practice or in conservation institutions. It is significant that all the School's graduates who entered the most recent competition for senior posts in Government Departments for conservation of the environmental and architectural heritage came out winners.

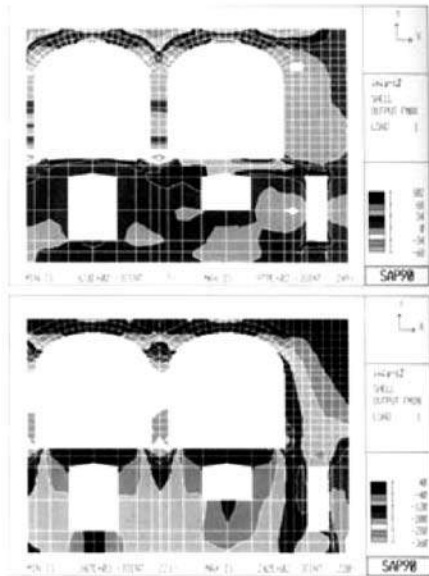
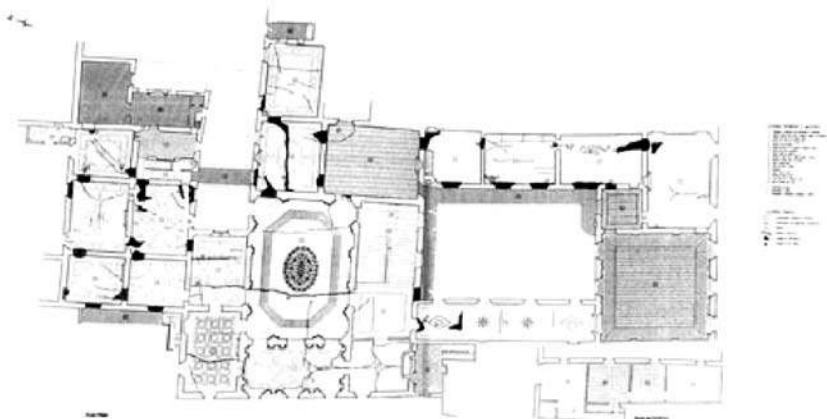


Fig. 14
Structural analysis of historical buildings
(Specialist in Restoration of Monuments
thesis).



Teaching activities, which previously occupied students full-time, have in recent years been concentrated in one week per month. The students also do work placements in government conservation departments or in high-profile companies operating in the restoration sector. In addition, each year, in association with other Italian or foreign universities or institutes, the School organizes a study trip to promote exchanges of experiences and cultural enrichment.

The students themselves come from foreign as well as Italian universities and from different educational backgrounds: they include graduates in architecture, engineering, archaeology and the humanities. Although the course programmes have to adapt to set frameworks that leave scant margin for distinctive content, they nonetheless make it possible to explore conservation topics in much greater depth than permitted in students' earlier undergraduate studies. One area attributed particular importance is the analysis of buildings in terms of their physical construction, considering both masonry with use of traditional materials, and modern concrete. Practical teachings, in such fields as consolidation of walls and comprehensive structural intervention, are part of the conservation design process, which is developed in the classroom but also with year-long on-site experience. Teaching focuses specifically on urban-scale intervention and on relations between general land-use planning and actual conservation work; history of restoration theories and interventive practices; archaeometrics and related exercises. A number of disciplines – archival conservation and archaeology, for instance – extend the frame of reference to sectors of study inevitably connected with the work of conservators.

This explains, in brief, the model that we are still working at and improving in the Faculty of Architecture and Society of the Politecnico di Milano: teaching restoration starts in the first-level degree, and goes on to the postgraduate level with different opportunities.

The contributions that our foreign guests and Italian colleagues presented in this part of the proceedings respond to a series of questions raised by the promoters of this event. It's true this part of the workshop is meant to deal primarily with "when, and to what extent?". However, there are a number of issues inevitably linked with this question.

The choice of where to position the teaching of restoration is part of a sometimes mandatory strategy that is often linked with number of credits available and type of subject – compulsory, elective etc. – at least for courses serving to train architects for the profession. Somebody has asserted that restoration subjects are to be given in postgraduate levels.

The choice that the various formative approaches often have in common – in the countries and in the experience of our foreign colleagues too – is to keep restoration teaching, in its various forms, to the last years of study. The models proposed and the relative teaching structures instead appear to be widely diversified.

In the École d'architecture annexed to the University of Montreal in 1964 the subject of Conservation de l'environnement bâti is taught in one of six *ateliers* each of which corresponds to a different study programme. Professor Deom explains the significance of the multidisciplinary approach that informs the *atelier* for third-year students who are close to qualifying and entering professional practice; in effect, it bears some resemblance to the *sintesi finale* workshops run for several years in Italian facul-

ties of architecture. Participating in the *atelier* are lecturers from the various schools of the Faculté de l'aménagement where architecture, town planning, architectural landscapes and history of architecture are taught; also involved are experts from government conservation departments and professionals from architecture firms, able to provide an important link with professional practice. Education in the area of heritage awareness, on the other hand, is addressed in history of architecture lectures that form part of the first-level degree course.

In his description of the teaching model followed in his faculty, Professor Hugues Wilquin from the Polytechnic in Mons (Belgium) writes that in Master programmes 1 and 2, taken in the 4th and 5th years of studies, the compulsory subject is entitled Composition 4. In this subject, 35 hours of lessons are spent on restoration and rehabilitation, and 100 hours on students' restoration/rehabilitation project. The optional course on Restoration management, for a total of 100 hours, retraces the various phases of the students' restoration design, paying special attention to the history of the building considered, assessment of deterioration and structural diagnostics. It is completed with an "advanced interdisciplinary project". The examples in this report refer to the key role played by architectural design in intervention on built resources, and how this materializes.

By contrast, Professors Rodica and Mircea Crisan from the "Ion Mincu" University of Architecture and Urbanism in Bucharest describe a model in which teachers of history of architecture and teachers of restoration techniques collaborate to train architect-restorers. The department of History and conservation is in charge of teaching Theory of restoration, a compulsory subject taught in the second semester of the 4th year; the Technical sciences department handles problems encountered when intervening on existing buildings, with one elective course on Technology of building rehabilitation, 28 hours in the first semester of the 4th year, and another on Structural restoration, 28 hours in the 5th year (here students also study the highly relevant subject of seismic risk reduction). The one compulsory subject is therefore Theory of restoration. Here therefore historical and cultural aspects appear to prevail over the technical side of the discipline.

The educational programmes of the Faculty of architecture in Kayseri, Turkey, place importance on conservation of the built environment – as Professor Lokce wrote. However, subjects related to conservation are addressed only as part of 'summer practice' teaching. Mainly through their project exercises students learn that "conservation is not a remote field of interest but on the contrary, a way of seeing and considering the historic environment".

Professor Salman, of Istanbul Technical University explains how it has been possible to include the subject of restoration in the degree programmes of that university.

In the Spanish schools of architecture notable difficulties are still being encountered with the introduction of restoration as a specific discipline in their curricula. So far until a few years ago the only compulsory course on Restauración arquitectónica was offered by the school in Granada. A few elective courses – with enrolments therefore limited to the relatively few students who opt to take them – are now being taught in Valladolid and Barcelona; otherwise, teaching of restoration is restricted to postgraduate studies. The introduction in the Universidad politecnica of Valencia, in 2002, of Architectural restoration as a compulsory subject, with 4.5 credits (3 theoretical and 1.5 practical, total 45 hours), is to be considered a conquest. Offered alongside

it – as professors Vegas, Mileto and Noguera, its promoters, report – are some optional subjects in the second-level graduate course, and a new offering in the postgraduate course that unifies previous Master and PhD courses in the form of a European master. “Given that the compulsory subject is the only possibility to learn some smattering of preservation for the majority of the students”, they decided to organize the subject so as to make it as formative as possible. Professor Vegas and Mileto write about the way subject, offered to no fewer than 500 students, is structured, as well as about the ambitious project that is completed in the postgraduate courses. They also explain how the magazine “R&R y Loggia” and the foundation of the Instituto de Restauración del Patrimonio are contributing to the organization of teaching programmes for restoration courses.

Professors Montiani and Bensi study the subject of colour in architecture, the history of colouring techniques, in terms of both material culture and artistic culture, and the problems of preserving frescos and wall paintings. They propose that subjects of this type could and should be introduced into master degree courses in faculties of architecture.

Another issue brought to light by the contributions of colleagues concerns the way in which conservation of the built environment is interpreted and put into effect. Profound differences have been made apparent by the profiles of our respective teaching programmes presented by different contributors. We see, for example, that students learn to consider “différent degrés d’intervention possible sur le bâti existant... en fonction des valeurs patrimoniales déterminées du lieu”, to explore them and then to apply them in their projects. By contrast, in other cases students are asked to consider existing buildings, including non protected historic buildings, in the same way. In this case the distinctions between monuments and historic buildings are not related to the different “value” ascribed to them but to what is actually revealed by a meticulous study of each individual building.

Anything but new, these questions clearly need to be discussed longer.

Notes

- 1 The compulsory courses are taught by two full members of faculty staff – one full professor and one associate professor – and by 10 lecturers on fixed-term contracts who have research doctorates and often also the diploma awarded by the post graduate School for Specialists in Restoration of monuments.
- 2 The teaching staff involved in the restoration workshops consists of 3 full professors, 2 associate professors, 2 research fellows and 4 lecturers on fixed-term contracts. Four elective courses (Chemistry and technology of restoration, Consolidation of historic buildings, Deterioration and diagnostics of historic materials, Theories and history of restoration) are offered during the second year of the master degree; they are taught by a full professor, associate professor, one research fellow and a fixed-term lecturer (for Chemistry of restoration the former head of the National Research Council “Gino Bozza” Centre in Milano)
- 3 The course accepts enrolments from 120 students. There is also an elective course “Tools and methods for research on historic buildings”, which had 68 enrolled students this year. Compulsory courses for the first-level Science of Architecture degree are taught by lecturers on fixed-term contracts, PhD graduates in conservation from the Politecnico di Milano. The elective course is taught by a full professor.

Rodica Crisan
Mircea Crisan

Technical Sciences Department
"Ion Mincu" University of Architecture and Urbanism
Bucharest
Romania

**Contributions of the Technical Sciences Area
in Teaching Conservation/Restoration
of the Architectural Heritage**

By tradition, the department of “History and Conservation” is in charge with the teaching of the “theory of restoration”, discipline historically born and grown up with specific regard to the preservation of the most valuable architectural heritage protected by specific legal status and particular principles of intervention.

As a complementary formative demarche, our “technical sciences department” has assumed the task of teaching several aspects concerning the technical part of the interventions on existing buildings, including listed monuments, but also not protected historic and more recent built patrimony.

May be the best example of integration between “theory” and “technique” should be the post-graduate Master program in “conservation and rehabilitation of the built heritage”, coordinated by both mentioned departments. But considering the main/basic architectural education process (in our School 6 years of study for the architect diploma) we shall refer here to some elective disciplines - as are Structural Restoration and Technology of Building Rehabilitation - taught in the second cycle of the architectural education (4th year of study) within the “technical” disciplinary area.

In the followings we shall present these disciplines, trying to give some answers to the introductory questions proposed by this first meeting of the “conservation” sub-network: Why? What? Who? When? To what extent? How?

Structural Restoration

The course (teacher: prof. eng. Mircea Crisan) offers to the students in architecture the opportunity to improve their competences in conservation/restoration with particular knowledge concerning the structural safety of the historic buildings.

Why?

It is well known that, operating directly on the original substance of the building, the structural interventions are potentially the most invasive for the old fabric; that’s why they require a particular profile of structural engineer, so that safety requirements could be reached within the original concept of the building and without altering its authenticity; it is a necessary condition in the case of architectural monuments, but – for several reasons – it is also a sound attitude in the case of historic buildings in general (even if not listed).

The problem of the structural safety is especially important (and threatening!) in the case of the Romanian built heritage, confronted with a very intense seismic activity (but also with ‘heavy’ codes and their ‘rigid’ application!), so that a special expertise of the person in charge is very necessary. In such context, the mission of the architect – currently coordinator of the project – is even more ‘delicate’ than usually and requires particular knowledge, including (at least) general notions about the principles, methods, techniques (and dangers!) proper to the engineer’s intervention on historic buildings.

What?

The course points out the particularities of the engineering approach in interventions on historic buildings, with special attention paid to the restoration of architectural monuments. Theoretical and methodological aspects of the analysis, diagnosis and structural treatment are taught, critically reflecting current national and international

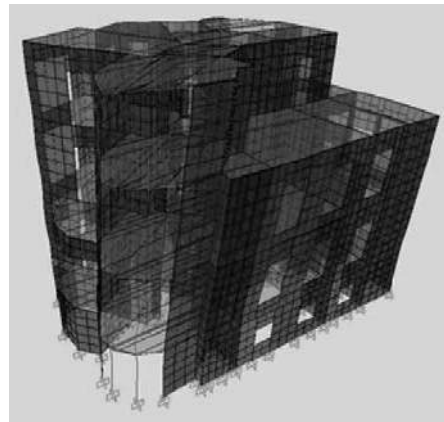


orientation in the field, as well as conclusions of the personal experience of the teacher in the structural restoration design.

Synthetically speaking, the teaching follows several basic ideas concerning the structural restoration demarche:

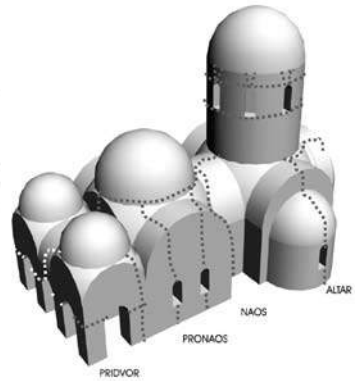
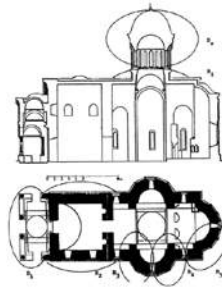
- knowing and understanding the historical building before deciding any intervention
- the minimum effective intervention (to improve, not to transform)
- technological compatibility as a sine qua non condition for the treatment.

The first part of the course gives to the students the general knowledge on the historic evolution of the theories in structural restoration, international documents and legislation in the field; the specificity of the structural interventions on historic buildings in general and in the particular case of the listed monuments; the methodological steps of the intervention; the general symptoms of structural decay and their causes; the building's vulnerability and the safety evaluation; the expected level of safety; the treatment materials and techniques, and their selection criteria; the structural restoration design and the work site.



In the second part of the course, for the different component parts of the historic buildings (walls, foundations, arcs and vaults, floors, roof structures) the traditional materials and techniques, the static behavior, the typical seismic damage mechanisms and the specific treatment technologies, are described and exemplified with relevant case studies.

As an example of architectural heritage with particular typology, the orthodox churches case is distinctly presented: the historic evolutions of the main structural types, their structural sensibilities, their specific mechanisms of damage and correspondent treatment solutions, are illustrated by theoretical elaborations and practical examples.



The third part of the course is dedicated to the investigation of complex case studies.



Who?

The teacher is a structural engineer with large practical experience in restoration (about 160 structural diagnosis and projects for listed monuments) and a doctor degree in the same field achieved at the School of Architecture in Bucharest (UAUIM).

When? To what extent? How?

The course (elective) has 28 teaching hours and is now taught in the second semester of the 4th year (was in the 5th), in parallel with the “theory of restoration” course (compulsory). It generally consists in lectures with digital image support, being richly illustrated with case studies from the teacher’s own portfolio.

Few years ago, the ex-cathedra course was integrated by visits in work sites, but the increasing number of students/course – presently more than 100 – makes practically impossible to organize such visits.

For the final evaluation, students are asked to deliver a personal research work on a free chosen theme in the field of the “structural restoration”.



CONSOLIDARE CORP BI-SERICA IN SECTIUNEA LONGITUDINALA



Technology of Building Rehabilitation

The course (teacher: prof. arch. Rodica Crisan) considers the rehabilitation as a conservative *attitude* (and not as an intervention category) aiming to restore and/or 'upgrade' the *use value* of the built heritage within the limits imposed by its valuable characteristics.

The built heritage is here understood as depositary of *reusable resources* characterized by a variable ratio of use value and cultural significance, ranging from architectural emergencies (as the particular case of 'non renewable resources'), up to strictly 'utilitarian' constructions. The accent is put on the large category between the two extremes and in particular on the *minor historic architecture* which's individual quality may not justify a protection in the sense of the "monuments' law" but which mostly defines the traditional urban landscape and local identity.

Why?

It is already proved and generally accepted that architects are (and would be) engaged more in re-designing existing buildings, than in designing new ones. In a society which aspires to be 'sustainable', the efficient use (and re-use) of built resources becomes (or has to become) more and more a reality of the professional practice. The course aims to stimulate an attitude responsible for the quality of the built environment and conscious of the reuse potential of the existing buildings, as a component of the 'teaching of sustainability' in architectural education.

In order to be effective, the process of re-designing existing buildings requires specific competences, quite different from the 'routine' of designing new buildings generally taught in the schools of architecture. In this context, it is evident that the first motivation of a 'rehabilitation' course is to give to the future architects the basic theoretical and methodological competences in this specific design field.

Another motivation of the course concerns the assignment of general knowledge on certain technical aspects of the intervention on historic buildings, and also the introduction of the concept of 'use value' in relation with listed monuments, both aspects integrating the restoration teaching.

Last but not least, the course aims to create an ATTITUDE respectful toward the architectural heritage – even modest and not listed! – paying special attention to the MINOR HISTORIC ARCHITECTURE presently the category of built heritage the most aggressed by real estate speculations and ignorant interventions.



What?

The students are guided to discover, to understand and to appreciate old buildings, to be able to “see” their qualities beyond superficial (and often artificial) decay symptoms. take decisions in base of objective criteria, based on an accurate building investigation, to design solutions able to increase the use value by the minimum intervention, without altering the intrinsic values of the historic building, being it listed monument or not.

The teaching includes:

- elements of ‘theory of rehabilitation’ (use value of existing buildings; building’s ‘performances’ as measure of the use value; building’s decay as low level of ‘performances’; the ‘upgrade’ of the use value within the building’s characteristics or ‘maximum effectiveness by minimum intervention’; relation conservation – transformation; relation use value – cultural value; compatible use; compatible intervention technology);
- basic knowledge concerning the historic buildings (traditional building materials and techniques as pre-modern instruments to offer ‘performances’; traditional Romanian urban housing as possible ‘place’ for rehabilitation: historical evolution and typology, cultural significance, present state and potential use value);
- technical and methodological aspects concerning the buildings’ decay phenomena and their treatment (the diagnosis and the treatment strategy; the physical building’s decay and materials’ pathology; the humidity of historical buildings: effects, symptoms, sources, diagnosis, treatment strategy and techniques; the structural safety of historic buildings).



Who?

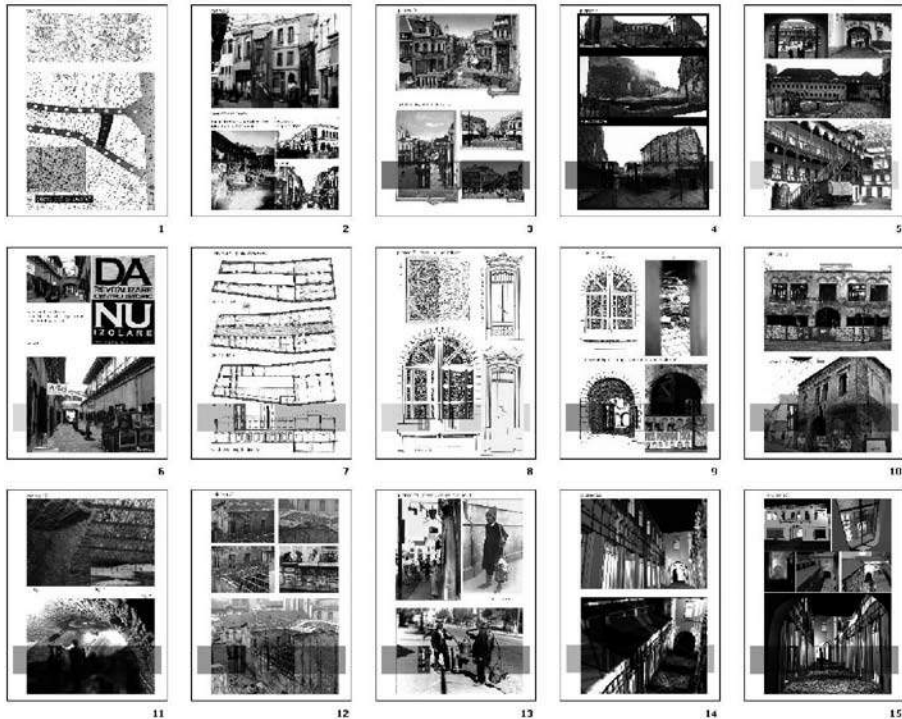
The teacher is an architect, a theorist, with research background in the field of traditional housing, masonry pathology and the 'theory of rehabilitation' and a doctor degree in the field of 'building rehabilitation' achieved at the School of Architecture in Bucharest (UAUIM).

When? To what extent? How?

The course is an elective one; it has 28 teaching hours and it is taught in the first semester of the 4th year, before the first contact of the students with the "theory of restoration" (compulsory course, in the second semester of the 4th year).

Generally the course consists in lectures with digital image support (PowerPoint presentations). Lately, due to the increased number of students / year of study, the course involves about 120 students (or even more); this situation limits the possibilities of applying non-conventional teaching methods (like visits, debates, panel presentations) as it used to happen previously.

For the final evaluation students are asked to deliver a personal research work pointing out the reusable resource quality of buildings, either based on a bibliographical study, either by a rehabilitation proposal for a specific case (building) freely chosen and investigated in situ. They are also encouraged to make a short public presentation of their work, with image support (PowerPoint presentations, video-clips) in front of their colleagues which may formulate questions and comments.



Extract from the final exam work (image support for oral presentation) of the students Bejan Alexandra & Dinu-Popa Emil, 4th year 2005-2006

Hugues Wilquin

Faculté Polytechnique de Mons
Belgium

**Restauration et Rehabilitation
du Patrimoine Architectural**

Synopsis

Ce texte reprend la méthodologie didactique de l'enseignement et les concepts enseignés en matière de restauration et de réhabilitation du patrimoine bâti en Masters 1 et 2 (4^{ème} et 5^{ème} année de la formation).

L'enseignement

L'enseignement en Master 1 et 2 s'articule en trois phases non nécessairement inclusives:

- L'enseignement obligatoire (35 heures) qui comprend le cours de Composition architectonique 4 (restauration et réhabilitation) et le projet de restauration/réhabilitation 4/sd semestre (100 heures).
- L'enseignement optionnel Management de la restauration en Master 1 et 2 (100 heures).
- Le choix optionnel d'un travail de fin d'études (392 heures)

Comme je reprendrai essentiellement ci-dessous les concepts et méthodologies reprises dans le cours obligatoire, pour décrire de manière succincte l'enseignement et le choix optionnel de T.F.E., nos étudiants ont un choix possible de spécialisation, le Management de la Restauration qui s'étend sur deux ans et s'articule comme suit:

Management de la restauration 1 (4 ECTS) en Ma 1.

MR1.1. Acquisition de données, symptomatologie, anamnèse et prospectives. 2 ECTS

MR1.2. Structures: acquisition de données et modèles-types spécifiques de calculs. 2 ECTS

Management de la restauration 2. (5 ECTS)

MR2.1. Etudes sanitaires et diagnostiques approfondies. 2 ECTS

MR2.2. Techniques d'interventions. 2 ECTS

MR3.3. Projet interdisciplinaire avancé de restauration (jusqu'aux techniques de restauration) articulé au grand projet de Ma2. 1 ECTS

Le choix optionnel pour le T.F.E. amène chaque année, environ quatre à cinq étudiants vers des mémoires ayant trait à la restauration du patrimoine immobilier. Des domaines variés sont abordés (le patrimoine en zone sismique belge et étrangère (Sicile, Grèce,...), l'évolution du patrimoine (région mosane,...) l'archéologie et la réhabilitation industrielle,...

L'enseignement obligatoire comporte un projet de restauration/réhabilitation autour d'un problème patrimonial (l'abbaye de Gembloux, le château d'Havré,...)

Le Cours de Base, les concepts développés

J'insisterai plus particulièrement dans cette communication sur les concepts développés.

La Charte de Venise

L'attitude en terme de restauration et de réhabilitation du patrimoine immobilier est issue de la charte de Venise édictée en 1964, confortée par ailleurs par les chartes et recommandations successives promulguées par l'IcoMoS (International Council of Monuments and Sites). (ICOMOS 1964¹).

Mais d'où provient cette charte et comment la considérer aujourd'hui??

La Lecture de l'Histoire et la Discontinuité des Styles

Dans son "Journal de voyage en Italie", Montaigne écrit:

"Sur les brisures mêmes des vieux bâtiments, comme la fortune les a logés, en se dissipant, ils ont planté le pied de leurs palais nouveaux, comme sur de gros lapins de rochers, fermes et assurés" (Montaigne²).

La stratification de l'architecture, la réutilisation des matériaux et les changements de fonctions ont profondément influencé l'architecture. Ce processus est plus un état de fait qu'une déduction conceptuelle.

Après le déclin de l'empire romain, l'abandon des monuments anciens et la réutilisation de leurs matériaux devient une caractéristique essentielle de la vie urbaine; le palais de Dioclétien devient la ville de Split, les arènes de Nîmes et d'Arles (Fig. 0) en France sont transformées en villages fortifiés, le théâtre de Marcellus à Rome est reconverti en bâtiment d'appartements, Hagia Sophia à Istanbul devient une mosquée, a contrario, une église se construit dans la grande mosquée de Cordoba en Espagne, un village entier de Turquie est bâti avec les pierres d'un site antique, le temple d'Athéna (480 BC) est intégré à la cathédrale de Syracuse en Sicile. Certains bâtiments ont de multiples vies tel le mausolée d'Auguste à Rome qui devient une forteresse, un jardin, des arènes et finalement une salle de concert.

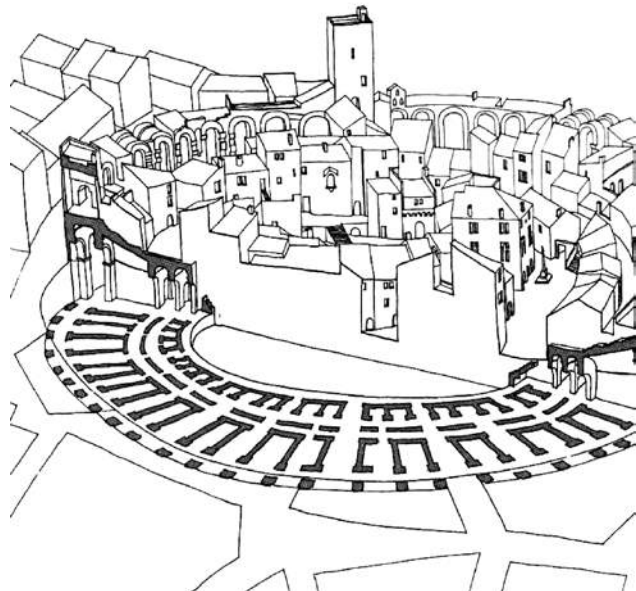


Fig. 0

Arles, axonométrie coupée sur l'amphithéâtre dans son état du XVIIème siècle, d'après une gravure de Jacques Peytret, architecte, plan et coupe de l'édifice antique (dessin de P.Pinon) in Monumental, 2002, annuel, Ed. du patrimoine, Paris, France.

Dès la Renaissance, en Italie, d'autres réhabilitations apparaissent, ainsi des temples romains sont convertis en églises par Alberti tout comme tel autre par Michelange; le palais della Ragione (Fig. 1) à Vicenza est requalifié et "recaréné" par Andrea Palladio qui renforce et augmente l'échelle du bâtiment par une nouvelle construction périphérique, une nouvelle "boîte autour de la boîte».

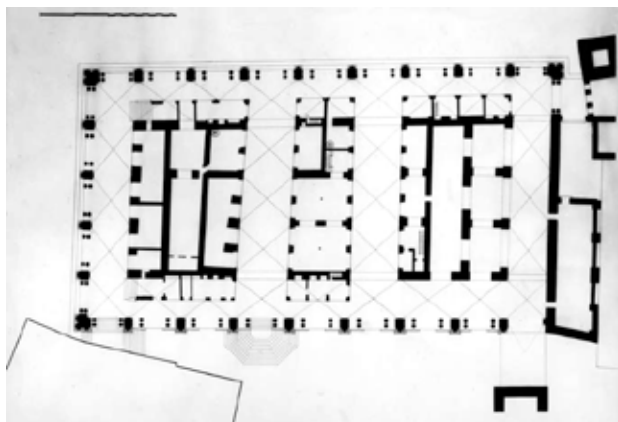


Fig. 1
Palazzo della Ragione,
Andrea Palladio, 1549,
Vicenza (Relevé D'Agaro,
1968).

Si nous considérons la genèse de l'apparition de l'idée de "purisme", le 19^{ème} siècle voit, en France, l'émergence de la restauration stylistique «à la Viollet-le-Duc «qui, dans son "Dictionnaire raisonné de l'architecture" (E.Viollet-Le-Duc 1854³) définit la restauration comme suit:

"Restaurer un édifice, ce n'est pas l'entretenir, le réparer ou le refaire, c'est le rétablir dans un état complet qui peut très bien n'avoir jamais existé à un moment donné. «On notera la contradiction entre "le rétablir dans un état «"qui peut ...n'avoir jamais existé». Evidemment, E. Viollet-le-Duc doit être regardé dans le contexte de son époque où les connaissances et les moyens techniques d'investigations encore limités sont patents. Nous sommes alors aussi au cœur de la période romantique et la fascination des ruines antiques ou d'un Moyen-Age imaginaire envahissent la peinture, la sculpture, l'architecture, le théâtre et la littérature.

A l'opposé de cette attitude, l'anti-restauration de Ruskin apparaît en Angleterre. Dans son livre, «Les sept lampes de l'architecture», John Ruskin développe l'idée du «laisser-vivre les monuments», de la naissance à la mort, jusqu'à la destruction.

«Pour Ruskin, intervenir sur un édifice ancien, le restaurer en supprimant des parties existantes ou en y ajoutant des éléments neufs, copies ou reconstitutions, est un sacrilège: l'architecture a pour mission de transmettre la mémoire des générations passées et le travail, sacré, qui les a fait œuvrer à la réalisation progressive de notre humanité. Mais les monuments des humains sont eux aussi mortels, inscrits seulement dans une plus longue durée. D'où le double devoir de les conserver en vie le plus longtemps possible et de se préparer à édifier, pour leur succéder, des monuments à la fois nouveaux et dignes des précédents.» (Choay¹⁵).

Eugène Viollet-Le-Duc, quant à lui, transforme littéralement, ajoutant un toit ici, une flèche là, modifiant Notre-Dame de Paris, Vézelay, Saint-Guilhem-Le-Désert ou les remparts de Carcassonne.

Il réécrit l'Histoire (tout comme l'Histoire des états-nations est alors écrite ou inventée à cette époque), oubliant de distinguer ses apports personnels des parties originales altérées par les vicissitudes du temps.

Il fut un artiste sublime et inspiré mais, comme archéologue et suivant les canons d'aujourd'hui, combien brouilla-t-il les pistes!

Jusqu'alors, la prétendue unité de style ne fut jamais de saison.

Comme Françoise Choay le fait remarquer:

"De l'Antiquité au 15^{me} siècle, on ne peut mettre au jour que quelques ébauches conceptuelles, non significatives, et quelques mesures de protection, mais exceptionnelles, épisodiques, non systématiques et essentiellement localisées à Rome..." (Choay, introduction à⁵).

Habituellement, lorsque l'homme de la rue évoque un château du 12^{ème} siècle, par exemple, il est probable que celui-ci a connu une édification initiale au 12^{ème} siècle mais qu'il a connu des modifications et des ajouts successifs au cours du temps. (Fig.4)

Ainsi, lors d'un de mes déplacements à Haghios Oros (Mont Athos) en Grèce, le monastère de Dohiarou, défini comme un complexe du 13^{ème} siècle, est apparu, à l'analyse, comme étant des 13^{ème}, 16^{ème}, 17^{ème}, 18^{ème}, 19^{ème} et même 20^{ème} siècles et également d'aujourd'hui puisque les moines (re)construisent des parties du bâtiment non comme des pastiches (copies à la mode des temples en bois japonais) mais bien totalement nouveau avec leur lot de «faussetés» à l'égard de la charte de Venise.

Néanmoins, comme le soulignait E.Viollet-le-Duc, avant d'en rejeter l'idée dans sa pratique:

"Fallait-il dans un édifice du XIII^{ème} siècle remplacer un arc brisé, c'était un chapiteau du XIII^{ème}, du XIV^{ème} ou du XV^{ème} siècle que l'on posait à sa place. Sur une longue frise de crochets du XIII^{ème} siècle, un morceau, un seul venait-il à manquer, c'était un ornement dans le goût du moment que l'on incrustait." (E. Viollet-Le-Duc 1854³).

Aveuglé par son souci de perfection, E. Viollet-le-Duc en vient même à ne plus voir la réalité et à proposer des plans idéalisés (cf son plan de Notre-dame de Paris Fig. 2 et le plan de la réalité Fig. 3).

A ce stade de la réflexion, trois périodes principales doivent être pointées: les écrits d'Aloïs Riegl à Vienne en 1903, la Charte d'Athènes pour la Restauration des Monuments Historiques adoptée lors du premier congrès international des architectes et techniciens des monuments historiques à Athènes en 1931 et la charte de Venise de 1964. Sans oublier les apports prépondérants de Camillo Boito (1893)¹¹, ... Cesare Brandi (1963)¹² et B.Paolo Torsello (2003)^{13,14}.

En 1903, à Vienne, Aloïs Riegl parle de l'attitude moderne face aux monuments patrimoniaux. Il distingue alors trois valeurs: l'Altwert (l'ancienneté: ce bâtiment est vieux), la Denkmalwert (la remémoration: un événement s'est produit dans ce bâtiment) et la Kunsthistorischeswert (la valeur artistico-historique: ce bâtiment contient des éléments remarquables et emblématiques pour l'art et l'Histoire).

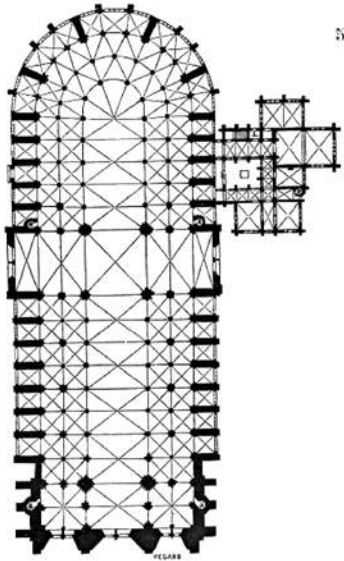


Fig. 2
Plan de Notre-Dame de Paris par
E. Viollet-le-Duc.

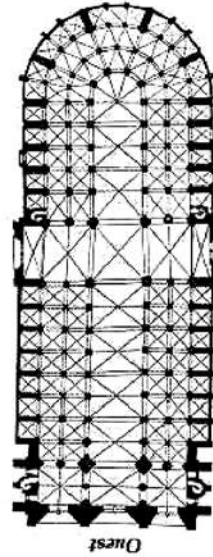


Fig. 3
Relevé exact du plan de Notre-Dame de Paris.

Riegl pointe le fait que, pour la plupart des gens, l'ancienneté est la valeur fourre-tout et la seule valeur qui contient toutes les valeurs historiques. (A. Riegl 1904⁵).

Camillo Boito, en 1893, en Italie, initie une approche de la restauration entre la restauration stylistique à la Viollet-le-Duc et l'anti-restauration à la Ruskin. Cette démarche, appelée parfois restauration historique, s'appuie sur le vérisme naissant (également en littérature) et se base sur une approche méthodique et scientifique. D'une part, la recherche de textes, de dessins, de peintures, de photos, d'écrits,... anciens permet de cerner l'historicité des différentes parties du bâtiment et/ou du site sans en rejeter aucune, cette recherche est alors confrontée aux observations et aux relevés minutieux sur le terrain; d'autre part, les interventions du temps actuel sont clairement rendues identifiables afin d'en informer le futur et, ce, autant dans le dégagement de parties évaluées sans intérêt (il faut évidemment alors poser les critères de l'évaluation) que dans les compléments.

Le bâtiment et /ou le site devient témoin d'une époque et non plus d'un style cohérent.

La conférence d'Athènes de 1931 (à ne pas confondre avec la charte d'Athènes chère à Le Corbusier et aux C.I.A.M. qui évoque aussi le patrimoine dans l'esprit moderniste) recommande l'utilisation de matériaux modernes. Une recommandation toute particulière est avancée pour que soit imprimé un distinguo marqué entre l'existant et les parties remplaçantes ou ajoutées, pour une absence de décoration des nouvelles parties et pour une simplicité géométrique et technologique.

L'enseignement des maîtres du Bauhaus: Kandinsky, Alberg, Moholy-Nagy et même Paul Klee semble avoir soufflé sur Athènes cette année-là.

Cesare Brandi réfute la théorie systématique de Boito car, pour lui, elle ne tient pas compte de l'unité et de l'esthétisme du bâtiment et/ou du site. C. Brandi applique sa restauration critique.

Il convient d'être conscient de l'intégrité et de la dégradation du bâtiment.

Pour Brandi:

- le restaurateur doit avoir une culture de la restauration (qui sera essentielle lors des évaluations critiques),
- le bâtiment et /ou le site possède une double historicité: celle de sa genèse et celle de sa vie,
- un objet, c'est une matière mais c'est aussi une image. Le restaurateur doit restaurer la matière et non l'image. Se pose ainsi la discussion autour de la notion d'authenticité.
- Le restaurateur doit assurer la réversibilité de son intervention.

Dans la perspective des écrits de Riegl, des recommandations de la conférence d'Athènes et de l'approche de Brandi, la charte de Venise trouve son origine dans l'approche européenne de la restauration. Malgré les chartes qui suivirent sous l'égide de l'IcoMos ou les tentatives de modifier la charte fondatrice, celle-ci reste toujours pertinente.

Néanmoins, la charte de Venise est-elle toujours appropriée pour, par exemple, la «restauration japonaise du temple Shintô d'Ise qui consiste à «copier» le temple original puis à détruire le premier tous les 20 ans depuis 15 siècles (Fig. 5).

Dans cette démarche, la transmission du savoir et du savoir-faire importe plus que la matière elle-même dont on ne nie pas la déliquescence et la mort.

Dans le même ordre d'idées, que penser de la charte de Venise et des constructions en terre en Afrique par exemple. Qu'en est-il de l'approche scientifique et de l'authenticité lorsque les Polonais reconstruisent Varsovie après sa destruction totale par les armées du Reich à la fin de la 2^{de} guerre mondiale, ne suivant pas toujours, une approche scientifique rigoureuse sur base de documents incontestables comme le recommande la charte de Venise dans ses articles 11, 12, 13 et 15 ? Mais le peuple polonais voulait retrouver sa capitale historique...



Fig. 4
Monastère de Dohiariou , Mont Athos, Grèce.



Fig. 5
Temple d'Ise "tout neuf!"

La Distinction Entre Monument et Patrimoine Courant

De la préservation au recyclage des bâtiments et des sites anciens, en passant par la conservation, la restauration, la rénovation, la réhabilitation, la transformation, ...des nuances portent sur le type d'interventions mais également sur l'objet (bâtiment, ensemble, site, paysage, ...) auquel elles s'appliquent.

Une distinction doit être posée bien que la frontière ne soit pas stricte et étanche entre les monuments et leur restauration d'une part et le patrimoine courant et sa restauration d'autre part. Evidemment, il n'y a pas de restauration sans une part de réhabilitation sinon nous nous verrions condamnés à restituer la fonction première dans les conditions de l'époque. Quelle visite d'un château historique se verrait-elle privée d'éclairage électrique et plongée dans un froid polaire en hiver?

Les «monuments intentionnels», suivant en cela la terminologie d' A. Riegl, possèdent différents degrés de valeurs artistico-historiques. Les moyens scientifiques, techniques mais aussi financiers les plus importants seront déployés pour les plus importants d'entre eux. Dans l'hypothèse où le doute règne, la conjonction de l'énergie d'un grand nombre de scientifiques et de chercheurs pourrait être mise en jeu pour résoudre les problèmes les plus délicats.

A cet égard, il faut également insister, pour le patrimoine immobilier intentionnel ou non-intentionnel (les bâtiments devenus parts importantes du patrimoine par leur rareté, la rareté de leur technique, leur valeur de témoignage ou de remémoration), sur la nécessité absolue d'intégrer des praticiens et des hommes de métier (artisans,...) dans la réflexion et l'action.

L'action alors entreprise devra toujours se placer sous l'angle de la considération ou du respect de l'existant après analyse, diagnostic et évaluation précise et motivée.

Les bâtiments «ordinaires» possèdent une certaine valeur d'ancienneté mais parfois une faible valeur artistico-historique. Leur importance procède alors de la valeur de remémoration (activité ancienne disparue, événement historique, archétype,...). Parfois, alors, les moyens financiers sont beaucoup moins importants (provenant de sources privées, locales,...). Cela ne doit pas évidemment signifier que la démarche scientifique ne sera pas rigoureusement suivie mais bien qu'il faudra investiguer et agir avec des moyens parfois plus simples.

Une Coquille Vide

A chaque époque, l'ajout de parties nouvelles à l'aspect contemporain a été nécessaire.

Comme décrit supra, les transformations architecturales au travers de l'Histoire furent toujours cernées par la vie de ces organes notamment pour ces bâtiments «trouvés» (par opposition aux bâtiments "décidés", complètement dessinés et maîtrisés).

Qu'est-ce qui peut nous aider sur le chemin de la création d'éléments nouveaux dans, autour ou à côté de bâtiments anciens?

Jusqu'à la fin du 19^{ème} siècle, l'unité du matériau (souvent local), l'unité de techniques (éprouvées), l'unité des outils étaient obligées.

Depuis les révolutions industrielles du 19^{ème} siècle (machine, moyens de transport et de télécommunications) jusqu'à nos jours, la réelle "explosion" des matériaux et des techniques et la perte simultanée de la conception à partir d'une économie de



Fig. 6

Bâtiment en style classique montois, deuxième partie du XVIIIème siècle, modifié au XXème siècle, Mons (Belgique), Café «L'Envers», état après intervention pour le rez-de-chaussée, architecte: Hugues Wilquin, 1989; l'absence de documents et de traces amènent au placement d'éléments analogiques contemporains qui «restituent» l'esprit de la structure et du fenestrage.



Fig. 7

Bâtiment en style classique montois, deuxième partie du XVIIIème siècle, modifié au XXème siècle, Mons (Belgique), Café «L'Envers», état après intervention pour le rez-de-chaussée, architecte: Hugues Wilquin, 1989.

ressources et de moyens nous a conduit dans le labyrinthe rhizomique sans issue des possibilités multiples et non hiérarchisées.

La volonté sinon d'un développement durable du moins d'un épanouissement durable nous conduit, bien évidemment, de la restauration au recyclage de l'existant, mais aussi à une reconsidération d'une économie de ressources et de moyens dans une approche macro-économico-écologico-sociale (développement local, économie des moyens de transports, bilan énergétique, émissions de gaz,...).

Dans le domaine de la conception dans l'ancien, le concept de vérité en architecture peut supporter notre démarche, ainsi, e.a., un élément structurel doit être montré tel quel, un matériau doit être utilisé suivant sa bonne pratique, issue de la tradition et de ses améliorations ou de son innovation compatible.

Au concept d'authenticité pour les parties subsistantes, au préalable évaluée à l'aune de critères partagés (A. Riegler⁵), s'ajoutent le concept de vérité (authenticité his-

torique, authenticité du matériau, de la technique et du geste,...) et le concept de compatibilité (esthétique, historique, mécanique, physico-chimique,...).

Il est essentiel d'insuffler une vie nouvelle pour maintenir la vie des bâtiments et des sites anciens.

Lorsque nous concevons un bâtiment ou un site nouveaux, les fonctions, les structures, les matériaux, les contextes, les significations génèrent, en conséquence, les formes, l'expression et le caractère.

Mais que faire de la forme quand la fonction originelle et ses contextes ont disparu?

Pour user d'une allégorie facile et un peu réductrice, que faire de la coquille vide quand le corps vivant du coquillage a disparu, avalé par les vicissitudes de l'histoire?

Et plus encore que faire quand une partie de la coquille a disparu sans laisser de traces?

La restauration et/ou la réhabilitation ne peuvent réussir que lorsqu'il y a compatibilité entre la nouvelle fonction et la forme laissée là par le temps, plus encore la reprise du bâtiment trouvera son amplitude si la fonction nouvelle possède quelque parenté avec le passé (présentation d'objets de design là où des objets étaient manufacturés, comme, p.e., aux Ateliers du Grand-Hornu en Belgique).

Il faudra donc d'abord se poser la question du choix des fonctions et des programmes les mieux adaptés à la nature intrinsèque des lieux renversant ainsi l'équation de la construction *a novo* qui donne enveloppes et chairs à des programmes décidés *a priori*.

Pour un bâtiment, un ensemble ou un site déterminé, étant entendu que ceux-ci influencent ou sont influencés par leurs environnements physiques et métaphysiques, le processus partira du général au particulier, déterminera les caractéristiques (fragmentées, volumiques, typologiques, séquentielles, rythmiques, structurelles, systémiques,...) du construit et du naturel environnant, de l'évolution de ces caractéristiques à travers l'Histoire et du glissement de leurs significations.

Le cadre socio-économique tout autant que le cadre écologico-financier joueront parfois également un rôle essentiel voire déterminant dans les choix fonctionnels et techniques.

Pour le bâtiment lui-même, comme Viollet-le-Duc l'écrivait:

«Il est donc essentiel, avant tout travail de restauration, de constater exactement l'âge et le caractère de chaque partie, d'en composer une sorte de procès-verbal appuyé sur des documents certains, soit par des notes écrites, soit par des relevés graphiques» (Viollet-Le-Duc 1854³).

Tant au moment des études préalables que durant le projet et son exécution, la démarche s'articule autour d'une analyse minutieuse de l'existant soit grâce à des documents (écrits, dessins, photographies,...) ou soit grâce au bâtiment lui-même, essai de décodage ou plutôt révélation d'un code originel ou d'un code «plaqué» référentiel avec conservation en parallèle du non-système des écarts par rapport à ce code d'apparemment ainsi «trouvé» (Fig. 9, 10, 11 et 12).

Le caractère d'interdisciplinarité des études et de l'action (à partir des études préalables) est essentiel. Les spécialistes ont à travailler non en parallèle (multidisciplinarité) mais bien simultanément en développant des discussions à chaque étape du travail.

Methodes d' Approches, Exemples de Techniques et Exemples de Restaurations et Rehabilitations

La suite du cours aborde alors le problème des études préalables, de la présentation d'exemples de techniques de restauration (la restauration de la pierre, les charpentes,...) car ces techniques sont plus largement développées dans le module du Management de la restauration. Sont également présentés des projets exemplaires (l'église

Fig. 8

Ancien garage d'un concessionnaire automobile (circa 1970), état avant intervention, Frameries (Belgique).



Fig. 9

Funérarium Cordier, état après intervention, architecte: Hugues Wilquin, 1999, Frameries (Belgique).



Fig. 10

Funérarium Cordier, état après intervention, les structures métalliques nouvelles se distinguent par les consoles perforées et par une couleur grise légèrement plus claire, architecte: Hugues Wilquin, 1999, Frameries (Belgique).



Saint-Barthélemy à Liège, les ajouts de P. Zumthor,...) et trouvent aussi place des séminaires de présentation de projets emblématiques par leurs auteurs (S. Meyrant, A. Dirix,...).

En Conclusion (à réhabiliter)

Cette démarche entamée depuis 1999 et récemment complétée par le module de Management de la restauration s'avère très attractive et très valorisante pour nos étudiants. A la suite de cela, nombre d'entre eux ont entamé des études de Master complémentaire Centre R.Lemaire,...) et se retrouvent dans l'administration du Patrimoine (Belgique, France) ou dans des agences spécialisées en restauration (Ma 2,...).

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**From Architectural Conservation/Restoration
to Heritage Conservation:
Université de Montréal's Perspective
on Heritage Education**

Université de Montréal's School of Architecture is one of ten Canadian schools of architecture accredited by the Canadian Architectural Certification Board. An integral part of Université de Montréal since 1964, the School is the only French-language professional program in architecture in Montreal. It offers a three-year undergraduate degree and, since 2000, a two-year professional Masters in Architecture (required to become a registered architect and member of the Ordre des architectes du Québec.) The School is one part of the Faculté de l'aménagement (Faculty of Planning) which also includes the departments of urban planning, landscape architecture, industrial design and interior design. The Faculty offers programs at the post-graduate level, specifically an M.Sc.A. and a Ph.D in planning. Its teaching is rooted in Montreal's rich urban and architectural landscape whose built heritage provides an ideal laboratory.

This article has two objectives: first, it aims to present a survey of how conservation of the built environment is presently taught at the School of Architecture. This brief summary follows the structure of the *Teaching Conservation/Restoration of the Architectural Heritage: Goals, Contents and Methods* organized by the European Network of Heads of Schools of Architecture (ENHSA) and the European Association for Architectural Education (EAAE) in the autumn of 2007 by examining the what, how, why and who of heritage conservation – a short form that communicates well the philosophy and approach of the Université de Montréal program. Secondly, given that the M.Sc. A.- CEB, Conservation of the Built Environment program celebrated its twentieth anniversary in May 2007, the article will describe the challenges the teaching of heritage conservation currently faces and the choices it must make about its orientation over the next few years.

Conservation education in the School of Architecture

What is taught and why

There are two programs that teach conservation at the master's level. The first is a two-year Master's in applied sciences in planning, option Conservation of the Built Environment (M.Sc. A. - CEB). This is a Faculty program – but still associated with the School of Architecture – created in 1987. It remains the only program in Canada to offer a post-graduate degree specialized in conservation linked to architecture and the other planning disciplines.¹ The Conservation of the Built Environment program has, since its inception, been multi-disciplinary in its approach, accepting students and professionals from a variety of different backgrounds including architecture, history, urban planning, geography and art history. Its multi-disciplinary character is also evident in this program's courses which seek to question the very nature of heritage – from architecture to cultural landscapes via traditions and expertise – and the different means necessary to put into place to ensure their continued existence. As well, this master's program is intended to augment and enhance the candidates' previous education and experience so as to make them truly versatile professionals. With a more comprehensive understanding of the issues of conservation, they can contribute their *savoir faire* at every step of projects at different scale – building, larger site or whole sector. The more than 130 graduates of the program to date now work in public services, in professional offices and as consultants in Quebec and abroad.

Conservation is also present in the M. Arch., the professional master's in architecture program and has been since its creation in 2000. In the second of their three terms of study, students are invited to choose conservation as a specialized studio, one of a group of six different options available. Studio work is complemented by two compulsory courses in conservation theory – courses shared with students registered in the M.Sc. A. program. Within the professional master's context, conservation is therefore seen as an architectural specialization to be explored just as the student is poised to begin working in the professional milieu. The conservation option is intended to prepare future architects for the expanding market in restoration, recycling and renovation in Quebec and to introduce them to its constraints. Students become familiar with the realities of existing built form by conceiving projects which include one or more elements of built or urban heritage. Intervention can be either at the scale of an entire site or of a specific building. The studio also attempts to familiarise participants with the different degrees of intervention possible on an existing building, from the integration of new construction to the restoration of the old. Decisions about the volume and size of a project's component parts, their siting and their relationship to the built context have to be justified relative to the place's heritage values. Building on the practical and theoretical knowledge gained in the conservation courses offered in parallel, the studio experience seeks to develop a rigorous working methodology that is appropriate to the field.

How conservation/restoration is taught

Built heritage and how to preserve it are relatively recent concepts in North America – which makes questioning the very nature of what constitutes heritage inevitable. In the School of Architecture, teaching of conservation is necessarily based on the premise that heritage is the result of a social phenomenon: from the moment of its conception and construction, a building is obviously not automatically deemed of heritage value. It becomes so by virtue of the passage of time and as a function of the importance attributed to it by society in general or a group in particular. This value-based approach, discussed from as early as the start of the twentieth century in conservation milieux,² and more recently enlarged by the work of the Getty Conservation Institute,³ therefore constitutes the most appropriate conceptual framework for both theoretical and practical teaching. Heritage values can be as varied as the groups, the authorities and the individuals who identify those values – and they will, of necessity, evolve over time.

Understanding heritage as being based on values means that conserving and enhancing built heritage can only be contemplated if they are grounded in a multi- and interdisciplinary approach – which requires the participation of many different actors contributing many different points of view. By teaching the fundamentals of conservation theory, the reading and analysis of a site, the people and organizations who will intervene and examples of successful projects, conservation education has as its principal objective the development of a critical attitude in future professionals. Architects, historians, urban planners and others have to look at any project which includes existing elements and – before any physical intervention – be able to answer the fundamental questions of what to conserve and why. It is with the ultimate objective of responding adequately to these fundamental questions – what to conserve and why? – that the teaching conservation in the two programs described above is based on.

Who teaches conservation

The diverse educational backgrounds and interests of professors teaching conservation in the School of Architecture reflects this idea of multidisciplinary work in the field. The disciplines of architecture, urban planning, history of architecture and landscape architecture are presented as part of the content of theory courses as well as in the research projects led by individual professors and by research groups including, among others, the Canada Research Chair on Built Heritage.⁴ Most professors are also active participants in different community heritage organizations or on consultative committees for different levels of government. Their volunteer activities enrich both their teaching and their research. Finally, the need to understand the constraints and challenges of professional conservation practice requires an important participation on the part of working professionals from the both the private and public domains. As invited critics in the studio or as speakers in class, their day-to-day experience of what they face in practice provides a much-needed balance to the theory taught in courses and seminars.

Future challenges and orientations

After a twenty-year existence, education in conservation of the built environment is on a sound footing. On one hand, the administrative structures which house it – both the two year M.Sc.A.-CEB and the more recent, M. Arch. orientation – have allowed that educational process to keep up with the evolution of the idea of heritage, notably in the multi- and inter-disciplinary approach so essential to the field. The first twenty years have also fostered the creation of fruitful collaborations with many different professionals, which have provided ongoing education for protagonists involved in the Montreal, Quebec and Canadian milieux.

It is precisely on the strength of this solid foundation that the teaching of conservation will be based in years to come. However, while continuing to educate young professionals emerging from all the different disciplines related to conservation, the teaching of conservation will work to do more with the architectural profession. This is a direct response to the reality of conservation practice in Quebec where one has to understand that architects are very present. Effectively, architects intervene at every stage of a heritage conservation project and as much in the public domain as in the private. It is current practice to give architects the mandate for a heritage study or for an evaluation of the physical state of a building. Within government bodies, architects work as project managers collaborating with their counterparts in the private sector who are responsible for the design and construction of a project.

An education in evolution

As is the case for all university education, maintaining excellence in teaching is an ongoing challenge. To achieve this objective, conservation needs to update its curriculum on a regular basis so that its content reflects the evolution of conservation – as much for the ongoing discussion of its definition as the issues that discussions raise. Attention to debate at the international level – notably at UNESCO or ICOMOS – is not only desirable, it is essential as a way of foreseeing practices and preoccupations that will eventually become important at a more local level. This transposition of international debate, often conceptual and abstract in nature, to the much smaller scale of

the average citizen is a recurring phenomenon. The example of the value-based approach to heritage cited previously demonstrates this eloquently. Developed by international experts working at the Getty Institute for Preservation in the late 1990s, this approach has little by little been integrated into the decision-making processes at the municipal and provincial levels (Montreal and Quebec, at least). The attention being paid in the last few years to intangible heritage in these same milieux is another pertinent example. Since the elaboration of the *Convention for the Safeguarding of the Intangible Cultural Heritage* in 2003, interest in conserving this kind of heritage has been evident in the views expressed by a number of government bodies in Quebec.⁵

A good university education in conservation can contribute to this transfer of knowledge. This can take the form of: participation in discussions, research or communication to future intervenors in conservation through teaching and publishing. At Université de Montréal, this means creating collaborative ventures with the professional milieu while continuing to stress the increasing importance of the international network, notably through supporting the research activities of the Canada Research Chair on Built Heritage.⁶

Best practices

Excellence in education also depends on its capacity to inculcate students with an understanding of what best practices are. Integration of best practices into heritage conservation would appear to be even more important given the relatively recent nature of professional practice in the field, at least in Quebec. If it's true that the last twenty-five years have seen the realization of many good conservation projects, relatively few have been built using a design and construction process that was based on the theory and principles of conservation. It is precisely these processes, methods, principles and even attitudes that are favourably disposed to conservation that we refer to as best practices. Without being a formula to follow unthinkingly from one project to the next – quite the contrary – good practices are determined on a case-by-case basis. Whether fed by one's own experiences or those of other people, they redefine themselves constantly as a function of results obtained. For the conservation architect, best practices are certainly many and varied through all phases of an architectural project - be it recycling, restoration or insertion. They can take the form of (for example) collaboration as part of a multidisciplinary team of professionals, a public consultation process or a decision to use the expertise of a specialized artisan to carry out a particular part of a project.

The teaching of best practices is not an easy thing. How does one inculcate a sense of what is right for heritage conservation given the multiple constraints inherent in every project? Certainly, best practices are derived from a fundamental knowledge of conservation (management practices, history, charters etc.) but putting these fundamentals into practice is largely dependent on the capacity of the student to adapt his knowledge to the different situations, issues and challenges posed by different conservation situations. It is therefore a question of how to incite the development of critical thinking which will, over time and with experience, help determine the best way to act for conservation. It will be crucial to continue pairing theoretical teaching with the lessons learned from professional practice as is presently the case with the participation of professionals as speakers or as invited critics. However, their experiences – whether the outcomes have been favourable to conservation or not – have to be analyzed with the intent of enabling the students to make their own judgements.

Changing perceptions

Another challenge for the next few years will be to interest a greater number of students in architecture in the field of heritage conservation. It has to be recognized that currently, conservation is often seen as dogma which is expressed architecturally by maintaining the status quo or by mimicry. Students in architecture, attracted by the design and conception of new projects, don't immediately associate imagination and creativity with the work of a conservation architect. However, the reality is that both imagination and creativity are absolutely called for in conservation practice, the strongest examples of which are finding a new use compatible with an existing building and integrating a contemporary project into a heritage context.

What can be done to reverse this trend? In the School of Architecture, several different courses of action have been in discussion for some time and are likely to be put into practice very soon. First, a new introductory course in architectural and urban heritage will be offered at the undergraduate level. The course will provide a survey of the multiple facets of what constitutes heritage, will familiarise students with heritage values and will inform them about conservation work in architecture and the different types of research undertaken by the School of Architecture in the field. This initiative obviously seeks to dispel erroneous perceptions about conservation and to attract a clientele to explore the opportunities in conservation available at the post-graduate level.

Looking at the problem another way, one can see interest in conservation growing as students realize how closely its fundamentals align with those of sustainable development, interest in which has grown enormously in recent years. As a result, certain teaching activities in the School – including the new introductory course to heritage conservation – will seek to reinforce these similarities. Sustainable development is an emerging preoccupation in the field of architecture in general and although this is already reflected in many different ways in the bachelor's level program, it is interesting to note that until now this concern is most often expressed as innovative techniques and technologies in the design of new construction. The link between sustainable development and heritage conservation proposes a reflection whose point of departure is the conservation of non-renewable resources. This reflection will undoubtedly lead to ways in which these resources can be reused and the means to get there, both in practice and in theory.

Throughout this overview, it has become clear that education in heritage conservation has retained both its pertinence and its *raison d'être* within the School of Architecture and the Faculty of Planning since its inception. In the next few years, it is clear that conservation education will only become more pertinent in light of cultural and environmental issues facing society. These issues will undoubtedly generate courses, studios and research that will be both dynamic and stimulating. This must happen because the quality of the university's contribution to the field of conservation depends on it.

Notes

- 1 This was revealed in the results of the as yet unpublished research project *Recensement de programmes de 2e cycle en conservation du patrimoine dans les universités canadiennes et internationales* undertaken jointly by Christina Cameron, holder of the Canada Research Chair on Built Heritage, Université de Montréal and Claudine Déom, assistant professor in the School of Architecture (with the collaboration of Nancy Dunton, consultant in the conception and coordination of programs on architecture) over the course of winter 2007. The only other program offered at the master's level is at Carleton University, where it is associated with the School of Canadian Studies.
- 2 See particularly the fundamental work of Aloïs Riegel published in 1903, published in French in 1984 as *Le culte moderne des monuments. Son essence et sa genèse*.
- 3 Avrami, Erica et al., *Values and Heritage Conservation*. Los Angeles: Getty Conservation Institute, 2000 and De La Torre, Marta, (ed.) *Assessing the Value of Cultural Heritage*. Los Angeles: Getty Conservation Institute, 2002.
- 4 The Chair has been involved since 2005 in the Faculty of Planning where it is attached to the School of Architecture. Under the direction of the holder of the Chair, Christina Cameron, research is focused on the problem of the evolving conception and perception of the idea of built heritage and the consequences of this evolution on heritage, its enhancement and its governance (www.patrimoinebati.umontreal.ca).
- 5 See, among others, recent proposed modifications to the law governing heritage in Quebec, *la Loi sur les biens culturels*.
- 6 This collaboration has begun to take shape with projects such as the *Recensement de programmes de 2e cycle en conservation du patrimoine dans les universités canadiennes et internationales (2007)* and colloquia including the event organized as part of the annual meeting of the *Association francophone pour le savoir (ACFAS)* in 2007 entitled *D'une generation à l'autre: enseignements, approches et pratique en conservation*.

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**In Search of Integration of
Teaching Design and Teaching Conservation**

Introduction

The institutionalization in architectural education in Turkey is rather a new phenomenon as its counterparts in Europe.

In order to summarize, three periods of progress can be said to exist. In the first period, the question of following an already established institution was present as the first stage of the modernization project was based on following a model rather than establishing something from scratch. In terms of these model institutions, there were actually two major systems for the newly established universities in Turkey. One of them is inevitably Beaux-Arts School in France with rather a major emphasis on aesthetics rather than function. The second system is mainly a Bauhaus-inspired one, which was established in Germany during 1920s emphasizing on the amalgamation of the art and industrialization. Its principles were probably the counterpart of what Beaux Arts declared.

In the second period, after 1956 an American Bauhaus style was established in the capital of Turkey under the framework of M.E.T.U. When compared with the previous approach, this one had tendencies that are more social.

In the third period, there was a heavy increase in the number of the schools depending on the higher education policy of post-1980 administration. In this context, Erciyes University Faculty of Architecture, Kayseri, was founded in 1992 by the guiding principles of YOK for the newly established universities during this era. For the third period, there was an unintentional hybrid sense of the first two periods of architectural education in Turkey in terms of pedagogy.

What is Thought about Conservation/Restoration and Why?

The education program of the faculty starts by discarding anything which the students have learned from their ill shaped environment and start anew to introduce creative thinking, the meaning of creation and meaning of design and providing preliminary senses of aesthetics. It then proceeds to the creation and improvement of the design ability. Since the student cannot find the necessary environment outside the school i.e. in the city, a microcosm is created within the school, which can enrich the architectural repertoire of the students. As frequent as possible, we arrange exhibitions, invite distinguished architects, organise international workshops and manage summer practices.

The progress in the consciousness of the architectural heritage is an indispensable tool for an establishment of an ideal architectural education. The other topics of the education such as design studio, construction cannot be regarded as separated from the knowledge of architectural heritage. The understanding of environment is a crucial factor of the perception of space and its control. Therefore, the question is why we who are involved in architectural education in conservation, survey, restoration give so importance to this issue. Hence, the entire curriculum is based on this matter. Every institution manages its curricula according to it but the range and the duration of the courses may vary depending on its teaching staff.

The notion of conservation can be considered in terms that are more crucial for Kayseri due to the fact that it is situated in a historical region and the demographic effect of it can still be felt in modern day Kayseri. Kayseri as an in-between place oscillating between its urban and rural features is a city in which the juxtaposition of past

and the present is heavily felt within daily life. Therefore, the design education should embrace the past while thinking in modern terms.

How Do we Teach Conservation/Restoration?

In our faculty; apart from the must course in the field of restoration/conservation in the third semester emphasizing on survey techniques in theoretical and practical form, there are practical elective courses in the fourth semester emphasizing on issues ranging from the analysis and documentation of a single building to the analysis and documentation of a historical site. (MIM S 35 Documentation and Analysis of Single Building & MIM S 34 Documentation and Analysis of Historical Site).

The aim of the first course is to give the consciousness of conservation in integration with its environmental patterns. The entire course is experienced within the scale of a single historical building. However, the latter course emphasizes more on the historical site. It aims to develop an understanding of the principles of conservation within the scale of a traditional urban texture. Besides, there are four elective courses emphasizing on the theory of conservation of historical buildings, the determination of re-functioned principles to the historical buildings, which are not in use, the theory of construction and decoration problems of historical buildings and environmental characteristics and the search of local identity and traditional/vernacular architecture in Kayseri.

As seen in undergraduate course schema; survey, restoration and conservation courses held relatively a small part. The regulation of an optimum educational environment is deterred due to this problematic. As Kayseri is a city rich in cultural and historical environment, this problematic becomes more crucial. Such a panorama dictates a standard point of view when compared with other institutions. However, the overall status of Erciyes University and indeed Kayseri as a middle Anatolian city has a potential of unique architectural heritage as seen in the rest of Anatolia. Therefore, this situation makes itself a reason for us to show more responsibility towards educational goals in survey, restoration/conservation.

The distribution of teaching in the duration and the organization of the curricula do not let us to achieve these goals. The notion of conservation cannot be considered apart from these facts, as it is a part of this phenomenon. However, the dominating notion in the curricula is to think conservation totally separated from the design process due to the probable notion that it embodies different sort of undertaking. Therefore, the general impact of conservation in design process, hence in urban life, is relatively less effective. Consequently, the design process and the notion of conservation were held in separated form rather than in juxtaposition. This probably led to a problem in the field because thinking not within same paradigms in these fields gives rise to a social and urban dilemma.

The principles of Architectural Department of Erciyes University are based on rather on this notion of juxtaposition. The embracement of the architectural heritage during the design process is an important part of this notion as it purports to arise not only as an architectural issue but also as a social and educational responsibility.

HISTORY/ HUMAN BEHAVIOR/ ENVIRONMENT	TECHNICAL SYSTEMS	PRACTICE	DESIGN
History of Architecture I (2+0)	Construction I (2+4)	Professional Practice (4+0)	Basic Design (4+8)
History of Architecture II (4+0)	Construction II (2+4)	Research Methods (4+0)	Graphic Communications. (0+4)
History of Architecture III (4+0)	Building Materials (2+0)		Architectural Design II (4+8)
History of Architecture IV (2+0)	Building Science I (2+0)		Architectural Design III (4+8)
Art and Esthetics (2+0)	Building Science II (2+0)		Architectural Design IV (4+8)
Theory of Architecture (4+0)	Building Science III (2+0)		Architectural Design V (4+8)
Introduction to Architecture I (4+0)	Structure (4+0)		Architectural Design VI (4+8)
Introduction to Architecture II (4+0)			Architectural Design VII (4+8)
Urban Studies (2+0)			Architectural Design VIII (4+8)
Survey (2+2)			Design Geometry (2+2)
			Urban Design (0+4)
			Structural Design (1+3)
			CAD I (1+3)
			CAD II (0+2)
			CAD III (0+2)

Table 1
Curriculum of Department of Architecture in Erciyes University¹.

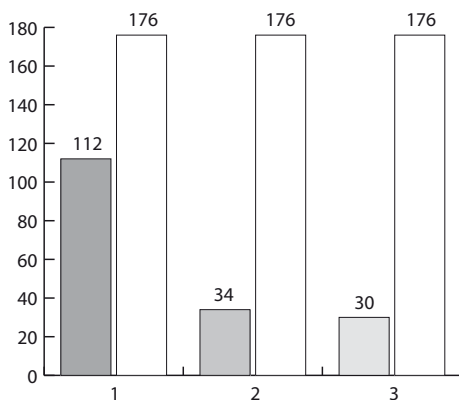


Table 2
Grouping of course hours Erciyes U. Department of Architecture according to the teaching method².

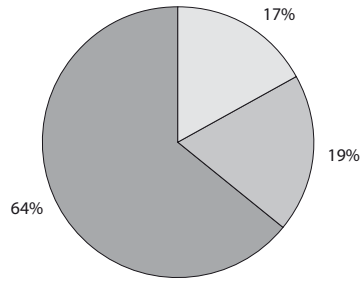


Table 3

Percentage of course hours Erciyes U. Department of Architecture according to the teaching method³.

Studio courses	studio+lectures	lectures
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Who Teaches Conservation/Restoration?

In Turkey, instructors with a mastership on restoration give the conservation/restoration education.

The present day staff of faculty of the department of architecture is actually separated from the design staff and consists of one Ass. Professor and two research assistants; one a PhD. student in the field of conservation of stone and mortar, puzzolanic materials and the other with a degree in Master of Science in Industrial heritage, modern survey techniques and conservation of the 20th century buildings.

For the present day, it can be argued that in Turkey we are lack of cooperation between the restoration staff and design/construction staff. In our faculty, the summer practices are believed to be a recipe for this weakness as they emphasize on the cooperation of the restoration staff with the rest.

When and to What Extent Do we Teach Conservation/Restoration?

For the present day, it seems that searching a new formation is being established in order to integrate with the EU standards such as European Credit Transfer and Accumulation System (ECTS) and therefore many of the schools have started to revise their programs according to these new standards. As a consequence of this revision; duration of the education, the quantity and content of the courses are being re-handled. However, we did not succeed in approaching an ideal in terms of range and duration of the conservation/restoration courses.

The main argument of our educational strategy is to guide the students in order for them to be more conscious of their historical environment and to use this consciousness during their design studios. It may be argued that this may lead to a more rationalistic point of view in the design process.

The first stage is an off-schedule organized summer practice emphasizing more on being conscious of architectural heritage than only as a study on drawing scale. Actually, the general aim of summer practices in Turkish educational system projects not a perspective of heritage in survey, instead it is aimed to concentrate on study in offices and on building sites.

The summer practices in Erciyes University Faculty of Architecture embody the preliminary stage of the notion of this juxtaposition. For this purpose, not only the instructors of survey and conservation but also the design instructors were oriented in this process. Therefore, this study maintained a climax of cooperation between instructors of both field and interaction between instructors and students. A synergy came out of this climax in the end in terms of dual communication between design critics and restoration/conservation critics. It is projected with these summer practices that conservation is not a remote field of interest but on the contrary a way of seeing and considering the historical environment.

Teaching design principles established while determining the subject, its content and design sites were also revised in this process. The design sites for the summer practices were chosen according to the principle that it can be a recipe for the dilemma of the rural/urban chaos in present day Kayseri. This revision includes cooperation of the educational staff in design and restoration/conservation studios.

In short; the cooperation of the entire staff within this summer practice and indeed the perception of this juxtaposition by the students were performed in order to solve the weakness of the curricula.

Additionally; starting with this autumn term, it will be aimed to organize design studios emphasizing not only on the conscious of heritage but also on the interaction of this consciousness with the design process.

Notes

- 1 The table is taken from a paper by Prof. Dr. Sevgi Lokce and Ass. Prof. Dr. Burcu Ceylan presented to the "Architectural Education Forum 3" held in 15-17 November 2006 at ITU, Taskisla, Turkey.
- 2 Ibid.
- 3 Ibid.

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**Teaching Restoration
at the School of Architecture of Valencia**

Introduction

The graduate studies of architecture in Spain have been traditionally linked to the Schools of Madrid and Barcelona, founded in 1840 and 1875 respectively. Only from the decade of the 1960s on, these options were enlarged with new schools of architecture in other cities like Valencia and Seville and, afterwards, San Sebastian, Valladolid, Las Palmas, A Coruna, Granada, Alicante. Some private schools of architecture have also been founded since then in Spain, like the ones at Pamplona, Barcelona, Madrid or Valencia.

Till present, the only compulsory subject regarding architectural restoration in the schools of Spain was "Restauración Arquitectónica" at the School of Granada, recently introduced. It consists on a compulsory workshop that has six credits (two theoretic and four practical). As far as we know, there have been no other compulsory subjects specifically devoted to the study of architectural restoration in any of the curricula of the previous schools. In the rare cases where some attention to architectural restoration was paid, this knowledge field was consigned to some isolated chapters of design subjects, to the strictly technical ambit of constructive pathologies or to optional subjects or courses.

Nor even the Spanish Ministry of Education introduced the concept of restoration in the general frame program of architectural studies in our country. This omission is significant as it shows that both in past and in present no specific training to be a preservation architect is absolutely considered. Or we could also say that any good architect designing new buildings is thought to be as good to work on architectural restoration.

In the best cases, there only existed restoration training in the postgraduate studies through Master and PhD courses that partially or specifically included the subject. This was, for example, the situation in the School of Valencia till the year 2002, when the introduction of a new curriculum finally included a compulsory subject specifically named "Architectural Restoration", with 4,5 credits (3 theoretical and 1,5 practical, total 45 hours) in the fifth course of the studies. This subject is taught by the authors of this article and is accompanied by several optional subjects in the graduate course and a new offer in the postgraduate course that unifies the previous Master and PhD courses in the form of a European master.

Other Spanish schools have incorporated several restoration subjects in the new recently introduced curriculum for graduate courses. That is the case of Barcelona or Valladolid but, being optional subjects, their impact is very small and limited to the few students that have chosen them. The offer in the postgraduate courses (Master and PhD) has been maintained in this new program.

UNIVERSIDAD POLITÉCNICA OF VALENCIA		
GRADUATE	POSTGRADUATE	RESEARCH
Architecture Restoration (compulsory) Graduate Optional Subjects	Master → Phd	IRP Instituto de Restauración del Patrimonio Magazines: R&R y Loggia

Fig. 1
Restoration studies at the Universidad Politécnica of Valencia.

The architectural restoration in the graduate studies at Valencia

Given that the subject "Architectural Restoration" will be the only possibility to learn some smattering of preservation for the majority of the students of the School of Architecture of Valencia, as professors in charge, we have decided to organize the subject as much formative as possible. In few hours and with 500 students divided in four groups, a very ambitious program is imparted. This program introduces the basic concepts and criteria and, at the same time, gives some rudiments for the practice of the profession.

The objective lies in the formation of not only general or specific but also technical criteria on the subject. Technology changes and evolves so quickly with time that it is more important to distinguish how to handle and use it in general terms than exactly knowing the last recipe of the market. After passing this subject, students must be able to propose a study and a project or, at least, to realize how much training and meditation is needed to solve a restoration project without being superficial.

First, the student is trained in theories and history of restoration in order to give him a basis to think and argue the decisions and criteria to be adopted in his practical project. This part includes an introduction to the vocabulary and the basic concepts of the field; an international panorama of the history of restoration from its fundamentals to the contemporary theories; and a vision of the present situation of the field in Spain and in the region of Comunidad Valenciana, through illustrative examples of the recent past.



Fig. 2

The visits to current restoration works with the students help them to better understand.

In parallel with this theory and history, a practical restoration project is requested from every group of students. This project will consist in a throughout study of the chosen building with a historical study, metrical, photographic, constructive and material survey, stratigraphic analysis, deformations, material, constructive and structural pathologies, research of characteristic elements and, finally, a general restoration project that shows and justifies the purposes, decisions and criteria of the authors. This project is accompanied by some specific proposals of technical solutions for chosen parts of the building.

These theoretical and practical parts of the subject are to be developed simultaneously in order to make them think in the restoration project from the very first moment. Many of the parts of this throughout study have been learned and implemented in the previous subjects of the career (History of Art and Architecture, Architectural Drawing, Construction, Structure Design...), but they have not been focused on historical buildings or conceived as a whole in a single study. Besides, the practical part is not

only represented by the restoration project, but also purposely linked to the theory and history of restoration as the students are always asked to argue and justify their project choices and the criteria applied.



Fig. 3 Example of a stratigraphic analysis of a facade made by a group of graduate course students.

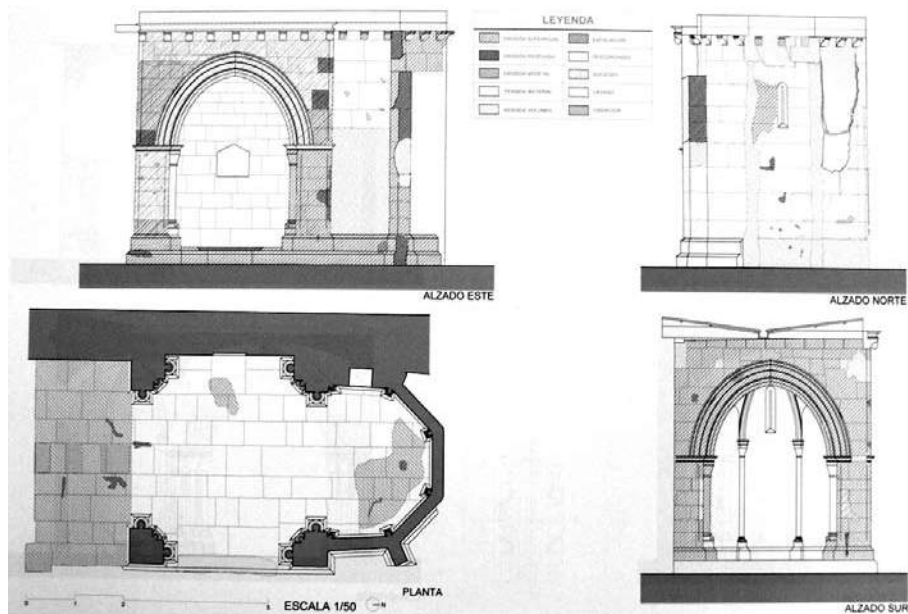


Fig. 4 Example of the restoration project for a chapel at Valencia made by students.

The rest of optional subjects complement this restoration training but the after-effect is very small. For example, the subject "Introduction to Restoration" is only open to students of first and second courses. It has three credits (30 hours) and have usually a close number up to 30 students, some of them even coming from other schools and therefore not architects.

The architectural restoration in the posgraduate studies at Valencia

In the academic year of 2006-2007, a new European Official Master on Architectural Restoration has been introduced in the Universidad Politecnica of Valencia. This Master course has been conceived as a possible step to further develop a PhD. That is to say, the Master's course and thesis substitute the former traditional system with subjects and represents an initial and necessary first step to get a PhD.

This Master is open to architects, quantity surveyors, art historians, engineers and any other type of profession if previously is approved by the Master's commission who is in charge of select and accept the applicants' curriculum vitae. The Master has a content of 60 credits (600 hours) for the architects and, generally, 90 credits (900 hours) for the rest of applicants coming from other studies. This difference of 30 credits aims to fill the training specific gaps of these non-architect students, previously to their incorporation to the main and central part of the Master, together with the rest of post-graduate architect-students. The content and specific subjects of these 30 credits are chosen after the necessities shown by the curriculum vitae of the students.

This organization of the curricula means that there are six previous months of training for non-architect students, plus one year more for all of them, the former and the architects. Once finished, the student must write a thesis in order to obtain the Master title. This final thesis may and must serve as a general trial for the later PhD thesis, in the case that the student decides to continue his postgraduate studies.

The first six months in the master include subjects like "History of Architecture I", "History and Theory of Restoration", "Methodology"... that constitute the first approach to these subjects. The following training during one year include the second part of these subjects, with a deeper and specific view, and introduces a workshop for restoration projects.

The authors of this text impart three of the Master subjects: "History and Theory of Restoration I", "History and Theory of Restoration II" and "Intervention criteria: from theory to practice". The first subject aims to introduce the first rudiments of the theories and history of restoration to students whose training did not touch this theme. This subject is similar to the theoretic part of the one called "Restauración arquitectónica" given in the graduate course and previously described.

Then, "History and Theory of restoration I", with four credits, is focused to students that approach the architectural restoration for the first time. Its main goal is to acquire a critical ability in front of the different restoration lines. That is to say, the student must know the history of restoration and the thoughts of the protagonists of the past in order to be able to form his/her own personal point of view. The students must build progressively their criteria to be able to analyse and criticize the restorations done by other architects and, above all, set a personal meditation that is necessary to face their future restoration projects. This subject does not try to impose a particular view on the student, but to open for him a whole panorama of the different approaches and aspects of the restoration field.

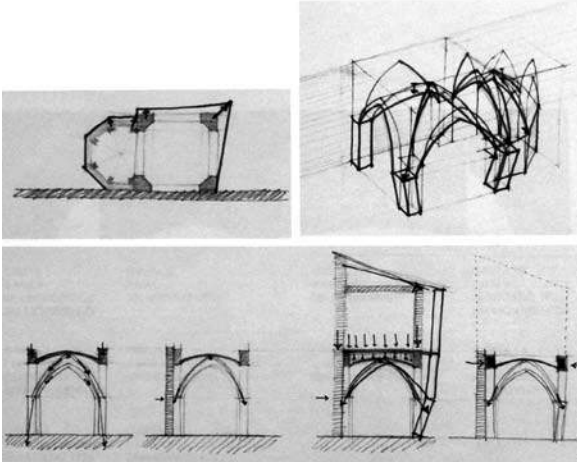
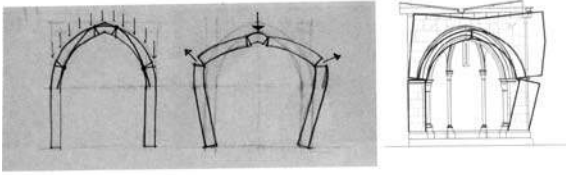


Fig. 5
Example of a structural analysis of mechanisms made by graduate course students.



Fig. 6
Example of a windmill's restoration project made by graduate course students.

The development of the program includes an introduction to the theories and methods of the contemporary restoration; an introduction to the vocabulary of restoration and conservation's terms; a view in the relationship between historical architecture and the pre-existences from the past; the origins and development of the modern theories on restoration since Ruskin and Viollet le Duc till nowadays.

The subject "History and theory of restoration II" deepens in the field and aims to extend this knowledge both in quantity and quality. This subject, also with four credits, is focused on students who have already received at least some previous training on the matter, either during the graduate course or during the first Master semester. The main didactic goal is to broaden this view on restoration in two lines: first, the ideas and discussions of the contemporary theories; second, the specific case of the restoration and conservation in Spain, both in the history of thoughts, ideas and built examples and the main cases in the Comunidad Valenciana region in the last significant thirty years. Again the objective consists not only in simply deepening on the knowledge of the theory but obtaining from it thoughts in order to form personal criteria around architectural restoration and conservation.

The development of the program includes an approach to the world of restoration charts and its relationship to the contemporary restoration of the architectural heritage; a historic and contemporary view on the restoration and conservation in Spain; and some specific subjects on the main debates of the field in the present.

The subject "Intervention criteria: from theory to practice", with four credits, face the fact that the knowledge of history, theory, techniques and constructive recipes for restoration is not enough if the Master student is not endowed with criteria to distinguish the objectives to reach during the restoration project. The detailed study of some intervention cases, from the first idea to its implementation in reality, the analysis the employed criteria, its formulation during the project and its materialization during the restoration works, help to show the student the process from theory to practice in the discipline of restoration. The idea is to help the students identifying their own thoughts on restoration and facilitating the way of these purposes without losing them till they are applied in the building. This elucidation of purposes help to realize the restoration project without letting oneself acritically being dragged along by technological recipes offered by the market and, therefore, looking for reasoned and weighed up possibilities, techniques and materials.

The development of the program includes considering the necessities of the building and formulating the intervention criteria; the analysis of the different intervention criteria through several examples; the formalization of the criteria during the project and the possibility of being coherent with them during the works. This subject comprises frequent visits to restoration works in order to show the practical application of these thoughts and the adopted criteria during the previous studies and the project. This subject also includes a practical exercise that consists in a critical analysis of an intervention from the architect's declared criteria till its realization in the building.

Other activities related to restoration at the Universidad Politécnica of Valencia

The teaching and training of architectural restoration in the graduate and postgraduate courses is complemented at our university with other activities of research and dif-

fusion in the field, where the authors of this text participate actively. In the year 2002, for example, the Instituto de Restauración del Patrimonio – IRP (Institut for Heritage Restoration) was founded. IRP is a research institute that groups all the activities related to restoration research and practice inside our campus. That means restoration activities on architecture, sculpture, painting, frescoes, textile, paper, etc. This institute is also a place where the students may obtain grants and scholarships, form part of the single research groups and develop their Master and PhD thesis.

On the other hand, two restoration magazines are published inside the Universidad Politécnica of Valencia: one more informative called R&R Restauración & Rehabilitación, and another more scientific one called Loggia, Arquitectura & Restauración, whose editors are the authors of this text. This task of diffusion complements the already named tasks of teaching, training and research. The realization of these magazines also allows some students to get a deeper view and knowledge of the restoration world nowadays.

Conclusion

Taking into account the specific difficulties inside the Spanish panorama of restoration, the School of Architecture of Valencia and, by extension, the Universidad Politécnica of Valencia, are trying to offer a definite training on restoration, even if for the moment there only exists one compulsory subject on architectural restoration in the graduate course. This means at least that, finally, the necessity of a specific training to be a restoration architect has been detected. We trust that, in the next future, this compulsory offer of subjects on architectural restoration could be enlarged with the introduction of the new Bologna European education lines. In any case, this desired enlargement of the curriculum of restoration's studies would aim to focus on the importance of transmitting criteria to the student more than offering only a strictly technical training.

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**The Interdisciplinary Programme
for Post Graduate Specialisation Courses
for Protection Of Monuments, Conservation
and Restoration of Historic Buildings and Sites**

The PostGraduate course focuses on the Protection of Monuments and offers two distinctive directions (a) Conservation and Restoration of Historic Buildings and Sites (b) Conservation of Building Materials.

It is organised by the School of Architecture of N.T.U.A in collaboration with the Schools of Chemical Engineering, Civil Engineering and Rural and Surveying Engineering of NTUA. A Scientific Committee, constituted by representatives from the collaborating schools, is responsible for the administration and management of the course, the selection of students and the organisation of the curriculum.

The following information concerns Direction (a) Conservation and Restoration of Historic Buildings and Sites.

Post Graduate Degrees Awarded

The postgraduate Course in the Protection of Monuments awards a Post Graduate Specialisation Diploma in *Conservation and Restoration of Historic Buildings and Sites* to the following:

- Graduates from schools of Architecture, Civil Engineering, Rural and Surveying Engineering of a Greek University or equivalent University abroad.
- Archaeologists
- Art Historians

Students holding already a postgraduate Specialisation Diploma may become eligible to continue their studies leading to a Ph.D. degree, with the help of the staff of the programme.

Criteria for Acceptance

The candidates should be graduates of the aforementioned disciplines. A number of additional criteria are taken into consideration for the selection of students. These include:

- Overall grade obtained in their degree or diploma
- Grades obtained during their degree or diploma in specific subjects relevant to the Post Graduate Course
- Performance in previous degree or diploma dissertation or other studies of theoretical nature
- Any relevant professional or research activity
- Publications in relevant matters in scientific journals
- General skills as described by the candidate's referees
- Basic knowledge of architectural drawing (for non architects)

The course is announced in the press once a year. The candidates are selected before the end of each academic year.

The candidates should include in their application the following:

- Copy of their degree or diploma or equivalence certificate when required.

- Certificate of grades obtained during their studies
- Curriculum vitae
- Certificate of competence of at least one foreign language (Greek for foreigners)
- Short note stating their specific scientific interests and their relevance to the course
- Two reference letters
- Photocopy of identity card or passport
- A recent photo

Course duration

The course starts in the beginning of October of each academic year and terminates at the end of September of the following academic year.

The minimum duration of study for obtaining the postgraduate Specialisation Diploma is one-year (1), while obtaining a Ph.D. requires three years, including one year of the postgraduate course (1+2).

The maximum duration of study is two years for the postgraduate Specialisation Diploma and six years for the Ph.D. In special cases, extensions can be granted.

Programme

The normal duration of studies for obtaining the postgraduate Specialisation Diploma (12 months) is subdivided in three equal terms.

The first two terms include lectures seminars and tutorials. A number of lectures is attended by students of both specialisations (core lectures). Further lectures are selected according to each student's interests (optional lectures). Tutorials are carried out individually in parallel with the equivalent lectures. The estimated time for both core and optional lectures is 270 hours. The estimated time dedicated to course work and presentations is also 270 hours.

In the third and final term, students carry out an individual dissertation. Every student selects a supervisor who is responsible the student's progress. Supervisors need to have expertise in a field relevant to the subject of the dissertation. The suitability of each supervisor has to be approved by the Scientific Committee.

The completion of the Postgraduate Programme in the prescribed time scale demands full time attendance and involvement in lectures, seminars and the course work. An active involvement in research is also considered an integral part of the course.

Award of Post Graduate Specialisation Diploma

A Post Graduate Specialisation Diploma is granted upon the successful examination in nine (9) subject areas, six (6) of which are part of the core lecture series and three (3) of which are part of the optional lecture series, which comprises six (6) subject areas to choose from. Additionally, students have to complete five (5) individual projects.

Tests on the core subject areas are carried out through an eight-hour examination consisting of a number of theoretical questions and a sketch design.

For the optional subject courses students are asked to complete an essay or carry out a restoration design proposal.

All examination procedures are fulfilled by the end of May, before commencing the post graduate dissertation, which is carried out in the final term and is submitted at the end of September. The postgraduate Specialisation Diploma is awarded after the dissertation is submitted and successfully examined.

Lecturers

Apart from the professors of our University who participate in the programme, a large number of professors and scientists, Greek and foreign, are invited every year from other universities and institutions in order to give lectures to our students.

Scientific Committee

MEMBERS OF SCIENTIFIC COMMITTEE

A. SCHOOL OF ARCHITECTURE

Prof. E. Biris (Programme Director)

Prof. E. Korres.

Ass. Prof. E. Maistrou

Prof. F. Goulielmos

Ass. Prof. K. Mylonas

B. SCHOOL OF CHEMICAL ENGINEERING

Prof. A. Moropoulou – (Director of Direction B.)

Prof.N. Spirelis

Assistant Prof. M. Kouli

C. COLLABORATING SCHOOLS

Prof. A. Georgopoulos - Dept. of Rural & Surveying Engineering

Assistant Prof. E. Vintzilaiou - Dept. of Civil Engineering

Responsible for Scientific Secretariat:

Maria Balodimou – MSc. Architect Engineer

Programme of Lectures

1. CORE LECTURES, Common in both Directions (a) & (b)
 - 1.1 History and Theory of Restoration.
 - 1.2 Introduction to the Pathology & Restoration of Monuments and Building Materials.
 - 1.3 Legislation and Management.
2. CORE LECTURES, Direction (a)
 - 2.1 Methodology for Analysis and Documentation.
 - 2.2 Methods of Conservation and Restoration.
 - 2.3 Protection and Design in Historical Buildings and Sites.
3. OPTIONAL LECTURES, Direction (a)
 - 3.1 Special Subjects concerning Conservation and Restoration of Monuments (includes site visits).
 - 3.2 Special Subjects of Archaeological Research.

- 3.3 Protection and Design of Industrial Heritage.
- 3.4 Lighting of historic buildings.
- 3.5 Geometrical documentation of Monuments.
- 3.3 Recording and Filing Methodology.
4. COURSE WORK, Direction (a)
 - 4.1. Criticising a Restoration.
 - 4.2. Projects concerning surveying, designing, documenting and analysing a building.
 - 4.3. Project concerning the Protection and Restoration of a Historic city or Settlement.
 - 4.4. Project solving Conservation problems.
 - 4.5. Project concerning the Incorporation of a New Building in a Historical Environment.
5. POST GRADUATE DISSERTATION carried out by Research

List of invited Professors and Scientists

1. BISCONTIN Guido	<i>Prof.Univ.Ca'Foscari di Venezia Dpt. Environmental Studies</i>
2. ATHANASIOU Fani	<i>Msc. Architect ir. - 16th Ephorate of Antiquities in Thessaloniki, Greek Ministry of Culture</i>
3. CHRISTOFIDOU Athina	<i>Msc. Architect ir. Head of Div. Restoration Works of Byzantine & Post Byzantine Monuments. Greek Ministry of Culture</i>
4. CHRONOPOULOS Ioannis	<i>Prof. of Agriculture Univ. Athens</i>
5. CURUNIS Spiridione-Alessandro	<i>Prof. Univ. Rome "La Sapienza"</i>
6. DELLAS Aikaterini	<i>Architect ir - Greek Ministry of Culture isle of Rhodes</i>
7. DELLAS Georgios	<i>Architect ir - Greek Ministry of Culture isle of Rhodes</i>
8. DIAMANTOPOULOS Dimitrios	<i>Architect – Urbanist ir.</i>
9. DIMAKOPOULOS Iordanis	<i>Dr. Architect ir-Restorer Dir.Gen. Greek Ministry of Culture</i>
10. DOUMAS Christos	<i>Dr. Archaeologist – Prof. History & Antiquities Univ. Athens</i>
11. GAREZOU Maria	<i>Archaeologist</i>
12. HUEBER Friedmund	<i>Dipl. Ing. Dr. Techn. Prof. TU Wien Austria– KU Leuven Belgium</i>
13. IOANNIDOU Maria	<i>Architect ir. – Restor. Committee of Athens Acropolis, Monuments. Greek Ministry of Culture</i>
14. KIENAST Hermann	<i>Dr. Architect ir.-Vice-President German Archaeological Inst. of Athens</i>
15. KOLLIAS Elias	<i>Dr. Archaeologist</i>
16. KOLONAS Vassilis	<i>Dr. Architect ir.</i>
17. KONIORDOS Vassilis	<i>Architect ir. - 9th Ephorate of Thessaloniki - Eptapyrgio Fortress. Greek Ministry of Culture</i>
18. KONSTADINOY Fani	<i>Archaeologist – Benaki Museum of Athens</i>
19. KONSTANTIOS Dimitrios	<i>Archaeologist – Director of Byzantine Museum of Athens</i>
20. KORRES Dimitrios	<i>Architect ir.</i>
21. KOUFOPOULOS Panagiotis	<i>Msc. Architect ir.</i>
22. KOUVELA Agni	<i>Architect ir.</i>

23. KYRIAKI Eleni-Eleousa	<i>Architect ir. –Epidaurus Monuments. Greek Ministry of Culture</i>
24. LAMBRINOUDAKIS Vassilios	<i>Prof. History and Archaeology Univ. Athens</i>
25. LOUVI Aspasia	<i>Archaeologist – Cultural Inst. ETBA</i>
26. MAGOU Eleni	<i>Dr. Chemical ir. – Head of research lab. National Archaeological Museum of Athens</i>
27. MAINSTONE Rowland	<i>Dr. D Eng, C Eng, MICE, FIStructE, FRSA, FSA, HonFRIBA</i>
28. MALLOUHOU Fani	<i>Dr. Archaeologist – Conservation Committee of Athens Acropolis Monuments. Greek Ministry of Culture</i>
29. MAMALOUKOS Stavros	<i>Msc. Architect ir.</i>
30. MARAVELAKI P.	<i>Dr. Chemical ir. - Ephorate of Classical and Pre-historic Antiquities. Greek Ministry of Culture</i>
31. MARCONI Paolo	<i>Prof. 3rd University of Rome Italy</i>
32. MARINOU Georgia	<i>Dr. Archaeologist - Restor. Committee of Mystras Monuments. Greek Ministry of Culture</i>
33. MATSUMOTO Suji	<i>Architect – Japan Centre for International Cooperation in Conservation. Tokyo National Research Institute</i>
34. MICHAIL Ioannis	<i>Dr. Architect ir</i>
35. MILTIADOU Androniki	<i>Dr. Civil ir. - Greek Ministry of Culture Div. Restoration of Byzantine and Post-Byzantine Monuments</i>
36. MOROZZO Donatella	<i>Prof.Ass.University of Genova Italy</i>
37. PALYVOU Klaire	<i>Dr. Architect ir.</i>
38. THEOHARIDOU Kalliopi	<i>Dr. Architect ir.</i>
39. THEOULAKIS Panagiotis	<i>Dr. Chemical ir. – Restor. Conservation Committee Temple of Apollo at Bassae. Greek Ministry of Culture</i>
40. TSOKOS Grigorios	<i>Assoc.Prof. of Physics Univ. Thessaloniki</i>
41. URLAND Andrea	<i>Dr. Architect ir – ICCROM</i>
42. VAN VOORDEN Frits	<i>Prof. of Architecture Univ. Of Delft Holland</i>
43. VOYATZIS Sotiris	<i>Dr. Architect ir.</i>
44. WOLTERS Wolfgang	<i>Dr. Prof. Techn. Univ. Berlin Germany</i>
45. XENOPOULOU Sofia	<i>Dr. Architect ir. – Museologist</i>
46. GIRAUD Dimosthenis	<i>Dr. Architect ir – Director Div. Restoration Ancient Monuments. Greek Ministry of Culture</i>

Paolo Bensi

Second University of Naples
Italy

**Le Role de l' Enseignement
de l' Histoire des Techniques Artistiques
en connexion avec l' Architecture**

Depuis quelques années, sur l'invitation de Paolo Torsello et successivement de Stefano Musso, je collabore avec l'École de Spécialisation en Restauration des Monuments de Gênes par le cours de Histoire des Techniques Artistiques.

Cette matière d'enseignement est souvent en Italie absent dans les cours universitaires des Facultés de lettres, scientifiques et même architectoniques.

Dans mon pays telle situation peut porter à des conséquences négatives dans le domaine de la sauvegarde du patrimoine monumental, puisque les Directions des biens architectoniques sont déléguées à s'occuper aussi des œuvres d'art en connexion stricte avec l'architecture: peintures murales, mosaïques, stucs, sculptures (fréquemment peintes).

Il faut que les fonctionnaires des Directions et les responsables des chantiers de restauration soient compétents dans la nature des matériaux et dans la structure des œuvres qui font partie des décorations architectoniques et telles compétences doivent, à mon avis, être fournies par les Écoles de Spécialisation.

Il n'est pas nécessaire insister pour rappeler combien la décoration des surfaces architectoniques, en particulier cette picturale, se rapporte dialectiquement avec les formes et les espaces de l'architecture, des temps en temps avec des nouveaux niveaux de réalité ou d'espaces fictifs.

Nous pouvons mentionner comment dialoguent entre eux dans la villa Barbaro à Maser, près de Treviso, l'architecture de Palladio, les fresques de Véronèse et le paysage vénitien autour d'elle.

Tels concepts et d'autres toujours fondamentales pour la sauvegarde des peintures murales sont présents dans le livre *La conservation des peintures murales* (Bologna 1977), fruit de la collaboration internationale entre deux restaurateurs italiens de l'Istituto Centrale del Restauro – Laura e Paolo Mora – et un historien de l'art belge, Paul Philippot.

L'important c'est que ceux qui s'occupent de la conservation des surfaces décorées aient conscience de la variété des procédés techniques et des leurs changements selon les époques et les écoles locales. L'Italie à bon droit est la patrie de la peinture à fresque mais ont été utilisés, en Italie et dans l'Europe, des autres méthodes aussi, pour compléter ou pour remplacer la fresque, soit parce que nombreux colorants ne supportent pas le contact destructif avec la chaux éteinte fraise, inévitable dans la véritable fresque, soit pour obtenir des effets optiques et esthétiques particuliers : vivacité des couleurs, clair-obscur, effets atmosphériques.

Tels méthodes étaient appliqués sur enduits fraises ou secs et étaient basés sur l'utilisation des liants inorganiques, comme la chaux, ou organiques – protéines (œuf, colle animale, lait), huiles, résines végétales, gommes, cire d'abeilles – souvent mélangés entre eux.

Les enduits mêmes ont eu des structures différentes dans le cours du temps. En général prévale le mortier de chaux et de sable, appliqué par couches d'épaisseur et de consistance granuleuse différents, mais, selon les nécessités, ont été ajoutés poudre de marbre, de brique pilé (ou de roches éruptives, avec fonctions hydrauliques) ou fibres végétales: ces dernières allégeraient le poids des enduits et retenaient l'humidité nécessaire pour une bonne réussite de la fresque.

En outre en plusieurs cas, surtout pour les murs intérieurs, ont été utilisés des mortiers à base de gypse.

Il faut rappeler que les artistes ont fait recours même à techniques mixtes très particulières, avec des matériaux pas usuels fixés sur les murs, tels que toiles collées (le 'marouflage'), plaques de cuire ou de pierre et même papiers.

Les décorations murales sont donc le fruit d'un équilibre délicat entre matériaux organiques et inorganiques, un ensemble polymatériel complexe, qui pouvait comprendre aussi des reliefs en cire ou résine, feuilles métalliques (or, argent, cuivre, étain), fragments de glace ou de verre.

Cet ensemble était construit de manière à offrir au spectateur des sensations perceptives multiples, variables de point en point - de matité ou de transparence, de surface ou de profondeur - souvent malheureusement altérées par la dégradation et par des interventions de restauration peu respectueuses.

Il est évident que il faut analyser, reconnaître, connaître et respecter la complexité, si elle a survécu, pendant l'étude et la restauration des monuments, et tenir compte de la présence, dans les techniques traditionnelles, des matériaux pour la plupart d'origine naturelle ou produits de l'homme à l'imitation des substances naturelles. Donc quelconque matériel qui entre en contact avec l'oeuvre d'art - moyens de nettoyage, fixatifs, agents de consolidation et protecteurs - doit être soigneusement choisi d'après la nature technique spécifique des décorations objet de la restauration, qui peut changer selon les points de la surface, et il doit être compatible avec les matériaux naturels.

Maria Rosa Montiani

Artistic Lyceum "Paul Klee - Nicolo Barabino"
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Discovering Natural Materials Again

In his introduction to Carla Arcolao's book *Le ricette del restauro*, prof. Paolo Torsello maintains that ancient sources, whether you use them or not, make attitudes change¹. From his words we discover again a method of knowledge relied on experiences, senses and on dignity of ancient materials, released from industrial products and time organization.

As an art historian, I think the choice of sources and documents is an essential indication for a critical vision and can inspire us important suggestions to operate. For this reason we need to understand these periods and arguments that will help comprehension through a web of relationship.

Some of these considerations were born teaching in the Scuola di Specializzazione: I tried to see a coincidence among pigments and supports as it happens in the ochres, flowers...; to see the resonance of colour with environment; to reason about network.

The aim of my contribution is to trace a short history on two correlated fields, the Prehistory and the colour. The late discoveries on the Prehistory involve actuality, because they can change the way we consider past providing suggestions for "the aims of social rebuilding", as John Zerzan quoted.

The Prehistory looks towards the end of Paleolithic as a gatherers' society more than hunters', without social hierarchy or work division until the Bronze age, with imponent intelligence and consequent technical skills, without separation between masculine and feminine and a prevalence of feminine biology and thinking who permitted cultural acquisitions.

From the reconstruction of Marija Gimbutas the Prehistory was a peaceful world owning writing forms free by administration and property.²

If we consider among interesting sources and suggestions the documentations and the studies on prehistorical life and technique, we can change perspective on our life and technique too.

Most scholars like John Zerzan bring our attention on the precious quality of natural life and materials- facilitated in a world without trade and productivity and how they available again at the moment of return to wilderness.

A great capacity to use natural elements and materials characterises a peaceful civilisation hitched to nature, which applies them for comfort and salubrity.

This atteim gives a critical ground to valuate always new proposals of industry, as tell: "before use fork, remember how to use hands". Consequently we may ask why it's possible we just think that "more complex = more adapt"³

Reconsidering Prehistory brings to think that language isn't necessary to develop a skill of observation, because it can block this skill.

In this sense the animal-man roles turn, as we see for example, in the delicious japanese myth of origins, where the Gods Izanami and Izanagi learn to make love seeing two Yellow Wagtail birds.

In reality, as most scholars (Mumford, Levi Strauss) tell, the language and symbols were inhibitory agents to subjugate life to control. They intervene in order to compensate a lack caused by work stress⁴.

The attraction of Prehistory is very strong already at the end of Middle Age. Boccaccio brings attention on primitive world and on the role of wilderness in the beginning of civilization. In his *Genealogia Deorum* he opposes the power of Vulcan, personifying the physical fire, against Prometheus, personifying the celestial fire of wisdom, who broke the "sacrality of nature" (Panofsky).



Fig. 1
Wild woman with unicorn, Bale, Historisches Museum, last half of XVth century, tapestry.

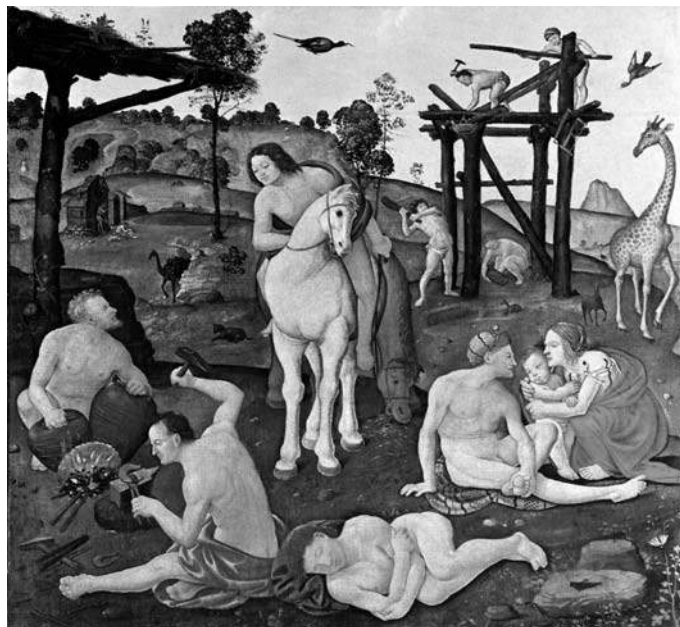


Fig. 2
 Piero di Cosimo, *Eolo and Vulcan*, Ottawa Gallery of Canada, 1500 ca.

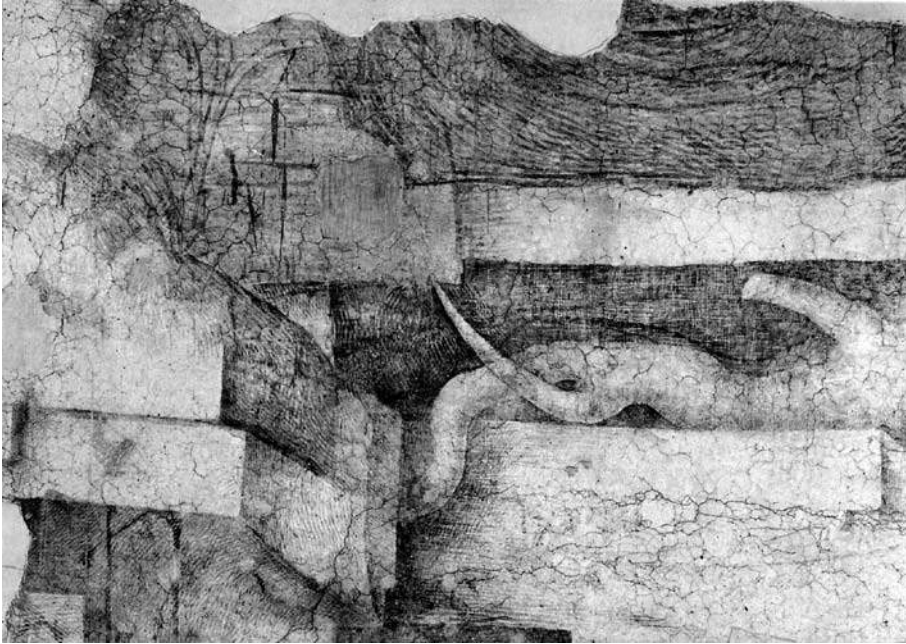


Fig. 3

Leonardo da Vinci, *Sala delle Assi (roots)*, Milano, Castello Sforzesco, 1500 ca.

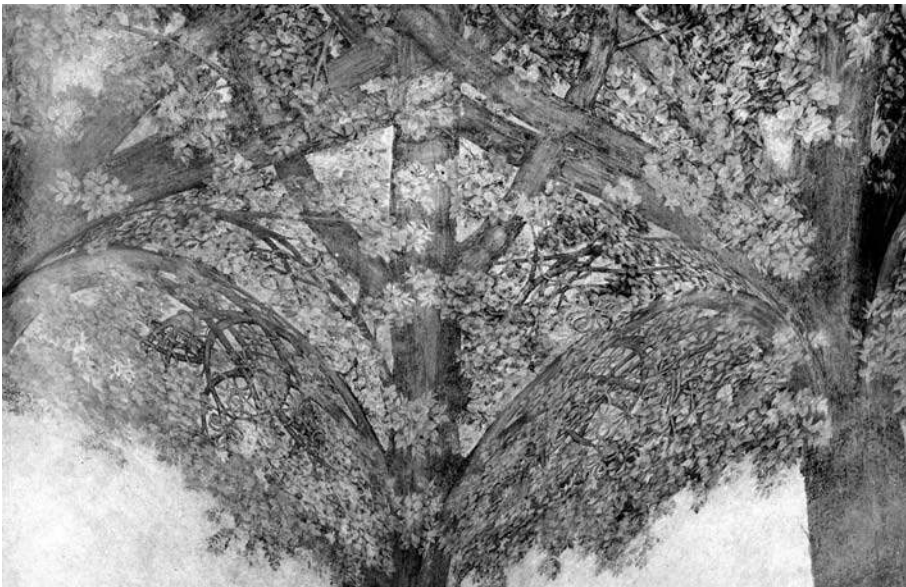


Fig. 4

Leonardo da Vinci, *Sala delle Assi (leafage and golden knots)*.

As modern world gradually progressed, the forest became the last defence, shelter of wilderness and freedom, and became peopled with resistant presences: unicorns, drakes, centaurs, faunes and wild men. Pagan and medieval images unite themselves: "salvatico è chi si salva" ("Savage is whom is saved") as Leonardo said.

The Sweetness accompanies these presences as we see in the tapestries where wild woman is compared with Virgin Mary and the wild men are living friendly with unicorns, drakes and other creatures. It emphasizes the respect and nostalgia for a way of life more and more far.

These images served to temperate the removal from nature and the unbalanced city life. They were a mean of wisdom that allowed in the alchemical manuscripts to learn and transmit informations using images and represented the memory of a culture which did not interrupt the contact with nature.

At the end of XVth century Piero di Cosimo paints a series of scenes of primitive life; among them, *Discovery of Honey* is most interesting for the presence of Vulcan and Dionysus, civilisator gods, which still maintain wilderness. Panofsky wrote: "Come Lucrezio e Vitruvio, Piero concepiva l'evoluzione umana come un processo dovuto alle innate facoltà e talenti della razza. Simpatizzava con le miglitorie della vita, ma si rammaricava di ogni passo che andasse al di là di quella fase innocente". The People resting for example in Piero's *Eolo and Vulcan* or *Eve nursing* in the Borso d'Este's Bible do the same gestures and have same dignity of Natives photographed by Lévi-Strauss in *Tristes tropiques*⁵.

Primitives were attributed important inventions, among them the architecture. In Piero's paintings and in Vitruve's illustrations we find huts made of tree branches. Previously Filarete in his *Trattato* does hypotheses on first huts: his projects for an ideal city reflect the prevalence of water and green and his quests of primitive architecture.

As soon as love and interest for wilderness grows, imitation of natural patterns (shapes) prevails in the XVth Art. In Leonardo's paintings rocks, waters, vegetables grow, cross and flow each other.. Leonardo studies together anatomy and geology. The rocks are the bones of Earth; the rivers are like veins that flow as hair. These images unite infinitely small and the infinitely great in unbroken energy. In the Sala delle Assi at Castello Sforzesco Leonardo imitates a room of "*verzura*" as it was found in contemporary gardens. He argues tree is first shape of architecture, from the roots (foundations), which harvests the evolution of earth, to the leafage growing towards sky (dome). This is the reason why the tree seems a pattern in the sciamanic wisdom: going down his roots means going in the unconscious and past, rising to leafage is meeting Soul and other worlds, as we read in Michael Ende's *Die unendliche Geschichte*.

A net of artificial golden knots is placed upon branches. It creates some circles named "labirinti" or wheels composed by drawings of 8 interlaced that, although clearly readable, seem to have a secret mechanism. For Leonardo the knot is a magical tool which envelopes the room in a protective net, because it expresses relations and energy. Even the training of sight through mirrors, spots, clouds, stones in Leonardo appears like a magical divinatory proceeding called "scrying". In this way we perceive environment like a living spiritual entity⁶.

Just in his urbanistic projects Bruno Taut disposed the green-surrounded buildings on the sides of a trunk-like road, as between tree's branches. It's the same image that we find in Nias' villages of Indonesia.

The Leonardo's labyrinth, with his alternance of brightness and secrecy seems to describe a movement of growth from a central nucleus as it happens in Celtic Art.



Fig. 5
Bruno Taut, *Das distanzierte Gefühl verlangt Distanz in Raum und Form und Farbe*, from *Die Auflösung....* Hagen 1920.



Fig. 6
Maitre de Moulins, *Triptych*, Moulins Cathedral, 1499-1500.

The image of a wheel can be found even in medieval iconography - Wheel of seasons, Wheel of luck, Wheel of ages - and in the wheel of medicine of American Natives, a graphic method to individuate common elements between living things and solutions of problems.

The sense of harmony and fluxus among every element is expressed deeply when the wheel is coloured with the radiant colours of rainbow. The halos around saints and Madonnas, in the paintings of Maître de Moulin and Grünewald have coloured bands expanding from a central point.

Here the colour is a signal of metamorphosis, growth, which underlines the contact with nature⁷. The living and constructive character of colour is evidenced by exagonal frameworks modelled in bee's wax.

Rudolf Steiner sustains that bees'honeycombs have the same structure of quartz crystals and human skull: therefore honey has a strong nutritional power, as classical mythology recognizes. All bees' products are yellow, a colour which makes light and energy of the sun evident.

The exagonal shapes have been used frequently in architecture: Wright (*P.R. Hanna House or Honeycomb House*, 1936) considered them adequate to human movement and then Fuller applied them in geodetic domes and in "tensegrity" structures.

From these examples it's possible to find a set of relationship.

As writes Fritjof Capra, quoting Leonardo and Goethe as a source of pattern studies, we can use this method to have a global vision of environmental problems.⁸

In conclusion carrying out these ways in the architectural restoration means:

- to elaborate a method to observe reality;
- to find relationships, using traditions and sources of spontaneous architecture,
- and then choose natural materials which express these connections.

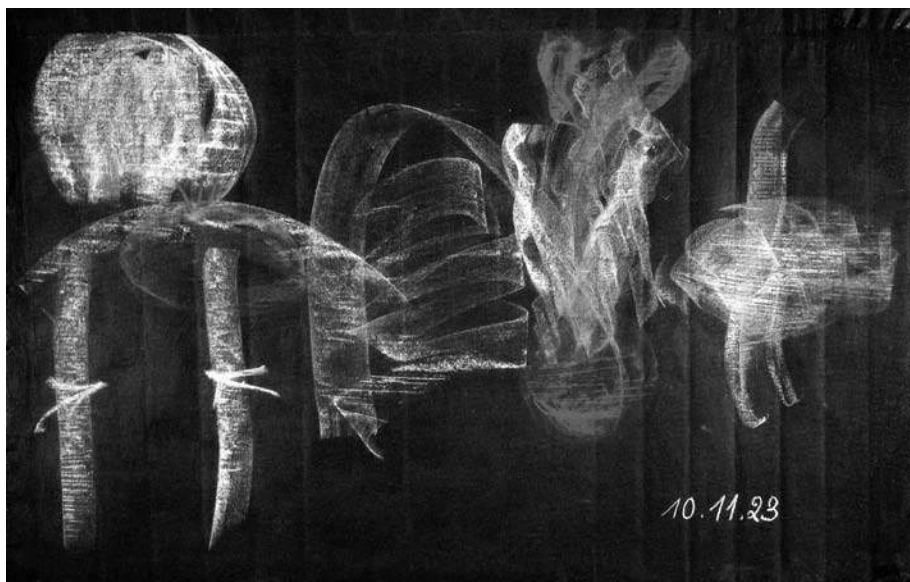


Fig. 7

Rudolf Steiner, *A head opened towards all sides. Honeycomb and honey*, from *Drawings At chalkboard 1923*

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**The Master Programme
“Intervention Methodologies
in Architectural Heritage”**

Introduction

The Master Programme “Intervention Methodologies in Architectural Heritage” is an initiative of FAUP that aims to provide specialized post-graduate training in the field of “restoration, recuperation and rehabilitation of architectural heritage”.

The programme lasts for two years – the first one corresponds to the specialisation course (taught part) and the second one is devoted to dissertation writing.

The taught part will take place during one year and will be composed of 26 modules of 16 hours each, divided between lectures and seminars. A specialisation diploma is awarded after completion of the taught part.

There is also the possibility to attend separate modules within this programme and receive the corresponding credits.

Aims

The specific aims of the Master Programme Intervention Methodologies in Architectural Heritage are the following:

- to provide specialized training in the field of protection of architectural heritage;
- to meet the growing demand of the labour market for highly trained technicians in this area of knowledge, which is becoming increasingly demanding and specialised;
- to widen the possibility of higher level education for graduates, thus contributing for the professional valuation and enrichment in the area of specialised and post-graduate training;
- to stimulate a closer and more productive relationship between the university and the organisms and institutions dedicated to intervene in this problem area.

Designated Students and Career Prospects

This programme is primarily intended for graduates in Architecture, whose basic training constitutes an indispensable qualification for attending the Master Programme.

Besides teaching at universities, the professional areas targeted are those traditionally related with architectural design project, of both the public and private sector.

Among the public organisms and institutions targeted, the following may be pointed out:

- Colleges and higher education schools
- Town Halls and their specific departments
- Local Technical Offices
- Technical Support Offices
- Regional Coordination Commissions
- Public Institutes and Offices specifically dedicated to architectural heritage

In the private sector, reference goes to Design Offices working in the fields of architecture, construction, technical management, inspection and restoration works in buildings, as well as in the field of urban rehabilitation. Information: STUDY PLAN

As far as the practical component is concerned and within the scope of “Project Methodologies”, the programme is structured around the critical approach of three paradigmatic themes – Architectural Restoration, Architectural Restoration and Recuperation, Urban Recuperation and Rehabilitation. These actually make up a summary of the issues triggered by the complex process of intervention in architectural heritage in general.

As far as the theoretical component is concerned, the study plan is organised in four subject areas (Theory, History, Construction and Patrimonial Management), which comprise the fundamental topics brought about by projects of intervention in architectural heritage, circumscribed by the Building and the City.

- Area of THEORY
 - Theories of Intervention in Architectural Heritage (32 hours)
 - Theories of Urban Rehabilitation in the Consolidated City (32 hours)
- Area of HISTORY
 - History of Architectural Restoration and Recuperation (32 hours)
 - History of City Rehabilitation (32 hours)
- Area of CONSTRUCTION
 - Structural Interventions in Old Buildings (32 hours)
 - Traditional Building Materials and Techniques (64 hours)
 - Technical Installations, Services, Equipment and Public Space in the Consolidated City (32 hours)
- Area of ARCHITECTURAL HERITAGE MANAGEMENT
 - Architectural Heritage Legislation and Management (32 hours)
- SEMINAR
 - Project Methodologies (128 hours)

Timetable

Thursdays, 9 a.m. - 6.30 pm

Fridays, 9 a.m. - 6.30 pm

Numerus Clausus

The maximum number of vacancies is 30. The minimum number of students required is 15.

Enrolment and Fees

Enrolment: 1,000 Euros

Fees: 1,500 Euros / year

Admission Requirements

Only graduates in Architecture (or in a training area officially defined as equivalent) who have achieved a minimum grade of 14 will be admitted in this programme. Ex-

ceptionally, may also be admitted following appreciation of their curriculum: (i) graduates in architecture (or in a training area officially defined as equivalent) with a grade lower than 14; (ii) graduates in Architecture from foreign universities; (iii) graduates in other areas from Portuguese universities (or officially defined as equivalent) whose curricula show adequate technical and professional training in the scientific areas of the programme. Tough conditionally, senior students of undergraduate programmes may also apply to admission in the programme.

Applications: 2nd July - 31st August 2007

Selection Of Applicants: 3th - 14th September 2007

Enrolment: 17th - 29th September 2007

Beginning: 11th October 2007

Gian Paolo Treccani

Faculty of Engineering
University of Brescia
Italy

**Teaching of Architectural Restoration
in an Engineering Faculty**

The teaching of Architectural Restoration in an Engineering Faculty has more advantages than in Architecture Faculty, but also has some specific difficulties:

- 1- Engineering Faculty join many subjects, and the architectural restoration course is only one of them, neither the most important, during the long, hard curriculum of studies. Therefore, the course can not get into the theory of the doctrine but attends to the practical drills.
- 2- The regulations of the Engineering University provides for a 6 months course and for a project laboratory only for the 5 years "Edile-Architettura" ("Building Engineering-Architecture") degree, while in "Ingegneria civile" ("Civil Engineering") degree the course of Architectural Restoration is composed of: a module of Architectural Restoration A (in the 3rd year or in the 1st year of specialist degree) and a module of Architectural Restoration B (in the 1st year of the specialist degree).

Architectural Restoration A is a compulsory matter compulsory only for the Architectural curriculum.

The themes of Architectural Restoration A are: the survey of building geometry, materials, decays, whereas the topic of Architectural Restoration B is the project for the reuse of an edifice.

With the teaching of Architectural Restoration in Engineering Faculty there might be the advantage of a collaboration with scientific laboratories (that are located in Engineering Faculty) and with other teachings: Technical Architecture, Structural Restoration, Buildings in seismic places, History of Architectural Techniques, Chemistry, Topography, Technique of constructions.

Among them, the Architectural Restoration course have the closest collaboration with Technical Architecture, Structural Restoration, History of the architectural techniques. The students may choose a theme and then develop it in these courses.

The final thesis in Architectural Restoration, moreover, can be correlated with other subjects such as Chemistry, Building in seismic places, Technique of constructions and with other organisms, external to the University, such as Brescia Commune, Natural Sciences Museum of Brescia, Superintendence of the architectural estates of Brescia, Mantova, Cremona.

The aims of the course Architectural Restoration is mainly the teaching of restoration methods of decayed building.

Its lessons themes are the following:

- history of theoretical debate;
- reasons for the buildings conservations;
- decay: its registration, interpretation and the projects to fight it;
- project for reusing a building.

The subject of this project are 3:

- Reuse: the course's purpose is teaching the students the meanings of "barriera architettonica", "barriera localizzativa", "degrado funzionale", "fruizione ampliata", and mostly to apply these concepts to real situations.

- Consolidation and reduction of seismic damages: the students choose how to reuse a building and verify if the consolidation and the structural improvement are possible.
- Decay and intervention on building materials: the restoration works carried out by Brescia Commune, by Superintendence of the architectural estates of Brescia, Mantova, Cremona may offer the students the possibility of studying practical case and of working out restoration methods through out analysis in laboratory and on the place.

A real difficulty at the beginning of the Architectural Restoration course is the research in the archives (Record Office of Brescia, Ecclesiastical archives, private archives, ...), necessary to study the history of buildings before starting the project of conservation, restoration, reuse. During the research the students have the collaboration of the staff of these organisms.

The historical investigation has to be verified on the place with the observation of the building (geometry, materials, decay, ...) and its surroundings.

During the most difficult surveys is very useful the collaboration with the course of topography, that help the students with instruments (theodolite, laser scanner, ...) and with photo straightening programs.

In the knowledge of the materials and of the decay's pathologies the students may be helped on the place by the restorers; very important, mostly for the students that are working out the thesis, is the collaboration with Chemistry Laboratory for Technologies of Engineering University of Brescia and with the Natural Sciences Museum of Brescia.

A grayscale photograph of a classical building facade. The image shows a balcony with a decorative balustrade featuring several balusters. Above the balcony are windows with shutters, some of which are open. The word "Posters" is overlaid in a bold, black, sans-serif font on the right side of the image.

Posters



EAAE-ENHSA Sub-network Workshop on Conservation

Teaching Conservation/Restoration of Architectural Heritage: Goals, Contents and Methods

Genoa, Faculty of Architecture, University of Genoa, October 18-20, 2007

The workshop represents a further initiative and a new start for the Thematic Sub-Network on Conservation within the EAAE and ENHSA and it will be the occasion to bring together educators in conservation from various European Schools of Architecture so that:

- they can investigate similarities and differences in the contents and pedagogy of teaching within the field of conservation/restoration of architectural heritage;
- they can examine the ways in which the teaching of conservation/restoration fits into the curricula of different schools;
- they can critically compare educational objectives and strategies implemented by the schools in relation to conservation/restoration teaching;
- they can exchange ideas and thoughts on new teaching methods and discuss the role of the teaching of conservation/restoration for an architect.



FINAL PROGRAM

18th October 2007

h. 14.00 – 15.00 workshop registration

h. 15.00 Welcome address

Benedetta Spadolini - Dean of the Faculty of Architecture
Orietta Pedemonte - Director of the Department DSA

Workshop presentation
Stefano F. Musso - Coordinator of the sub-network on Conservation

Presentation of EAAE
Per Olaf Fjeld - EAAE President

Invited speaker
Caterina Bon Valassina - Director of the Italian "Istituto Centrale del Restauro" - MIBAC
(Restorer's training and profile)

h. 16.30 – 17.00 Coffee break

Opening lecture
Paolo Torsello
Method, procedures, protocols

Keynote speech
Luc Verpoest - "Raymond Lemaire Centre for Conservation", Katholieke Universiteit Leuven
Presentation of the Centre

Discussion

h. 20.30 - Social Dinner at the Restaurant "I tre Merli", Porto Antico Area

19th October 2007

h. 9.30 Keynote speech
Leughin Kealy - School of Architecture, University College of Dublin, Ireland
Teaching thinking/learning/doing: Conservation and creativity in architectural education

Panel
A. Aveta, G. Marino - Faculty of Architecture, University "Federico II", Naples, Italy
A. Craciunescu - "Ion Mincu" University - Bucharest, Romania
G. Franco - Faculty of Architecture, University di Genoa, Italy
F. Giovannetti, M. Zampilli - Municipality of Rome, Faculty of Architecture, University of Rome 3
G. Guariso - Polytechnic of Milan, Campus Bovisio, Italy
L.G. Larsen - Royal Danish Academy of Fine Arts, Copenhagen, Denmark
J. Coenen (M. T. Van Thoor) - Technische Universiteit Delft, The Netherlands
E. Vassallo - Faculty of Architecture, University IUAV of Venice, Italy

Discussion

h. 11.45 – 12.15 Coffee break

Exhibition opening

h. 13.30 – 15.00 Lunch

h. 15.00

Keynote speech
André De Nayer - University College of Design Sciences - Antwerpen, Belgium
How do we teach conservation/restoration?

Panel
A. Anzani, L. Binda, L. Cantini, G. Cardani, P. Condoleo, S. Saisi - Polytechnic of Milan, Campus Leonardo, Italy
J. Bastos - Technical University of Lisbon, Portugal
S. Castello, A. Pane, V. Russo - Faculty of Architecture, University "Federico II", Naples, Italy
D. Fiorani - Faculty of Architecture, University of L'Aquila, Italy
L. Napoleone - Faculty of Architecture, University of Genoa, Italy
R. Prescia - Faculty of Architecture, University of Palermo, Italy
F. Tomaselli, G. M. Ventimiglia - Faculty of Architecture, University of Palermo, Italy

Discussion

h. 17.15 – 17.30 Coffee break

Keynote speech
Herb Stovel - Heritage Conservation Programme - Carleton University, Ottawa, Canada
Challenges in moving conservation education from architecture to heritage

Panel
F. Augelli, S. Bortolotto, C. Tedeschi - Polytechnic of Milan, Campus Bovisio, Italy
A. Biato - Faculty of Architecture, University of Genoa, Italy
A. Baror - Tel-Aviv University, Israel
M. Boriani, M. C. Giambruno - Polytechnic of Milan, Campus Bovisio, Italy
G. Caterina, S. Viola, P. De Joanna - Faculty of Architecture, University "Federico II", Naples, Italy
G. Caterina, M.R. Pinto - Faculty of Architecture, University "Federico II", Naples, Italy
M. De Vita - Faculty of Architecture, University of Florence, Italy
F. Dogliani - Faculty of Architecture, University IUAV of Venice, Italy
P. Motta - Private sector

Discussion

20th October 2007

h. 9.30 Keynote speech
Carolina Di Biase - Polytechnic of Milan, Campus Leonardo - Pole of Mantua, Italy
(When at what extent do we teach conservation/restoration?)

Panel
R. Crisan, M. Crisan - School of Architecture, Ion Mincu University - Bucharest, Romania
H. Willequin (L. Deballeux) - Faculté Polytechnique de Mons, Belgium
C. Deom - Université de Moncton, Canada
P. Bensi - University of Napoli II - S. M. Capo a Vietere pole
M.R. Montani - Scientific Lyceum "Cassini", Genoa, Italy
Y. Salman - Istanbul Technical University, Turkey
F. Vegas, C. Mileto - Polytechnic University of Valencia, Spain

Discussion

h. 11.45 – 12.00 Coffee break

Plenary Session (by note speakers, EAAE President, workshop coordinator)
 Chairman: Stefano F. Musso

h. 13.30 – 15.00 Lunch

Closing session: Future perspectives for the thematic sub-network



organized by: ENHSA, EAAE, University of Genoa, School of Architecture, 2007. supported by: MIBAC, Municipality of Genoa. - organized by: MIBAC.

The program is subject to subsequent changes.



Countries represented: Belgium, Canada, Denmark, France, Germany, Greece, Ireland, Israel, Italy, Holland, Norway, Portugal, Romania, Spain, Turkey. - E-mail: conservation@arch.unige.it



UNIVERSITA' DEGLI STUDI DI NAPOLI "FEDERICO II"- ITALY

Facoltà di Architettura

Corso di Laurea Magistrale in Architettura-Restaurato

The "heritage" represents the place where communities find again own characteristics, their identities, in lack of which the preponderant character of the man get lost in other words the sharing of the ideas and the memory.

To international level, it is in progress a job to adjoin and revise the concept of "heritage", that, sometimes, risks to include every things and to take over any expression of the man and/or of the nature.

The permanence of the tangible and intangible testimonies of the heritage is essential to guarantee a balanced development of the contemporary society.

The interpretation of the "heritage" and its values is variable and strongly conditioned by the particular contexts that are culturally often and deeply different. The priority of the Course of Magistral Degree in Architecture-Restoration is given to the transmission of theories' plurality and of interpretations, but within limit of a precise doctrinaire reference that makes head to the long and consolidated Italian tradition. The architectural and urban heritage's preservation constitutes the basic action of preservation of the material traces being on the territory in its different levels and values (artistic, traditional, historical, cultural, etc). The restoration constitutes the process of interdisciplinary and executive nature of the conservative choices. The theoretical and technical principles that regulate the conception and the action of the preservation/restoration are those of the authenticity, identity and compatibility's respect of the physical-materials and planning choices within limit of an aware project.

The formative objective of the GdM is that to furnish a plurality of tools to understand and to manage the process of knowledge and intervention in the architectural heritage, both from a theoretical point of view and specifically technical.

On both plan regarding the concepts' definition and the technical process' organization the complexity of the subject asks for a precise run of transmission and teaching of the contents. The architecture's preservation and restoration demands a knowledge of the planning stage to different levels: from that of the configuration of new elements to that plant engineering, from that of the economic sustainability to that of the technological choices of the materials, and so on; according this way it's possible to pursuing the principal objective of the protection of a building, with its values inside the contemporary social

sphere. The GdM sets to its base the organization of the subject so that a based methodological run is taught on the knowledge of the preservation's object (History of the architecture, Diagnostic, Drawing, Science and Technique of the building), on the interpretation of the building, on the possession of the necessary tools in the decisional moment (Planning of the Restoration, architectural planning, technical fittings, Technology of the architecture, Urban studies, Estimate and economy, Legislation).

It is also given to the direct knowledge of the restoration's executive aspect by visits to the specialist laboratories and the yards of monumental restoration in progress.

What and Why

Who

The teachers are most architects be trained in the technical and theoretical-humanistic aspects. They have to face the complexity of the architectural restoration without estranging from the priority necessity of the motivations' definition that are at the base of the preservation. Nevertheless, the curricula of the teachers have to show a specificity (publications, studies and specific searches, share to the national and international debate) in relationship to the attributed teachings, as well as a particular didactic experience. For other teachings ("to choice") and for those "integrative" of the Laboratories, the teachers, which are not only architects, are expert of different subjects, in this way it's possible to integrate the job that the students have to face in their progress of the two years with a different kind of disciplinary competences (Legislation, Economy, Technology, etc). This organization makes to assimilate to the students the specificities of the sectors with which the project of preservation/restoration has to interface. The interaction among the different disciplinary fields is guaranteed in our GdM with the forecast of such inside integrative examinations to the Laboratories of Restoration's Planning, of the architecture, of the old town centers' urban studies.

T E A C H E R S

a. y. 2 0 0 7 - 2 0 0 8

Aldo Aveta	Ottavia Corchi	Bianca Gioia Martino
Alessandro Baratta	Alessio D'Auria	Pietro Mazzei
Attilio Belli	Francesca Ferretti	Ruggiero Moricchi
Giovanni Borrelli	Ornella Fiorillo	Giulio Pane
Gaetana Cantone	Maurizio de' Gennaro	Maria Perone
Claudia Casapulla	Bruno de'Gennaro	Maria Raffaella Pessolano
Stella Casiello	Vincenzo Franciosi	Aldo Loris Rossi
Gabriella Caterina	Luigi Fusco Girard	Martile Simonetti

How

Extentions and perspective

An aware process of acquisition of the competences is necessary to elaborate a project of architecture considering different disciplines and managing an interaction among these. The architect has to have a formative background founded upon a preparatory transmission of the fields that preside to the project and, in a second phase, an experimentation step by step on the interaction among the different fields in the construction of the same project. The restoration's project is a plan where further

fields enter making the works' configuration even more complex. For such reason, the teachings that rotate around the preservation/restoration cannot be submitted to a following cycle of studies, but to constitute preponderant part of the baggage of notions since the first year of the course of studies. To the actual state, the architects are called to face a reality in which they have to acquire a manifold knowledge of the inside aspects to the project. For this reason, different kind of disciplines should be strengthened both national and international level such as the theoretical disciplines (History of the criticism, Aesthetics, etc) that help to interpret better the object of study; those properly techniques connectioned with applied search and advanced technologies experimentation's centers and finally, the disciplines regarding international financial plan to be able to exploit the managerial abilities and to contribute to eventually improve such decisional trials in the European seat.

To the actual state, in Italy, the realization is in progress and, therefore, the adjustment to the DM. 270/2004. It wishes us that such trial can involve an improvement of the formative offer of the GdM in the auspicious direction.

S U B J E C T S

history of the architecture, drawing, diagnostic and consolidation, theory and history of the restoration, science and technique of the buildings, technology, geo-resource, archaeology, history of the art, laboratory of restoration, laboratory of urbanistic planning, laboratory of architectural planning, economy for cultural heritage, legislation for cultural heritage, plant engineering.

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Montesobrero street, 3-80143 Naples (Italy)
<http://www.architettura-restaurato.unina.it>

P R E S I D E N T
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info@architettura-restaurato.unina.it

S E C R E T A R I A L S T A F F
Mr. Vincenzo Bonato tel. +39. 081. 2538875
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RESEARCH

MODIFICATION

Prof. Rob van Hees



Monitoring Restoration St. Peters Church, Leiden

Restoration of Forest Cabins at Zonnestraal sanatorium, Hilversum

Development of Monument Damage Diagnostic System (MDDS)

Participation in Seminars on PREventive CONservation and

Monitoring of the Architectural Heritage (SPRECOMAH)

Organisation of Docomomo 10th International Conference; the Challenge of change

Secretariat of European Architecture History Network (EAHN)



INTERVENTION

Prof. Jo Coenen



Database on interventions in monuments and cultural buildings

Museum Our Lord in the attic, Amsterdam (with Getty Conservation Centre)

Research on recent interventions in GlassPalace and Oranje Nassau building, Heerlen

Proposals for interventions in World Heritage site Olinda, Brazil

Integral Analysis of Designing Buildings (IPAG)

Research of the architecture of Gerrit Rietveld (exhibition in 2009)

Pierre Weegels fecit, research on the work of architect Weegels, Weert



TRANSFORMATION

Prof. Paul Meurs



The European City in transformation: Dresden

Development of a theoretical framework for urban heritage conservation (UNESCO)

Conservation management plan for the city of Paramaribo, Surinam

Member of Transformation Platform for Transformation of Office Buildings into Dwellings

Transformation of Railway stations and their environment in Europe

Protected cityscapes, organisation of a conference for the National Committee



Faculty of Architecture



Delft University of Technology

EDUCATION

BSc 1 t/m BSc 4

BSc 5

DESIGN EXERCISE city // context // re-use

ARCHITECTURAL BASIC NOTION introduction to @MIT



BSc 6

DESIGN EXERCISE city // context // re-use

MSc 1

DESIGN EXERCISE restoration // renovation // re-use

TECHNIQUES & CONSTRUCTION physics // techniques // installations lectures

CONSERVATION TECHNIQUES conservation techniques // lectures

TECHNICAL STUDIES building physics // techniques design

ARCHITECTURAL DESIGN I elementary @MIT

ARCHITECTURAL STUDIES @MIT history course

HISTORY history department



MSc 2

DESIGN EXERCISE restoration // renovation // re-use

THE PLASTICALLY NUMBER free choice

DAMAGE DIAGNOSTICS free choice



MSc 3

DESIGN EXERCISE urban // landscape // architecture // techniques

ENVIRONMENT urbanism analyses

ARCHITECTURE architectonic analyses

TECHNICAL STUDIES II technical analyses

ARCHITECTURAL DESIGN II intensification @MIT

HISTORY PAPER history department



MSc 4

DESIGN EXERCISE urban // landscape // architecture // techniques



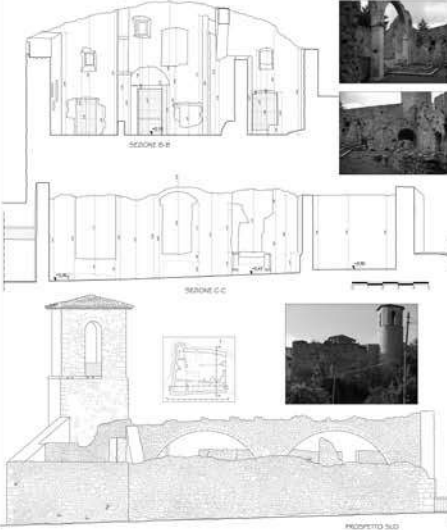
Faculty of Architecture



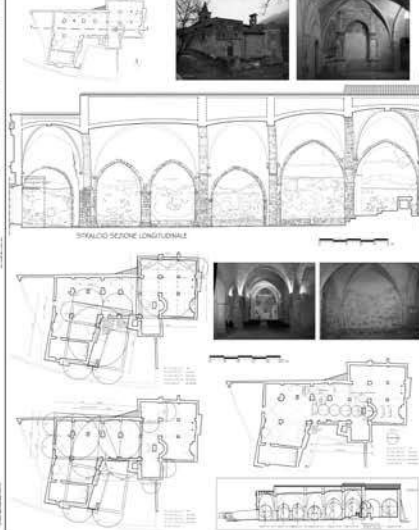
Delft University of Technology

COSA E' PERICOLO
 L'impugnatura del rilievo non affligge solo le aree archeologiche di pregio, ma anche e soprattutto le strutture architettoniche storiche. Essi nascono dalle compressioni delle caratteristiche spaziali, geometriche, strutturali e materiche affini all'edilizio, in relazione alla complessità della seconda confluenza materiale nel tempo, come nella definizione di un progetto in grado di compiere in maniera consapevole ed efficace le funzioni di tutela e di conservazione. L'attività di studio è la progettazione finalizzata ad un percorso analitico che termina nel confronto di un'immagine superiore di natura storico-scienza e tecnica, da una parte, e la lettura del risultato di quegli interventi del dibattito tecnico attuale, nonché un'operazione rivolta ad una serie di soluzioni più ricche, valutate in Italia e in Europa, all'altezza filosofica delle procedure analitiche applicate, nelle caratteristiche materiali, tecniche e strutturali più comuni, nell'abilità storica, nei processi, nell'impugnatura generale, nella continuità, nel quadro di riferimento culturale e storico.

Moneta BULGOS - San Pietro a Castellino in Paolena (SA)

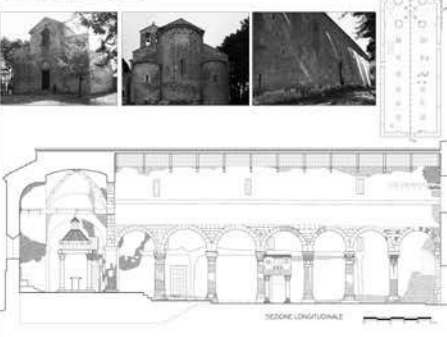


Parona SALSODA - Santa Maria del Ponte a Torre degli Anzani (SA)

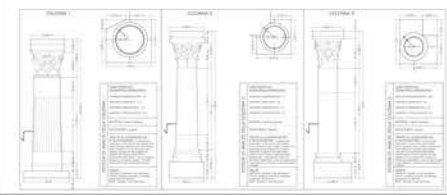
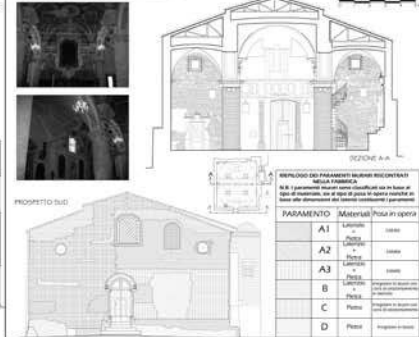


COME
 Il percorso formativo si articola in un processo concettuale che lega le informazioni storiche con i processi operativi, in quanto, infatti, l'indagine storica è sempre e necessariamente un'attività operativa, che si svolge attraverso la lettura e l'analisi delle fonti, la ricerca e l'individuazione delle informazioni, la loro interpretazione e la loro sintesi, la loro organizzazione e la loro comunicazione. Il percorso formativo è sempre e necessariamente un'attività operativa, che si svolge attraverso la lettura e l'analisi delle fonti, la ricerca e l'individuazione delle informazioni, la loro interpretazione e la loro sintesi, la loro organizzazione e la loro comunicazione. Il percorso formativo è sempre e necessariamente un'attività operativa, che si svolge attraverso la lettura e l'analisi delle fonti, la ricerca e l'individuazione delle informazioni, la loro interpretazione e la loro sintesi, la loro organizzazione e la loro comunicazione.

Moneta BULGOS - Santa Maria Assunta a San Marco (SA)



Spazio DI SERRAVALLE - SS. Pietro e Andrea a Castellino (SA)



TAV. DI DATI DELLE DIMENSIONI DEI MATERIALI RICOSTITIVI DEI PARAMENTI - scala 1:10			
Param.	Dimensioni, max.	Dimensioni, max.	Dimensioni, max.
A1			
A2			
A3			
B			
E1			

REPERIO DEI PARAMENTI STRUTTURE RICOSTITIVI
RELAZIONE
 Le relazioni sono indicate con le lettere A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO, CP, CQ, CR, CS, CT, CU, CV, CW, CX, CY, CZ, DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, DK, DL, DM, DN, DO, DP, DQ, DR, DS, DT, DU, DV, DW, DX, DY, DZ, EA, EB, EC, ED, EE, EF, EG, EH, EI, EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC, FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ, GK, GL, GM, GN, GO, GP, GQ, GR, GS, GT, GU, GV, GW, GX, GY, GZ, HA, HB, HC, HD, HE, HF, HG, HH, HI, HJ, HK, HL, HM, HN, HO, HP, HQ, HR, HS, HT, HU, HV, HW, HX, HY, HZ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NN, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UU, UV, UW, UX, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VU, VV, VW, VX, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WU, WV, WW, WX, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YY, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ

PARAMENTO (Materiali) (Pura in opera)

A1	Laterizio	colore
A2	Laterizio	colore
A3	Laterizio	colore
B	Laterizio	colore
C	Laterizio	colore
D	Laterizio	colore
E1	Laterizio	colore
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E3	Laterizio	colore
F1	Laterizio	colore
F2	Laterizio	colore
F3	Laterizio	colore

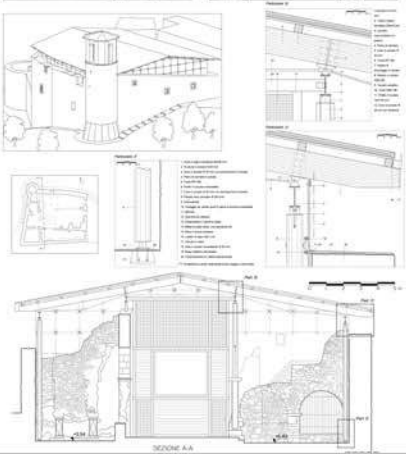
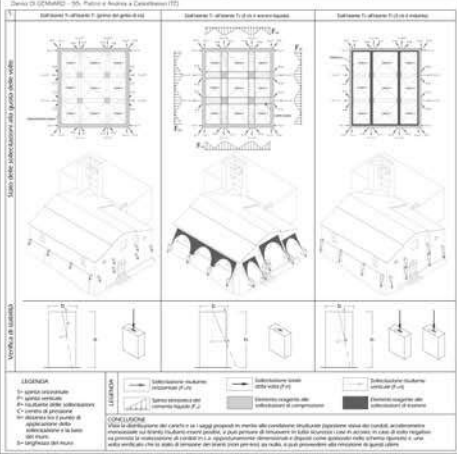
PARAMENTO (Materiali) (Pura in opera)

E3	Laterizio	colore
F1	Laterizio	colore
F2	Laterizio	colore
F3	Laterizio	colore

DALLA CONOSCENZA AL PROGETTO: SPAZI STRUTTURE SUPERFICI

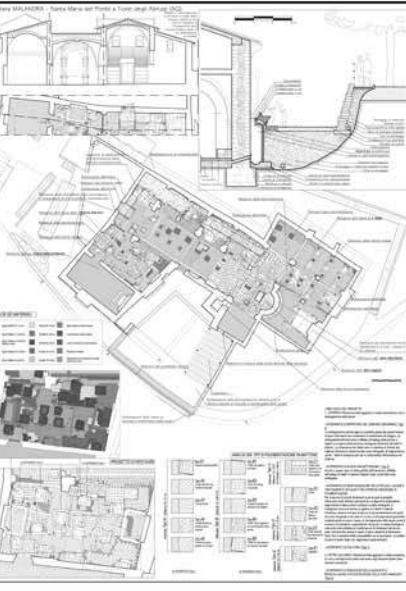
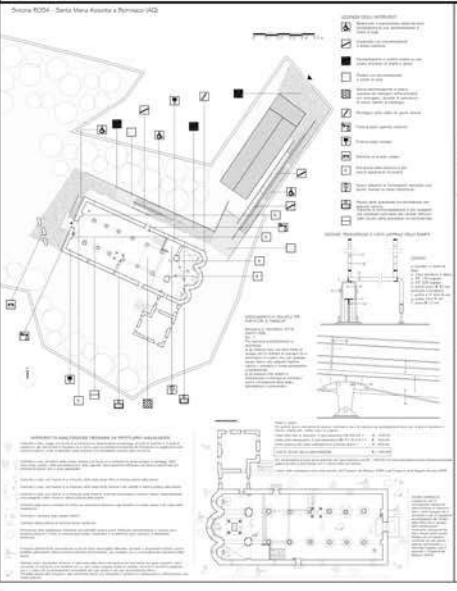
129
Il Corso di restauro architettonico dell'Agia è basato su un percorso ordinato e articolato dai lavori di campo (foto, saggi e architetture), selezionati sulla base del proprio curriculum per ciascuno merito a fondo dell'Arco. I tutor selezionati presentano ciascuna molto orientati: tutti sono specialisti in quanto alla "Scuola di Restauro" di Venezia con i suoi corsi di "Restauro", "Teoria e Storia", "Restauro del Monumento" e "Restauro del Sito".

QUANTO E IN QUALE MISURA
L'individuazione del corso di restauro architettonico nel Corso di Laurea in Ingegneria-Architettura ha controspazio, come già per la creazione della Facoltà di Architettura, la definizione di un nuovo spazio formativo dell'ingegnere architetto, oggi molto ampio e ricompletato con quello dell'architetto: il corso, coltivato al giorno per giorno e di durata annuale, prevede lo svolgimento di 12 CFU per lavoro di laboratorio (tra i 60 e i 80 anni e di 3 CFU per il laboratorio (tra i 60 e i 80 anni).
La materia di Storia dell'Architettura e il Disegno dell'Architettura e l'Architettura Tecnica hanno preponderanza all'opera.
Un particolare approfondimento per il resto è dato dalla lettura dell'architettura e del Restauro degli edifici, coltivata sempre al giorno per giorno, mentre è riservata come base al perfezionamento degli aspetti strutturali e del restauro storico architettonico.
Per far spazio al corso di laurea di Ingegneria, l'attuale formato del corso è stato riorganizzato in un formato di laurea triennale e strutturato attorno all'architettura storica, mentre è stato ampliato il numero di corsi di laurea culturale presso il restauro e restauro, mantenendo la struttura del corso di laurea triennale, ma con un numero di corsi di laurea triennale e un numero di corsi di laurea triennale.



PROSPEKTIVE FUTURE
Lavorare in Italia è un lavoro duro, soprattutto se si è ingegneri e architetti, ma è un lavoro che si fa con passione e dedizione. Il corso di laurea triennale in Ingegneria-Architettura è un corso di laurea triennale che si fa con passione e dedizione. Il corso di laurea triennale in Ingegneria-Architettura è un corso di laurea triennale che si fa con passione e dedizione.

130
Il corso di laurea triennale in Ingegneria-Architettura è un corso di laurea triennale che si fa con passione e dedizione. Il corso di laurea triennale in Ingegneria-Architettura è un corso di laurea triennale che si fa con passione e dedizione.



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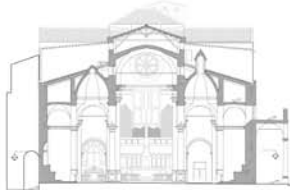
The contents of teaching, and targets of conservation/restoration are based on the identification of the historical and artistic value of the monument, to explore a judgment of value determined from the acquaintance of constructive and architectural elements and the historical city context.



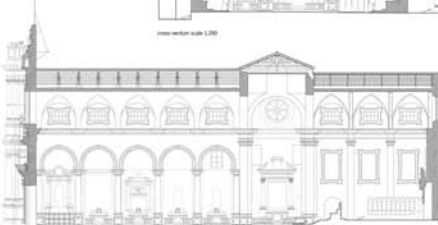
The project proposal is that of the church of S. Anna in Palermo, an interesting 17th century Opera Line Renaissance facade of which Anna took to the 1700 inspired by the architectural models of Francesco Borromini and Guarini Guarini.

The project for the restoration of this work because of its complexity requires a detailed historical study through the historiography and sources of archive. It is therefore necessary to reconstruct the constructive history of the work, changes and the architectural identifications.

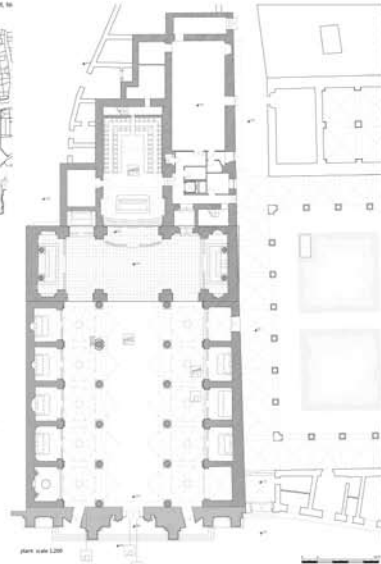
A second phase of study is the design with plans, sections and statements and any other necessary to acquire the knowledge and of restoration of the forms and architectural character.



cross section scale 1:200



longitudinal section scale 1:200



plan scale 1:200

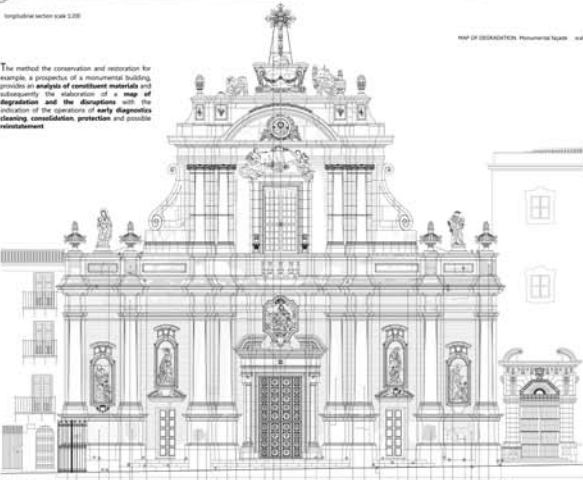
Architectural identifications

-  Original facade of the Church to be based in the project of the current building (1688-1690).
-  Facade reconstruction which includes on a project of Arch. Renata Prescia (2008-2009).
-  Reconstruction facade on a project of Arch. Giovanni Saguto (1970-1976).

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The method for the conservation and restoration for example, a prospect of a monumental building provides an analysis of constituent materials and subsequently the elaboration of a map of degradation and the disruptions with the indication of the operations of early diagnosis, cleaning, consolidation, protection and possible reinforcement.



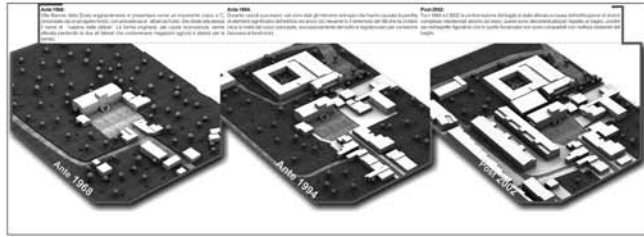
MAP OF DEGRADATION: Monumental facade scale 1:200

Progetto di conservazione - Legenda	
	Restoration of the facade to be based in the project of the current building (1688-1690).
	Facade reconstruction which includes on a project of Arch. Renata Prescia (2008-2009).
	Reconstruction facade on a project of Arch. Giovanni Saguto (1970-1976).
	Restoration of the facade to be based in the project of the current building (1688-1690).
	Facade reconstruction which includes on a project of Arch. Renata Prescia (2008-2009).
	Reconstruction facade on a project of Arch. Giovanni Saguto (1970-1976).
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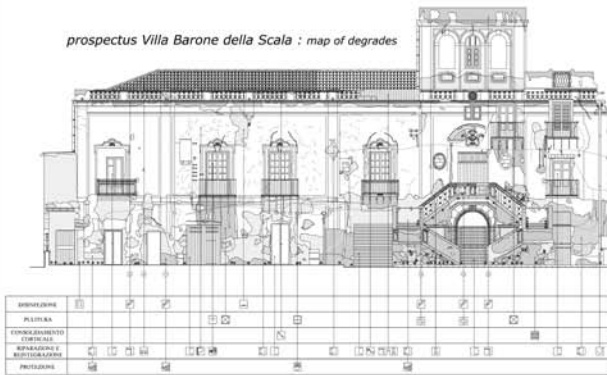
URBAN ANALYSIS
CONSERVATION
PROJECT



Villa Barone della Scala : Urban development of the Baglio



prospectus Villa Barone della Scala : map of degraded



PROBLEMA	STRATEGIA	CAUSE	MECCANISMO
LUMINOSITÀ

RUMORE

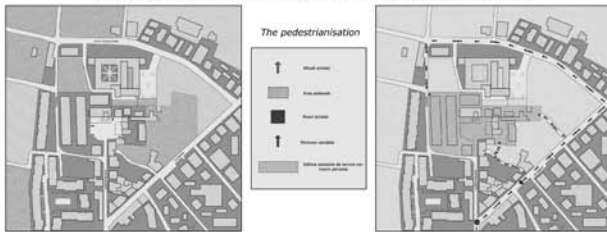
QUALITÀ AMBIENTALE

COSTRUTTO

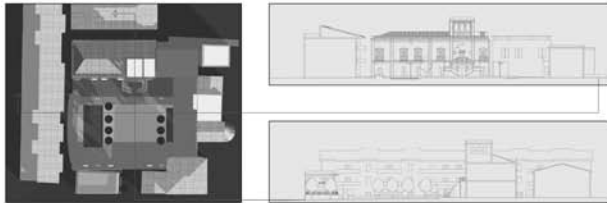
MATERIA

LIVELLO DI INTERVENTO IN BASE ALLE ESISTENZE			

project of baglio and the villa Barone della Scala : Plants and sections



The project of the baglio arises from the need to create a meeting point in an urban area that today is likely to be only a point of transition for those who live in adjacent buildings. If you return an identity to baglio, one of the key points in the evaluation of the project was to redefine the traffic, providing the closure of access and the opening of alternative routes. In this way, the piazza assumes more the identity of a "parking" lot becomes a place recognizable, meeting point and space for events throughout the giornata design of the baglio is based on three themes: the pedestrianisation-a place of aggregation and meeting with other families but system of roads. Including in part the concept of urban design as an addition to times, significant to a predetermined situation, there is a conviction that the project of restoring of this space took of the possibility of working on the design of the site. A number of pumps of stone and fortitude connect in a system the morphological structure of the baglio strongly and characterize the image, so that by not giving the baglio assume a role of mediation between urban context and the site.



APPLICATION OF THE METHOD:

Diagnostic survey of the flooring with majolica tiles in the Mirrors Gallery of Comitini Palace in Palermo



Palermo, Comitini Palace (1756-1771).
The investigation method is applied to the majolica flooring realized with neapolitan "riggioli".



investigated area

Photogrammetric acquisition and demarcation of the investigated area.

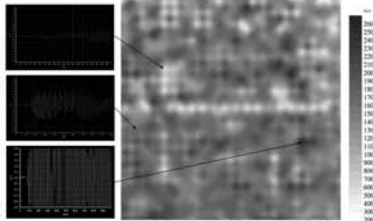
The diagnostic tests to improve the analytical method have been implemented on a squared area delimited by 20 tiles for side, with a surface of 16 mq. The results of the investigations have been treated so that to get tomographic elaborations to be simultaneously interpreted with the photogrammetric images of the flooring.

Ultrasonic survey

The measures are recorded long a regular layout to be able to elaborate some conclusive graphs through the conversion of the values in graphic maps of the mechanical wave propagation speed in the materials. The propagation speeds of impulses have progressively been recorded among adjacent tiles, inside the selected area, and they reveal the presence of compact zones, in which the mortars are well adherent, in good state of conservation, zones with internal discontinuity that caused the damping of the mechanical wave that reached the receiving probe.

Therefore it is possible to point out exactly the sites in which the consolidation effect is necessary. Besides, when the intervention will be concluded and with finality of verification, the increase of the speeds of propagation of the signal and the relative quality of the graph can be visualized and appraised on the display.

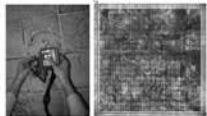
Recordings of the mechanical wave among the probes set on the majolica tiles and tomographic superficial section obtained through the propagation waves.



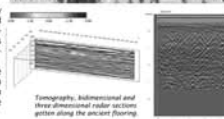
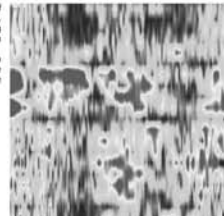
Radar investigation

The radar instrumentation has investigated the state of maintenance of the materials localized under the tiles. The investigation supported the stratigraphical reading of the materials and the location of their anomalies, in non destructive way.

The electromagnetic impulse radar analyses can put on evidence the discontinuities inside the thickness of the materials interpreting the radar maps that contain the electromagnetic signal reflections.



During the software elaboration it was chosen to apply to the radar maps that filters to favour the reading and the interpretation of the constituent layers in the investigated thickness. Besides visualizing the single sections radar the three-dimensional representations of the longitudinal and transversal scanmings have been elaborated. The internal discontinuities under the covering tiles are located filtering the tomography in transparency with the metric image of the flooring, getting information to compile the diagnosis of the state of maintenance and the project of the techniques of consolidation.



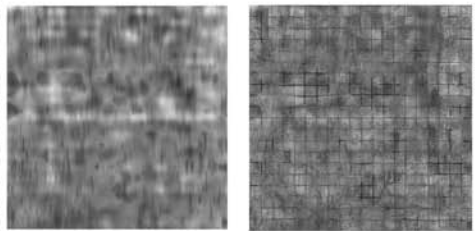
Tomographic, bidimensional and three dimensional radar sections gotten along the ancient flooring.

THE T.R.U.E. METHODOLOGY

Insert the diagnosis in the conservation project

To apply the methodology, the radar and ultrasonic investigations of the flooring have been projected and developed in site so that to get computer material to treat in tomographies and superficial maps. If the graphs are analyzed while varying their parameter upon the flooring metric photo it will be possible to locate all the portions to be consolidated and, interfacing the gotten graph with a c.a.d. type software, to edit the mappings of the degradation directly on the radar and ultrasonic tomographic maps, read in transparency with the image of the flooring, deprived of perspective deformations.

The conclusive graphs are metric maps of the anomalies that are useful to further elaborations. The graphic diagnosis gotten with the exposed analytical methodology supports the editing of the conservation project.



T.R.U.E. map with simultaneous reading of the radar and ultrasonic tomographies and T.R.U.E. map with photogrammetric image of the flooring and consolidation interventions.



1- WHAT AND WHY

Teaching and programmes:

Third year

Constructional characteristics of historic buildings (Prof. L. Marino)
 Comprehensive diagnostics course (Prof. Roberto Sabelli)-
 Architectural Science
 Conservation and rehabilitation of historic buildings (Prof. Maurizio De Vita) Architectural Science

Fourth year

Restoration workshop - (Prof. Giuseppe Alberto Centauro, Prof. Antonella De Piana, Prof. Pietro Marzocchi, Prof. Claudio Batistini)
 Restoration workshop - 1st year Specialisation (Prof. Maurizio De Vita)
 Consolidation of historic buildings - 1st year Specialisation (Prof. Silvio Van Riel)

Fifth year

Restoration sites (Prof. Giuseppe Cruciani Fabozzi)
 Conservation of architectural and museum heritage (Prof. Carlo Cresti)
 Consolidation of historic buildings (Prof. Silvio Van Riel)
 Applied geology (Prof. Carlo Alberto Garzoni)
 Archaeological restoration (Prof. Luigi Marino)
 Restoration of monuments (Prof. Francesco Guerrieri)
 Restoration of historic parks and gardens (Prof. Francesco Guerrieri)
 Restoration of decorated surfaces of monuments (Prof. Bruno Corà)
 Urban restoration (Prof. Susanna Fantozzi Miceli)
 History of gardens and landscapes (Prof. L. Zangheri)
 History of art (Prof. Fauzia Farnetti)
 History and techniques of photography (Prof. Paolo Brandicelli)
 Techniques of urban restoration (Prof. Franco Montanari)
 Theory and history of restoration (Prof. Daniela Lamberini)
 Final synthesis studio on restoration of architectural and environmental heritage (Prof. Luca Giorgi, prof. Daniela Lamberini, Prof. Silvio Van Riel, Prof. Pietro Matracci-Prof. Roberto Sabelli)
 Final synthesis studio on restoration of architectural and environmental heritage- 2nd year specialisation (Prof. Giuseppe A. Centauro)

Educational goals

To acquire knowledge of the culture of restoration, from the theoretical projects of the 19th century via the declarations of principle of the Restoration Charters, to the latest expressions of restoration culture for the conservation of historic buildings, both ancient and modern, urban centres, historic gardens, archaeological heritage, territory and landscape.

To learn techniques for surveying and graphical representation - manual and computerised - of buildings and places of historic and artistic interest, including the knowledge and use of highly advanced techniques (laser-scanner and similar).

To understand the importance of analysing buildings through historical research and the analysis of original sources, direct investigation of structures, structural surveying, conventional and digital photographic documentation, non-destructive surveys with a high technology content (thermography, georadar, etc.).

To learn to read forms of degradation and impairment in buildings and in the territorial areas under examination, and to represent that reading using international codes, using traditional and computerised methods, as an integral part of the conservation project.

To acquire skills for surveying the materials of historic architecture, how they are worked and used, and how they behave over time. Special emphasis is placed on analysing materials: stone, wood, simple and complex masonry and more recent reinforced concrete and modern metal materials.

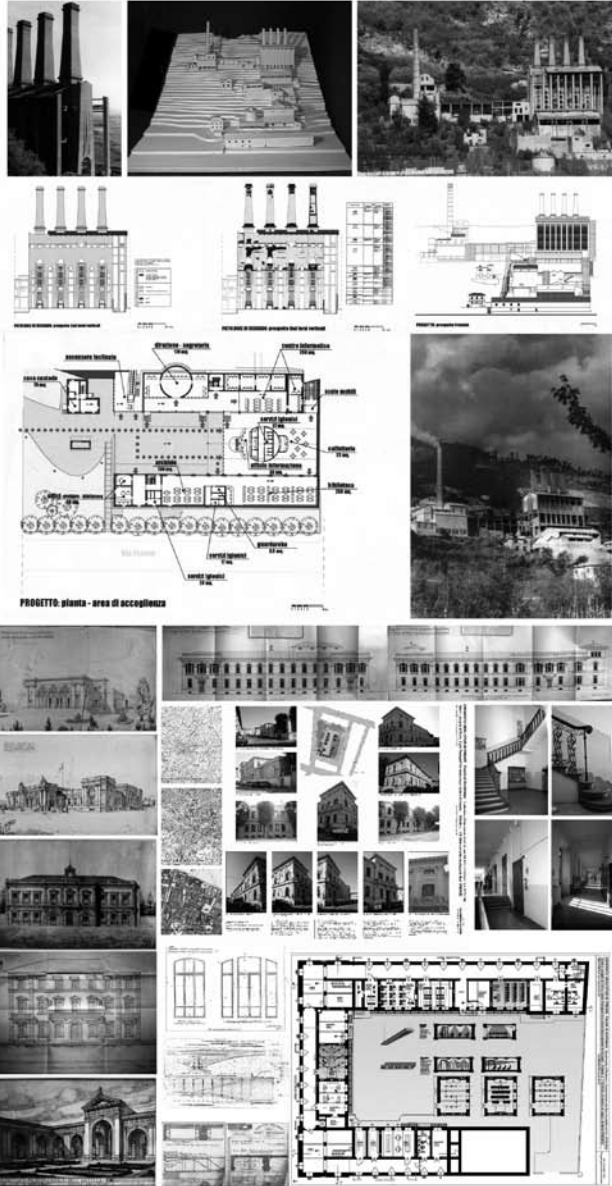
To learn how to prepare a restoration project throughout all the phases of the project, from the survey to the potential restoration approaches, from structural consolidation to proposals for reusing disused complexes. To prepare for checking regulations and laws governing the technological upgrading of historic architecture in a manner compatible with the existing structures and to learn the technical and bureaucratic procedures for drawing up a restoration project in modern times.

To be aware of the complexity and uniqueness of restoration issues, particularly in relation to the delicate balance between old and new architecture, old and new materials, and the general issue of contemporary addition while understanding a place's identity, and the requirements of conservation versus free expression.

To acquire a knowledge and direct experience of the manifold topics and issues arising on a restoration site.

Testi di laurea: EX CEMENTIFICIO MARCHINO A PRATO:
 in Polo Regionale per l'Architettura Industriale.
 RELATORE: Prof. Francesco Guerrieri
 CORRELATORE: Avv. Francesco Palermo
 LAUREANDI: Carmen Roberta Guerrieri, Francesca Spilloni

Testi di laurea: OPERE E PROGETTI DELL'ARCHITETTO ENRICO DANTE FANTAZZI.
 FRA CONOSCENZA E IPOTESI DI RECUPERO
 RELATORE: Prof. Maurizio De Vita LAUREANDA: Emanuela Piccini



2 - HOW

Educational methods and teaching strategies

Most of the teaching matter on the subject of restoration is concentrated in the fourth and fifth years of study of the architecture course. However, there are some second- and third-year courses on the knowledge and analysis of historic buildings, surveying and instrumental surveying of the existing structures, and diagnosis methods and techniques.

The various courses form a gradual progression from the acquisition of the basic knowledge in lectures to the papers that each student has to write in consultation with the tutor; these papers, together with the content of the lessons and bibliographical information provided, are the reference basis for sitting the final exam of the course.

The teaching materials are structured to give students an in-depth knowledge of the aspects of restoration culture and history, with ample references to the national and international characters of these aspects and are continually updated; both theoretical and applied techniques are used to teach students the value and importance of direct and indirect investigations of historic sites and buildings.

The course offers and encourages field research, hands-on contact and acquisition of cognitive data on ancient and modern structures, open spaces, urban districts and centres, and geographical areas of historical significance.

The Laboratory of Stone Materials and Applied Environmental and Landscape Geology (LAM) offers highly advanced testing and analysis, an ongoing commitment to research in support of the teaching and the students themselves, and also as a continuous relationship between investigations of the materials, principles and specific action involved in conservation. The Multimedia Laboratory (LAMU) offers facilities for testing, investigation, documentation and design work linked to the use of the latest tools for representation, communication and processing of restoration data and concepts. The Department's own fully equipped Photography Laboratory is a permanent reference resource for research, teaching and activities by staff and students alike, and has an excellent and extensive archive of the images taken over time of structures and places of historical significance, and of decades of restoration work.

We endeavour to impart the specific knowledge of the discipline in combination with other knowledge that often converges with restoration theory and practice. This includes structural engineering, physics and chemistry through the testing of the students' knowledge acquired in these fields and direct experimental work that can be offered thanks to teaching by external experts.

The faculty fosters meetings, both internal and on restoration sites, with players directly and personally involved in structures of stone, wood, metal, decorative devices, painting and also with specialists involved in archaeological restoration sites in Italy and abroad.

Links to the work of design workshops

The general and specific knowledge acquired in the various courses and seminars already produces what can be termed a pre-project outcome, in that the content of the examination tests and papers written by the students have to demonstrate an ability to carry out a critical reading and synthesis of structures of historical significance and to assimilate the theoretical, conceptual and applied topics offered by each course. These papers form an integral part of the restoration project that always begins with the investigation and in-depth understanding of the restoration topic to be developed and tackled.

Based on these teaching experiences, the restoration laboratories complement the students' training experiences by providing information on conceptual stages, working tools, regulatory data, and the significance of and methods for preparing all the phases involved in a modern-day restoration project. Following the theoretical teaching and its application in the field, through visits to restoration sites, individual students prepare a project that is as comprehensive as possible in terms of both the definition of each its stages, from survey to proposal, and the progression from the general concept to the detailed development of certain parts, elements and construction systems.

Workshop topics: restoration projects for structures and sites of historical interest, both ancient and modern, archaeological restoration projects, landscape and regional restoration projects, urban restoration projects, restoration projects for buildings and painted surfaces.

3 - WHO

Academic staff

Fall Professors
Carlo Alberto Garzonio
Francesco Guntieri

Associate Professors
Giuseppe Alberto Centurano
Maurizio De Vita
Osanna Fattorzi
Luca Giorgi
Daniela Lambertini
Luigi Marino
Silvio Van Riel
Luigi Zangheri

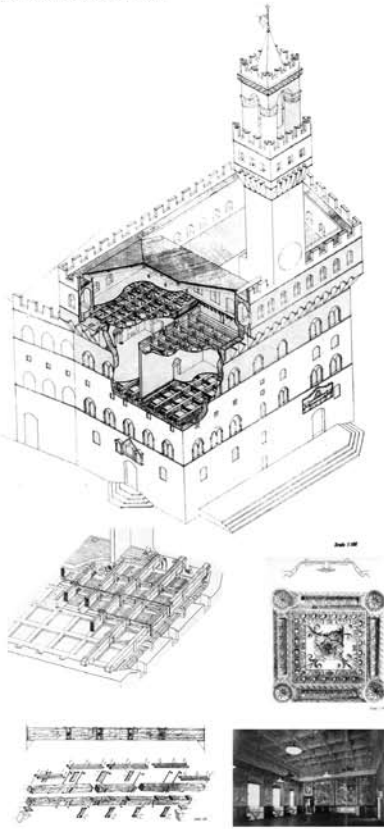
Researchers
Claudio Barlatini
Paolo Brandinelli
Antonella Del Punta
Fauzia Farneti
Franco Montanari
Pietro Mucchetti
Marilena Ricci
Roberto Sabelli

Contract teaching staff,

years 2007-2008
Pierluigi Baldoni
Alessandro Callioli
Daniela Chiesi
Bruno Coia
Carlo Cresti
Giuseppe Cruciani Fabozzi
Maria Di Benedetto
Ombretta Donelli
Dionisi
Federica Ferrari
Stefania Franceschi
Alessandro Gambetti
Leonardo Germani
Nadia Cristina Grandin
Claudia Massi
Claudia Messina
Gabriele Nametti
Riccardo Papi Paola Piazza
Tiziana Romiti
Giancarlo Petri
Gennaro Tampone
Carla Terasanni Pietramelleri
Vincenzo Vaccaro
Antonella Vitellio

UNIVERSITA' DEGLI STUDI DI FIRENZE
Facoltà di Architettura
DIRES
Dipartimento di Restauro e
Conservazione dei Beni Architettonici

Esercitazione Corso di Restauro Archeologico -
Prof. Luigi Marino

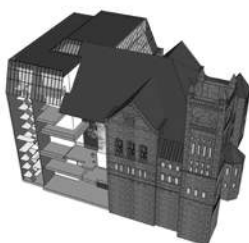
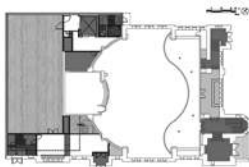
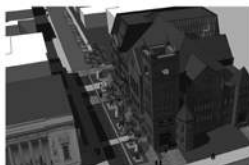


Testi di laurea: I palchi delle Sale del Consiglio, dei Gigli e dell'Uccello. Indagine sulle tecniche costruttive e sui materiali dei soffitti lignei quattrocenteschi in Palazzo Vecchio a Firenze. Relatore prof. Luca Giorgi, correlatori prof. Luca Uzielli, Arch. Ugo Muccini.
LAUREANDI: DANIELE BIFFINO, CAMILLA BURRESSI

Testi di laurea: IL RECUPERO DEL COLORE. NEL RESTAURO URBANO DELLE CINQUE TORRE. IL COMUNE DI MONTEDOSO AL MARE. Relatore: Prof. Arch. Giuseppe Alberto Centurano. Correlatori: Dott. Arch. Massimo Chimenti. STUDENTE: Simona Bassi



L'ENSEIGNEMENT DE LA CONSERVATION À L'ÉCOLE D'ARCHITECTURE DE LA FACULTÉ DE L'AMÉNAGEMENT DE L'UNIVERSITÉ DE MONTRÉAL / CANADA



Projet d'atelier d'architecture en conservation, 2007 : Transformation de l'Église Erskine and American en Musée d'Art Canadien, Julie-Anne Lajruneuse et Marie-Josée Dupont.

L'École d'architecture de l'Université de Montréal est l'une des 10 écoles du Canada dont la formation est accréditée par le Conseil canadien de certification en architecture (CCCA). Rattachée à l'Université de Montréal depuis 1964, l'École d'architecture est le seul établissement à Montréal à offrir une formation professionnelle en français.

L'École offre un programme de baccalauréat en Design architectural, d'une durée de trois ans. Elle offre également celui de Maîtrise professionnelle en architecture (2 ans), ce diplôme étant conditionnel à la reconnaissance du statut d'architecte par l'Ordre des architectes du Québec.

De plus, l'École d'architecture fait partie intégrante de la Faculté de l'aménagement où sont également enseignés l'urbanisme, l'architecture de paysage, le design industriel et le design d'intérieur. L'École prend appui sur un cadre urbain exceptionnel qu'est Montréal, une ville unique dont l'héritage bâti constitue un laboratoire d'étude très riche.

QUOI ET POURQUOI ?

L'enseignement de la conservation se concrétise par un atelier spécialisé au programme de M. Arch.. L'étudiant est invité à le choisir parmi un ensemble de six ateliers proposant des orientations différentes. La conservation est donc perçue comme une spécialisation à explorer et ce, à un moment de sa formation où il se positionne le plus près de la pratique professionnelle. L'atelier en conservation se veut d'autant plus une incursion qu'il constitue la seule et la première activité de ce genre offerte aux étudiants dans le cursus à l'École d'architecture.

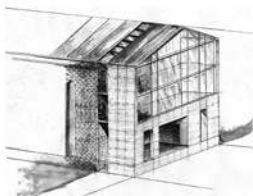
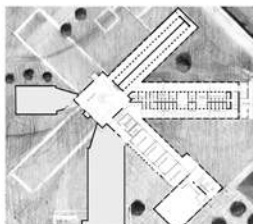
L'orientation Conservation de l'environnement bâti cherche principalement à former les futurs architectes en fonction de ce marché en expansion au Québec qu'est la restauration, la rénovation et le recyclage des bâtiments. Les étudiants interviennent par la conception de projets nouveaux mettant en présence un ou plusieurs composantes patrimoniales architecturale et/ou urbaine. Leur intervention peut donc se situer tant à l'échelle d'un site qu'à celle d'un édifice. L'atelier cherche également à le familiariser avec les différents degrés d'interventions possibles sur le bâti existant, de l'intégration de composantes nouvelles à la restauration d'anciennes. Des décisions relatives au volume des composantes du projet, à leur implantation et à leur relation avec le bâti environnant doivent être justifiées en fonction des valeurs patrimoniales déterminées du lieu. En raison de la nature même du projet, il arrive parfois que l'atelier permette une réflexion plus détaillée de la matérialité des solutions envisagées.

COMMENT ?

L'enseignement de l'atelier adopte une approche culturelle et sociale qui vise à assurer la conservation des éléments architecturaux et des significations culturelles léguées par les générations précédentes dans l'environnement bâti. La philosophie à la base de l'enseignement est celle de considérer la conservation et la mise en valeur de l'environnement bâti comme un domaine interdisciplinaire qui fait intervenir dans un même projet les disciplines de l'urbanisme, de l'architecture et de l'architecture de paysage. Pour ce faire, la formation en atelier s'appuie sur un enseignement théorique qui s'accomplit simultanément pendant le trimestre. Finalement, l'atelier spécialisé met l'emphase sur le projet d'architecture élaboré dans un contexte réel comme moyen de formation et de promotion de l'emploi. Il assure donc la présence de clients et de ressources professionnelles complémentaires à l'apprentissage.



L'ENSEIGNEMENT DE LA CONSERVATION À L'ÉCOLE D'ARCHITECTURE DE LA FACULTÉ DE L'AMÉNAGEMENT DE L'UNIVERSITÉ DE MONTRÉAL / CANADA



Projet d'atelier d'architecture en conservation, 2004 - Transformation du vieux pénitencier, Isabelle Regimbald et Anne Mager.

L'École d'architecture de l'Université de Montréal est l'une des 10 écoles du Canada dont la formation est accréditée par le Conseil canadien de certification en architecture (CCCA). Rattachée à l'Université de Montréal depuis 1964, l'École d'architecture est le seul établissement à Montréal à offrir une formation professionnelle en français.

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De plus, l'École d'architecture fait partie intégrante de la Faculté de l'aménagement où sont également enseignés l'urbanisme, l'architecture de paysage, le design industriel et le design d'intérieur. L'École prend appui sur un cadre urbain exceptionnel qu'est Montréal, une ville unique dont l'héritage bâti constitue un laboratoire d'étude très riche.

QUI ?

La diversité des formations et des champs d'intérêt des professeurs œuvrant en conservation à l'École d'architecture se voit le reflet de la conception multi-disciplinaire du patrimoine. Les disciplines architecture, urbanisme, histoire de l'architecture et architecture de paysage sont représentées dans les contenus des cours théoriques autant que dans les projets de recherche menés entre autres par la Chaire de recherche du Canada en patrimoine bâti. Afin de bonifier leur enseignement et leurs recherches, les professeurs sont pour la plupart actifs de façon bénévole dans différents groupes communautaires ou gouvernementaux en conservation. Ce même besoin de comprendre les défis et les contraintes de la pratique professionnelle en conservation justifie la participation d'architectes en pratique privée dans les ateliers. Du coup, ces professionnels permettent de faire le contre-poids à l'enseignement théorique dispensés par les cours/séminaires.

QUAND ?

La complexité du domaine de la conservation invite une réflexion qui s'étend sur un temps long. Dans l'ensemble de son cheminement académique, il est impératif que l'étudiant soit à l'aise avec l'évolution du concept de patrimoine et qu'il parvienne à maintenir le difficile équilibre entre la pratique et la théorie et celui entre l'application et la recherche. À ce titre, il importe d'offrir aux étudiants une opportunité de se familiariser avec la notion de patrimoine bâti tôt dans leur formation en architecture. L'initiation à cette réflexion doit également être encouragée par les cours d'histoire de l'architecture dispensés au premier cycle, afin que cette discipline s'intègre davantage au processus de conception du projet d'architecture et le bonifie. L'atelier multi-disciplinaire offert conjointement par les différentes écoles de la Faculté aux étudiants inscrits en 3^e année s'avèrera dans le futur un laboratoire pour le développement d'une pensée patrimoniale.

IN SEARCH OF INTEGRATION OF TEACHING

SURVEY AND RESTORATION GROUP

INTEGRATED SURVEY AND RESTORATION

Mim
531
Survey and
Restoration



*Traditional dwellings and environment, Conservation of Historical Sites, Restoration, Archeology
*Conservation of Stone and mortar, puzzolanic materials
*Industrial Heritage, Modern Survey Techniques and Conservation of the 20th century buildings.

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Objectives of the course

Introduction to theory of conservation and restoration

survey by means of traditional and modern measuring techniques

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Methodology of the Course

Evaluation of students' works every per week

Mid-term exam (theory and drawings)
Final exam (survey project)

Readings on conservation and restoration articles

Minimum requirements
%80 attendance & Critiques of projects
8 times during the term

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Assessment Modes

Mid-Term Assessment:
%25 theoretical + %15 article reading homework + %60 survey project draft

Final Assessment:
Finalized version of survey project



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Arch
S31
New Function Proposal to the Historical Buildings

Determination of re-functioned principles to the historical buildings which are nonuse. Research of the re-functioned



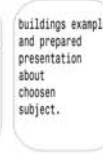
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Arch
S34
Documentation and analysis of single building

Emphasise on consciousness of conservation in integration with its environmental patterns

Experience within the scale of a single historical building.



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Arch
S35
Documentation and analysis of historical site

Emphasise on consciousness of conservation in integration with its environmental patterns

Understanding of the principles of the conservation within the scale of a traditional urban texture.



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ING DESIGN AND TEACHING CONSERVATION

MMER PRACTICE

DESIGN GROUP

		The education program of the faculty starts by discussing anything which he students have learned from the shaped				
		to introduce creative thinking for the reaction and design providing				
		nesses. It then provides the creation and improvement of the design. Since he student and the				
		outside the school in the city microcosm created within the school, which can enrich				
		architectural repertoire of the students. As requested, we arrange exhibitions, invite distinguished				
		ganizations, international workshop manage summer practice. The progress of the architectural				
		stabilization of architectural education. The other topics of education such as design				
		announced regarding the knowledge of architectural heritage. The understanding of environment is a social factor				

Prof. Dr. Sevgi LOKCE
Res. Ass. Oktay TURAN
GRAPHIC DESIGN
Res. Ass. FATİH KIRAZ



L'insegnamento del restauro nel percorso formativo:

III anno: Teorie e Storia del Restauro 4 crediti formativi IV anno: Laboratorio di Restauro dell'Architettura 8 crediti formativi

Corso di Laboratorio di Restauro dell'Architettura

Prof. Arch. Renata Picone Collaboratori: arch. Arianna Spinosa e Giuseppa Viraglione

1

What and why.

The laboratory course of restoration is placed at the fourth year in the quinquennial graduate course in architecture has the goal of teaching the students the knowledge about the debate on conservation and protection of architectural heritage. The course aims also to investigate the methodology of architectural restoration planning and the technics of conservation, to reach, also through the analysis of some case-studies and experimentation, to work out a final plan of architectural restoration.

How we teach conservation/restoration.

Definition of the study object based on its accessibility and decay conditions

METHODOLOGY AND PLAN PHASES

1 Knowledge

- Historical analysis at architectural and urban scale
- Comparison between the indirect data and the direct survey of the building and its masonry faces
- Manual and instrumental survey and graphical restitution of geometry and materials
- Diagnostic plan

Cattedrale di Santa Maria della Pace, sezione con rappresentazione del degrado spaziale
 Studenti: Elisabetta De Santis, Francesca Piro, Brian Lombardi, M. Sabatino Di Stefano



2 Structural aspects

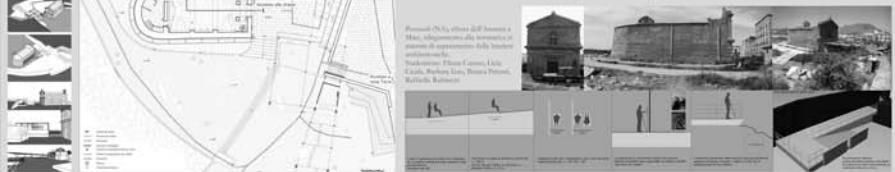
- Analysis of crackings
- Diagnosis of damages
- Specific surveys for diagnosis evaluation
- Selection of conservation techniques
- Monitoring and check of the works

Grande Sala, sezione di San Domenico analisi del movimento di degrado di corrispondenza
 Studentesse: Arianna Spinosa



3 Functional adjustment and normative law compliance

Functional adjustment is the part of the plan that allows to adapt the restored buildings accommodating public functions to the normative law about safety and accessibility.



4 Conservation plan of architectural faces

The plan previews the analysis of decay phenomena of the stone surfaces according to Lessico Normale 1/88 and the works to remove them, shared in:

- cleaning
- strengthening
- protection.

Cappella (DE), case reali, progetto di conservazione delle superfici. Studenti: Pierpaolo Pugliese, Sabatino Parronchi



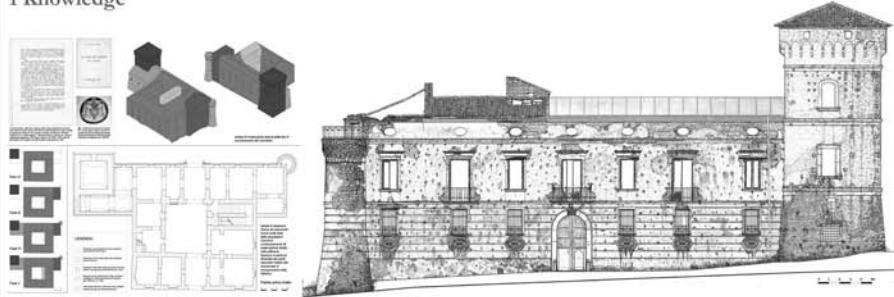


2

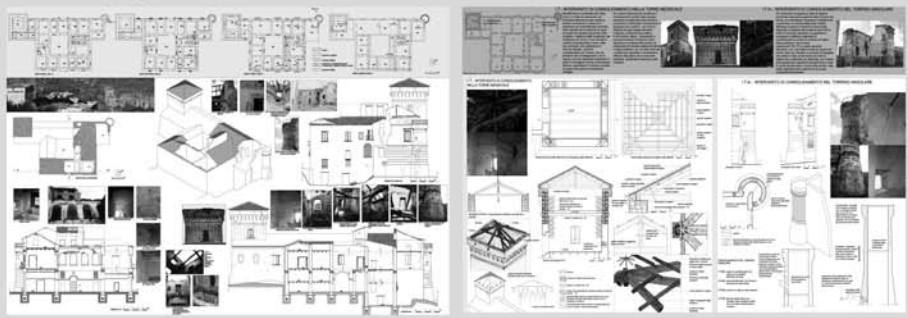
Conservation plan of palazzo Coppola in Sessa Cilento (SA) student: Marco Bignardi



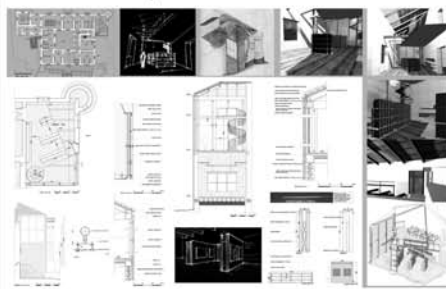
1 Knowledge



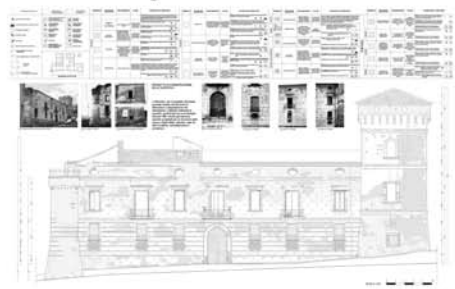
2 Structural aspects



3 Functional adjustment and normative law



4 Conservation plan of architectural faces



Università degli Studi di Brescia - Facoltà di Ingegneria

RESTAURO ARCHITETTONICO e LABORATORIO

RESTAURO ARCHITETTONICO A

RESTAURO ARCHITETTONICO B

Prof. Gian Paolo Treccani

Arch. C. Coccoli, V. Ghezzi, B. Scala

Cosa e perché?

Il progetto per l'accessibilità dell'area archeologica del Capitolium e del Teatro romano

L'offerta didattica del Corso è volta all'apprendimento delle metodiche d'interventi sull'architettura in condizione di degrado non assurse dal panorama teorico-disciplinare contemporaneo.

Il riconoscimento delle pratiche realizzative, dei processi manutentivi e dei successivi modi d'uso di un manufatto, la lettura analitica e non selettiva dei loro stratificarsi nel tempo (dalla costruzione ritenuta originale sino all'ultimo restauro), la consapevolezza della conseguente intrinseca complessità dell'architettura oggetto d'intervento e dei processi del degrado sia materico che strutturale che la riguardano, sono elementi indispensabili per un corretto approccio al progetto di conservazione e per la formulazione di un'ipotesi per il riuso compatibile di un edificio.

Le lezioni vertano sui seguenti argomenti:

• **Inquadramento di storia del dibattito teorico, con particolare attenzione al tema dell'utilizzo "operativo" della conoscenza storica;**

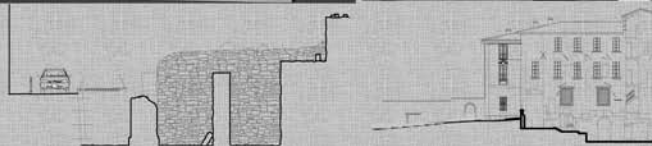
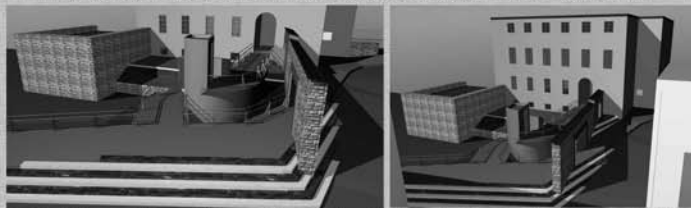
• **ragioni della conservazione edilizia in un panorama dominato da processi di restauro, riqualificazione, recupero ecc. improniziati alla selezione, sostituzione e falsificazione dell'esistente;**

• **lettura del costruito e dei processi di stratificazione attraverso vari "archivi" e il metodo dell'analisi stratigrafica applicato all'edilizia storica;**

• **degrado: registrazione, interpretazione, progettazione dei principali provvedimenti per contrastarlo;**

• **progetto per un riuso compatibile, esperienze.**

Il Corso pertanto ha la finalità di offrire allo Studente una chiave d'accesso al costruito che ne interpreti le vicende costruttive (ricomposte grazie ad un'attenta ricerca basata su fonti documentarie nonché su un accurato rilievo grafico e stratigrafico dell'esistente), che dia ragione storica dei fenomeni di degrado, che giustifichi culturalmente i necessari provvedimenti conservativi, e infine che ne prospetti un riuso compatibile. Particolare attenzione è riservata al tema dell'accessibilità e al rispetto della normativa per l'abbattimento delle cosiddette barriere architettoniche quale argomento imprescindibile dal più generale progetto di riuso di un'architettura.

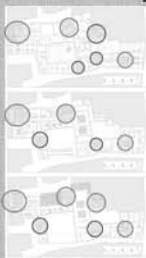


L'area archeologica di Brescia, per quanto concerne l'accessibilità, è caratterizzata da molteplici problemi, che determinano la necessità di una opera di organizzazione dei percorsi. Si è pensato di affrontare la tematica da una specifica prospettiva che ne privilegi due aspetti: la realizzazione di una "passeggiata archeologica" pubblica, che oltre a consentire la visione del Capitolium e del Teatro romano, sia percorso urbano accessibile, che contribuisca a rendere maggiormente fruibile questo polo culturale di Brescia, ossia l'area della Brexia romana e di S.Giulia, che devono integrarsi sempre più. Il secondo aspetto è invece la creazione di un ingresso accessibile a Palazzo Maggi Gambarà, individuato come entrata all'area archeologica.

La fruibilità delle chiese: il caso del Duomo Vecchio di Brescia

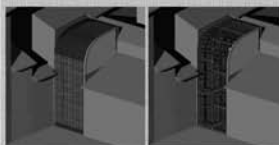


Ipotesi di conservazione e riuso di palazzo Avogadro in Brescia



particolare attenzione è stata posta all'accessibilità e ai percorsi interni per rendere autonome le tre funzioni, garantendo all'occorrenza una forte connessione tra esse.

- accessi verticali nuovi
- accessi verticali esistenti



Atlante delle barriere architettoniche



Teaching Conservation/Restoration of the Architectural Heritage: Goals, Content and Methods Genoa 1
8-20 October 2007 Host: Faculty of Architecture, University of Genoa

Università degli Studi di Brescia - Facoltà di Ingegneria

RESTAURO ARCHITETTONICO e LABORATORIO
RESTAURO ARCHITETTONICO A
RESTAURO ARCHITETTONICO B

Prof. Gian Paolo Treccani
Arch. C. Coccoli, V. Ghezzi, B. Scala

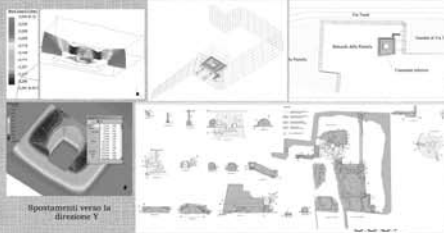
Come?

Il Corso è organizzato in lezioni, comunicazioni, visite ed esercitazioni finalizzate alla revisione delle ricerche assegnate ad ogni singolo gruppo; nell'ambito dell'attività del Corso è compresa la fase progettuale relativa alle procedure di conservazione, consolidamento e riuso del manufatto oggetto della ricerca. Sono comprese altresì alcune verifiche dello stato dell'apprendimento, da parte del singolo Studente, delle nozioni fondamentali dell'insegnamento di Restauro architettonico. Le lezioni del Corso riguardano anche argomenti attinenti le teorie del restauro, dal suo costituirsi disciplina autonoma sino ad oggi, per recuperare la dimensione storica del dibattito attuale e per chiarire in quale ambito teorico si colloca la proposta didattica del Corso.

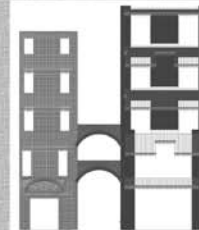
Chi?

Il Corso è tenuto dal prof. Gian Paolo Treccani mentre le esercitazioni sono seguite dalle Dottorande Carlotta Coccoli, Barbara Scala e dall'Architetto Valeria Ghezzi. Lezioni specialistiche sono tenute da tecnici ricercatori interni all'università o collaboratori esterni appartenenti ad enti e istituzioni (Archivio di Stato, Soprintendenza ai Beni Architettonici e del Paesaggio).

Problemi di Consolidamento e Conservazione del "Baluardo della Pusterla" del Castello di Brescia



I presidi antisismici tradizionali: il caso degli archi di contrasto nel centro storico di Brescia



Rappresentazione della mesh relativa all'arco con uso di elementi beam per la modellazione delle travi in c.a.



Rappresentazione della deformata del complesso archi-edifici, con indicazione dei versi degli spostamenti orizzontali dell'edificio di destra

Problemi di conservazione del materiale lapideo. Il caso della Loggia di Brescia

MAPPATURA DEI MATERIALI

- PIETRA DI BOTTICCHIO
- PIETRA DI REZZATO
- BEOLA
- CALCIARE NERO DELLE CHIAVI
- CALCIARE SCURO DI CAINO

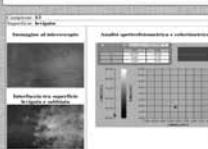
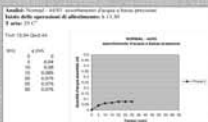


Prima della pulitura:
• grasso, sordidità, tracce
Dopo la pulitura laser:
• sordidità, sordidità
Sotto la pellicola di ossalati:
• tracce, Nero delle chiavi, calcare, calcare
• calcare scuro di Caino calcare, calcare, calcare, calcare

MICRODIFFRAZIONE DI RAGGI X



OBIETTIVI
individuare i fenomeni di alterazione e degrado
valutare gli effetti dell'intervento mediante microablatura e laser cleaning
TECNICHE DI INDAGINE
microdiffrazione dei raggi X (microtrone Daresbury - UK)
prove di assorbimento d'acqua a bassa pressione (Normal 44/93)
misure di spettrofotometria



Quanto e in quale misura?

Il Corso di Restauro Architettonico e laboratorio del corso di Laurea Specialistica a ciclo unico in Ingegneria Edile Architettura prevede 60 ore di lezione ex cathedra, 60 ore di esercitazione e 60 ore di laboratorio con frequenza obbligatoria per un totale di 9 + 3 CFU
Il Corso di Restauro Architettonico A del corso di Laurea in Ingegneria Civile e il corso di Laurea Specialistica in Ingegneria Civile prevede 60 ore di lezione comprensive delle ore dedicate all'esercitazione per un totale di 5 CFU
Il Corso di Restauro Architettonico B del corso di Laurea Specialistica in Ingegneria Civile prevede 60 ore di lezione comprensive delle ore dedicate all'esercitazione per un totale di 5 CFU

Teaching Conservation/Restoration of the Architectural Heritage: Goals, Content and Methods Genoa 1
8-20 October 2007 Host: Faculty of Architecture, University of Genoa

WHAT & WHY?

The course in conservation / restoration within the institution includes a **theoretical formation** and an **application** through personal research or project work.

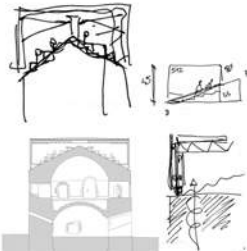
The time devoted to teaching of theoretical basis of conservation / restoration is quite short compared to the complexity of the discipline. In consequence, the accent is put on **philosophical and ethical issues** considered as ground knowledge for defining heritage and taking decisions in terms of conservation / restoration.

Aside from this main objective, students are confronted with materiality of built heritage by experimenting **Bauforschung**. This supposes a good knowledge of local history, archaeology and architecture, a development of the sense of observation and a capacity to investigate local archives.

On the technical point of view, there is no attempt to give a complete overview of the main conservation techniques (there are too many of them and they evolve too quickly). The aim is only to enable the students to **communicate with technicians** and to have a **critical point of view on the results and consequences of the techniques** to be implemented in their conservation / restoration projects.



HOW?



Conservation / restoration is a scientific, but highly polemic discipline. That is why the teaching methods are selected for their **participating** character. The students are supposed to develop their own approach and reflection about conservation / restoration. Even for the most theoretical aspects, there is no purely ex-cathedra teaching. Theoretical aspects are taught through **thematic sessions**. Each session is devoted to a particular question, general (what is heritage? How do we protect it and why? How does a conservation project work? The question of authenticity, etc) or particular (modern heritage, conservation of historic cities, conservation of ruins, dismantled heritage, conservation of specific materials, etc). For each session, the teacher brings study material (questions, texts, slides, case studies, etc.) to be analysed with the students and supposed to lead to debates. Some sessions include participation of field specialists or researchers, some are illustrated through visits or conferences, and some include limited exercises. After the theoretical formation, students are individually followed for the implementation of the acquired knowledge through a **personal research or project work**. Teaching methods are adapted to each individual case.



INSTITUT SUPERIEUR D'ARCHITECTURE INTERCOMMUNAL
INSTITUT LAMBERT LOMBARD, LIEGE, BELGIUM
 Claudine Houbart, Assistant

WHO?

The complete teaching of conservation / restoration is entrusted to the teacher responsible of the conservation / restoration option (see below). The requested qualification for this position is architect with a master degree in conservation. The actual teacher is **an architect and an art historian with a master degree in conservation**. She has a limited field experience in project work and elaboration of preliminary studies and is working on a PhD directly related to the discipline. She is also in charge of the architectural history courses within the institution. To fulfil her mission, the teacher regularly invites **colleagues, researchers or professionals** to intervene in theoretical sessions, studio work or student individual researches. Guests are supposed to communicate to the students their experience of a specific aspect of conservation / restoration. Among them are architects, university professors, researchers, members of public institutions, etc. Inside the institution, some colleagues are regularly associated to the conservation courses: it can be an architect with a large experience of conservation / restoration, a doctor in geology specialized in identification and conservation of stone or an architect specialized in survey methods. For very specific questions, teachers in the field of urbanism, human sciences or philosophy can also be invited.



WHEN?

MASTER 1
 7 ECTS
 Theoretical basis
 Limited applications

MASTER 2
 6 ECTS
 Master thesis 15 ECTS
 Project Work 20 ECTS

Conservation / restoration is not an obligatory matter but a **limited optional course** that the student can choose out of four possibilities. The choice is made at the beginning of Master 1 and has to be followed until the end of Master 2.

In Master 1, the option weights 7 ECTS: these are devoted to theoretical teaching through **15 thematic sessions of 4 hours** and to a limited application during an **intensive workshop of 1 week**.

In Master 2, the option weights 6 ECTS. There is no collective teaching: the students choose to investigate their optional matter in parallel with their **project work (20 ECTS)** or their **master thesis (15 ECTS)**. This doesn't mean that the complete project work or master thesis is "coloured" by the option, but that conservation / restoration concerns at least a part of the work proportional to the ECTS weight of the option (6 ECTS out of 26 in case of a project, and 6 ECTS out of 21 in case of a master thesis). This system enables the students to develop and deepen the knowledge acquired in Master 1 through a practical, scientific or theoretical personal approach.

The students that did not choose the conservation / restoration option have the possibility to get a very short introduction to the discipline through an optional module of 2 ECTS in Master 1.



UNIVERSITY OF GENOA - SCHOOL OF ARCHITECTURE

"School of Specialization in Restoration of Monuments"

First and Second Year

Director: Prof. Arch. Stefano F. Musso



What?

The students should acquire the notions and the background to be able:

- to dominate and to correctly utilise:
- 1) the theoretical and scientific references of the disciplinary debate on the safeguard, conservation, restoration and management of architectural heritage and landscape;
- 2) the fundamentals and principles that rule the various technical and disciplinary sectors involved;
- to know in depth the issues related to the safeguard of architectural heritage and landscape and the legal and normative

texts on these subjects:

- to know, to apply and to control direct and indirect analytical and diagnostic methods for architecture and built landscape;
- to use and to coordinate the techniques for treatment, the design phases, the overall management of the operational scheme and the quantitative and economical evaluation, the management and the final testing of the works;
- to promote and to manage competencies and experience exchanges among the various sectors about conservation, from the scale of movable objects to the one of monuments, urban sites and of the landscape.



Why?

The School aims at giving the students a strong cultural and technical professional preparation, which, however, is enriched by the essential contribution of theoretical disciplines and humanities. The mix of study subjects and studio

work is therefore designed to achieve the above mentioned goals. There is, in fact, the necessity to train professional able to interact with all the other stakeholders and operators involved in the conservation process; with an open-minded attitude and the ability to acquire, understand and manage dif-

ferent issues, needs and suggestions coming out from society and from various disciplinary fields and groups. This, because monuments, built heritage and cultural landscapes do not belong to scholars, technicians or single individuals or groups, but to all humankind.

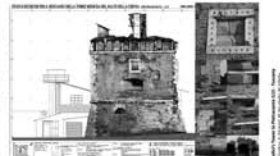
How?

The School pursues its objectives through a didactic organisation that covers a span of two years, to which it should be added the time necessary to complete the thesis. To train its students, the School tries to overcome the usual academic teaching forms: the student's curriculum follows the phases and sequence of the activities of a real conservation scheme, though in the didactic time assigned to the different school subjects. Attention is given also to laboratory and experimental activities, such as:

- Direct, topographic, analytical and digital photogram-

metric for architectural survey;

- Treatment and quantitative analysis of digital images;
- Chemical and physical analyses of materials and decay phenomena, with the support of the University or external laboratories;
- Non destructive analyses for the diagnosis of structural deficiencies;
- Stratigraphic survey and dating techniques of building components;
- Experimental application of some treatment techniques on stone and wooden artefacts;



Who?

Different and various are the scientific profiles and the cultural backgrounds of the teachers involved in the teaching activities to reach the goals above illustrate.

Permanent academic staff

- Prof. Dott. Paolo Bensi – history and techniques of fine arts
- Dott. Arch. Anna Bosto – archaeology of architecture
- Dott. Arch. Roberto Bobbio – urban planning
- Prof. Arch. Maura Boffito – descriptive geometry and technical drawing
- Prof. Dott. Gerardo Brancucci – earth sciences
- Prof. Arch. Massimo Corradi – sciences and history of construction
- Prof. Arch. Giovanni Franco – technology of architecture
- Prof. Ing. Sergio Laganasario – Structural behaviour and consoli-

datation

- Prof. Arch. Stefano F. Musso – monument conservation/ restoration
- Dott. Arch. Lucina Napoleone – theories and history of restoration
- Prof. Paolo Orlandi – biology for conservation
- Prof. Maria Luisa Cristina – biology for conservation
- Prof. Dott. Orietta Pademonta – mathematics
- Prof. Arch. B. Paolo Torseillo – theory of conservation

Non permanent teaching staff

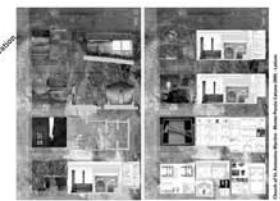
- Arch. Carla Arcolio – traditional
- Dott. Alfonso Aiasi – archival sciences
- Dott. Arch. Cristina Bartolini – heritage protection legislation
- Dott. Raffaella Bevila – protection of archaeological heritage
- Dott. Arch. Gianni Bozzo – conservation building site techniques
- Dott. Elena Calandra – protection of archaeological heritage

Dott. Arch. Michele Cogomo – tender technical- administrative documents

- Arch. Luisa De Marco conservation techniques/ international standards-principles for conservation
- Arch. Anna De Palma – image processing and virtual restoration
- Arch. Gabriella Garello – geometrical survey methods for architecture
- Arch. Massimo Gasperini – computer sciences
- Dott. Arch. Valerie Pignevet – computer graphics
- Ing. Fabrizio Martinioli – technical plants for heritage buildings
- Dott. Angelita Mastrini – chemistry for conservation
- Arch. Manuela Salvati – landscape protection and design

Technical staff

- Arch. Maria Angeta Fantoni
- Arch. Alex Riello



UNIVERSITY OF GENOA - SCHOOL OF ARCHITECTURE

"School of Specialization in Restoration of Monuments"

Specialization final thesis

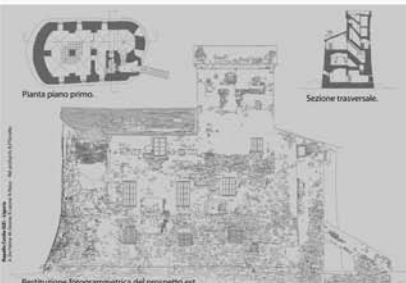
Director: Prof. Arch. Stefano F. Musso



How?

The thesis of specialisation is the occasion to run through this analytical and design itinerary again, in the "professional" time-span of six months.

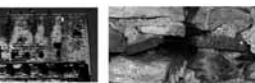
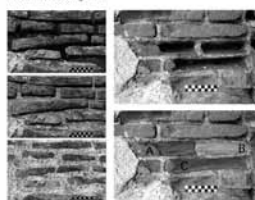
The studies and the design elaborations should always focus on a building selected in agreement with the teaching staff, with local institutions and Superintendence. Where possible, preference is given to projects that are part of a real conservation programme.



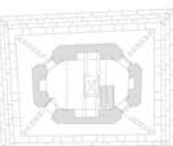
The role of information technologies in decision making from virtual restoration to intervention



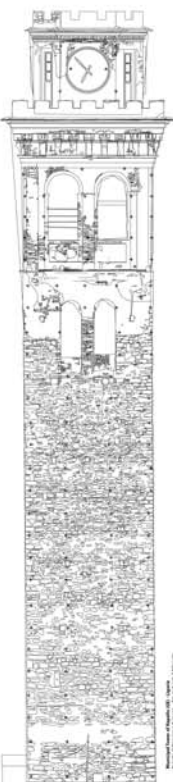
- Integrazione**
- 1 Mancanza di elementi lapidei
 - 2 Bagnatura
 - 3 Preparazione dello strato di allestimento
 - 4 Bagnatura mattoni
 - 5 Preparazione del supporto
 - 6 Stuccatura dei giunti
- Riempimento tramite iniezioni**
- 7 Pultura
 - 8 Iniezione di una miscela di malta idraulica additivata con fluidificanti
 - 9 Battitura
 - 10 Eliminazione materiale fuori uscito dal foro



Pianta a quota +15.175



Pianta a quota +25.94



Restituzione fotografica del prospetto Ovest

When and to what extend?

The programme of the school foresees at least 800 teaching hours (in the future, 120 ECTS) articulated in lectures and practical guided activities.

The didactic schedule allocates:

- the first year prevalently to the teaching of analytical and diagnostic methods of the building and its conditions;
- the second year to the study and the application of treatment techniques, to the administrative and financial management of the project, to the urban scale of conservation;
- finally, the thesis consists of the elaboration of a detailed

schema, defined up to building details, contracts and contracts conditions, the analytical estimates of the works, unit-prices elaboration.

- Detailed conservation design through the integrated use of cad, 3d-dimensional and solid modelling, data management.
- Elaboration of contract and tender specifications, reckonings, estimates.

UNIVERSITY OF GENOA - SCHOOL OF ARCHITECTURE

Master's Degree in Architecture - 5 years curriculum

“Studio-class in Restauration of Monuments”

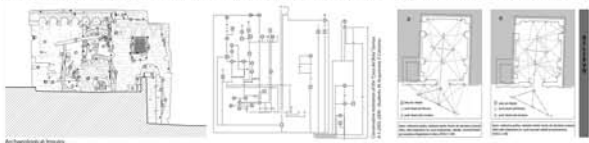
Prof. Arch. Stefano F. Musso - Prof. Arch. Anna Boato - Prof. Arch. Lucina Napoleone

arch. Carla Anselmi, arch. Andrea Carzani, arch. Lorenza Comino, arch. Anna Decri, arch. Maria Angela Fantoni, arch. Gabriela Garallo, arch. Simona Marini, arch. Daniela Pitagallo, geod. Roberto Ricci, arch. Alex Roth, arch. Rita Vecchiatti, arch. Barbara Volpato.



What?

Students are guided by teachers along their educational path which leads from the elaboration and assessment of the analyses to the drawing up of the conservation/restoration scheme of a building selected with the agreement of the teaching team. The exam consists in the presentation of analytical and design wrought outs that have been made during the conservation studio and in the one-to-one discussion of specific aspects that have been coped with during the work, in the light of the theoretical, methodological and technical learning acquired during the course.



Why?

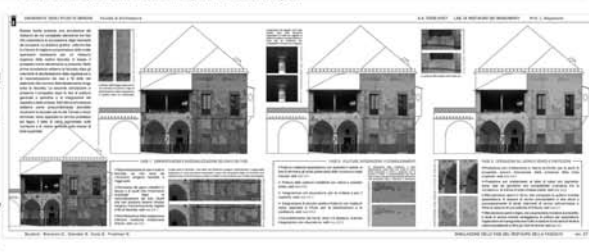
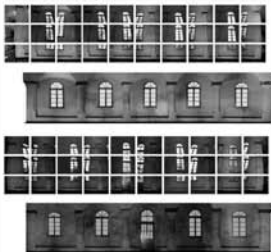
The different subjects intend to provide students with the information and the conceptual and operational instruments necessary to consciously intervene on the more ancient built heritage, that is to say: to provide students with the preparation:

- to know and to correctly use the references to the disciplinary debate on conservation/restoration and the legal and normative texts on this subject;

- to be able choose, use and control the direct and indirect analytical techniques for architecture, with particular regard to the rigorous geometrical survey and the archaeological analysis of the built heritage, to the exam of the technological and constructive components, to the chemical, physical, mechanical characterisation of materials and to the analysis of the decay phenomena of building materials and building components;
- to be able to select, apply and coordinate the different intervention techniques from the preliminary to the detailed project

phase of conservation, including the economical and quantitative evaluation of the works;

- to be able to prepare and to draw up the technical documents of analytical and diagnostic phase (thematical maps, diagnostics frames, reports...)
- to be able to develop the technical and administrative documents of the conservation scheme.



How?

Teaching activities are organized throughout:

- lectures, also by experts involved in the professional, entrepreneurial and institutional worlds, which are intended to provide a consistent framework of the technical and operational instruments and problems of architectural conservation/restoration. Among the subjects we may find, i.e., the methods and forms of non-destructive analyses and diagnosis, the requisites of the conservation project, the normative and institutional framework of heritage protection in Italy;

- Studio activity, in class and/or in situ, on the analysis and diagnosis of the problems of an historic building and on the elaboration of the project of its conservation.



- FIRST YEAR**
 - History of architecture and problems in architecture
 - History of modern and contemporary architecture
 - Introduction to the history of architecture
 - Historical methods of descriptive geometry
 - Fundamentals of computer graphics
- SECOND YEAR**
 - Architectural design I
 - History of modern and traditional architecture
 - Methods of descriptive geometry
 - Construction of architectural drawings
 - Introduction to architectural analysis
 - Physical and mechanical analysis
 - Urban Planning I
- THIRD YEAR**
 - Architectural design II
 - Architectural design III
 - Urban Planning II
 - Introduction to the history of construction
 - Architectural drawing I
 - Architectural drawing II
 - Physical and mechanical analysis
 - Urban Planning III
- FOURTH YEAR**
 - 1200-1500
 - History of modern architecture
 - History of contemporary architecture
 - Construction of architectural drawings
 - Introduction to the history of architecture
 - Physical and mechanical analysis
 - Urban Planning IV
 - Architectural design IV
- FIFTH YEAR**
 - Architectural design V
 - Architectural design VI
 - Urban Planning V
 - Architectural design VII
 - Architectural design VIII
 - Urban Planning VI
 - Architectural design VIII

UNIVERSITY OF GENOA - SCHOOL OF ARCHITECTURE

Bachelor's Degree in Architectural Restoration - 3 years curriculum

"Students's Portfolio"

Staff of the Restoration Disciplines: President, Prof. Arch. Stefano F. Musso - Prof. Arch. Anna Boato - Prof. Arch. Lucina Napoleone

arch. Carla Arcolin, arch. Anna Dotti, arch. Maria-Argelia Fantoni, arch. Gabriella Gavelli, arch. Maria Ghione, arch. Daniela Pitagala, arch. Valere Piquerez, geol. Roberto Rizzo, arch. Alex Riccio, arch. Rita Vecchiarelli



What?

- Architectural survey (rigorous direct survey, topography, analytical and digital photogrammetry, editing, 2D and 3D modelling, thematic cartography, endoscopy, magnetometry, sonic analyses)
- Analysis of building materials and decay phenomena (empirical and laboratory analysis for the physical, chemical and mechanical characterisation of materials, diagnosis of decay and thematic maps)
- Techniques for the analysis and the protection from structural deficiencies (crackings, deformations, geometrical checkings, monitorings, diagnostic frames, structural consolidations);
- Archival and archaeological analysis (evidence of written sources, comparative analyses of documents, stratigraphy of excavations and of built heritage, absolute and relative dating techniques);
- Computer graphics, simulations, digital image processing, pattern recognition, project management in virtual environment;
- Conservation techniques (management and technical control of cleanings, material consolidations, protections, fillings,...)
- Computational techniques for restoration schemes (work quantity and costs computation, informational system for the management of the works, contract specifications, tenders, costs analysis, construction site accounting)
- Assistance to building sites (organisation and control of works, safety planning, measurements and accounting, documentation, tests...)



How?

Lectures aiming at providing the notions and the theoretical and methodological instruments of taught subjects

Exercises that are intended to control the effectiveness of learning

Practical exercises with the tools and techniques that are used in the laboratories of the Faculty and the University

Short apprenticeships and training periods in enterprises operating in the field of conservation

Stages by public or private institutions in Italy or abroad

Design studios with lectures on theoretical and methodological contents

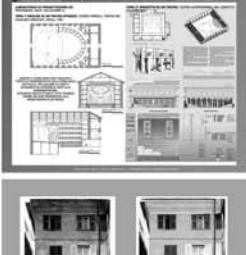
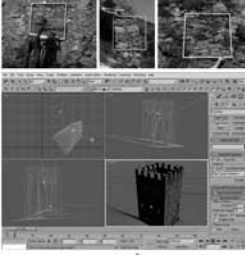
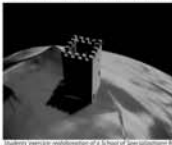
Specialised seminars with renown national and international experience

Additional courses for the acquisition of the basic notions necessary for the learning of specific disciplines.



Why?

To form professional figures that are able to know, understand and survey architectural organisms, in relation to their origins and subsequent transformations, to their settling context, by analysing the characteristics of their materials, their decay phenomena and their structural behaviour. The graduate's specific competences are the selection of interventions for arresting the decay phenomena and structural disease of buildings and districts, removing or reducing their causes, and directing of related technical and administrative processes.



- FIRST YEAR**
- Introduction to the history of architecture and restoration
 - History of architecture and history of restoration: A first lecture
 - Characteristics of the materials of architecture: A first lecture
 - Characteristics of the materials of restoration: A first lecture
 - Practical exercises in the laboratory of restoration
 - Practical exercises in the laboratory of restoration
 - Practical exercises in the laboratory of restoration

- SECOND YEAR**
- History of architecture and restoration
 - History of architecture and restoration: A second lecture
 - Characteristics of the materials of architecture: A second lecture
 - Characteristics of the materials of restoration: A second lecture
 - Practical exercises in the laboratory of restoration
 - Practical exercises in the laboratory of restoration
 - Practical exercises in the laboratory of restoration

- THIRD YEAR**
- Characteristics of the materials of architecture: A third lecture
 - Characteristics of the materials of restoration: A third lecture
 - Practical exercises in the laboratory of restoration
 - Practical exercises in the laboratory of restoration
 - Practical exercises in the laboratory of restoration
 - Practical exercises in the laboratory of restoration
 - Practical exercises in the laboratory of restoration





Politecnico di Milano
Faculty of Architecture and Society
MANTUA CAMPUS

What do we teach and why?

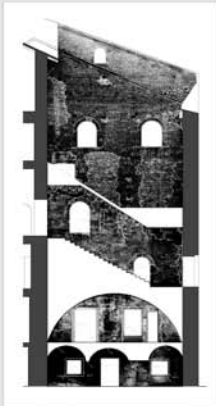
Since they were first introduced, the degree courses in Science of Architecture (three-year bachelor degree) and Architecture (two years master degree) offered at the Mantua campus, have focused on studies and design applied to existing cities and the built environment at large. Our objective is to gradually familiarize students with the history and problems of conservation of the cultural heritage and landscape, the methods and technologies applied in projects to preserve buildings and other structures that have been landmarks through time. The process is completed with restoration workshop activities carried out during the two years of master degree, together with further studies based on analysis and project planning. By considering buildings as both a resource and a testimony, their temporal dimension can be explored and made a fundamental element of restoration design. Students are asked to diagnose the state of deterioration of architecture from the past and to determine the most appropriate conservative techniques to apply, and the extent of compatibility with possible future uses. The overall knowledge acquired should allow student architects to broaden and significantly enrich their ideas about design project.

How do we teach?

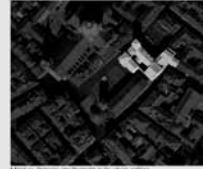
In the degree course in Science of Architecture the compulsory programs on restoration centre on the history of the discipline and on the relative institutional and juridical principles, and they provide fundamental knowledge about the materials and structural features of historic buildings. Lectures are followed by teaching on a more articulated level, with visits and practical exercises. The third-year elective course – "Tools and methods for research on historic buildings" – provides an introduction to the application of the methods studied (stratigraphy in elevation, for instance) and to analytical techniques, and it involves exercises that introduce students to the simplest and most common of these techniques. Basically students acquire the fundamental knowledge they need to work on restoration schemes and apply the concepts of conservation. Those intending to go no further than the three-year degree, can do a master if they want specific expertise in the field of investigation and analytical disciplines.

In the workshop activity of the master course, the lectures span from the study and investigation of deterioration to consultation techniques and conservation of materials. Completing the picture are the study of moisture and thermal equilibrium and the effects of installations, illustrated with examples.

The course of study includes case histories, investigations of deterioration and historical stratification (absolutely essential to determine the present state of buildings). It also indicates steps to take to preserve materials and structures, and outlines approaches to designing installations and additions necessary for the re-use of buildings. Students thus become practiced in singling out solutions to problems: they are taught how to design new elements of high quality, as well as to preserve existing buildings successfully. Very definitely ruled out is using contemporary components merely to comply with norms or needs, without any overall plan or ad hoc study of the elements added.



Plattico del Palazzo. From the Raumbuch [from Gropius] selection 2.37c. Annex and stratigraphic section



Mantua. Palazzo dei Podestri in its urban setting



Mantua - Palazzo Eden - 1932

5.11.a.101

Politecnico di Milano
 Dipartimento di Architettura
 Corso d'Ingegneria Edile-Architettonica
RAUMBUCH
 Palazzo dei Podestri di Mantova

Classico: Giuseppe Angeli, Carlo Lancia
 Casa: Giancarlo Piretti
 Data: 1932

Termografia 01 sulla parete A a 101 (termogrammi della prima campata della parete A mostrano l'esistenza di un'antica finestra medioevale monitorata con arco a tutto sesto, oggi tamponata. Nella mappa del 1871, tuttavia, si schiella ricostruzione storica) l'apertura rinvenuta grazie alla termografia è rappresentata chiaramente come una porta, e non come una finestra. Si deve supporre quindi che essa fosse stata modificata a che servisse a mettere in collegamento diretto la sala 5.11 con un ballatoio esterno. Il quale già permetteva da tempo di collegare lo spazio 5.13 e 5.23 senza passare per il locale 5.14, ove era collocato il corpo scala che dava accesso ai piani superiori e inferiori, in modo da semplificare i percorsi.

La demolizione del ballatoio, avvenuta nel 1971, ha permesso agli esecutori (Gazzola, Volo Orsacini) di ricostruire l'antica apertura monitorata come la vediamo oggi, ridefinendone in particolare il balcone e la parte inferiore che probabilmente erano stati distrutti quando fu creata l'apertura sul ballatoio rivestita nelle piante del 1971.

range 21,2 °C - 28,3 °C

Prima campata della parete A

L'apertura monitorata ricostruita nel 1971

1 isolatore in situ stanza 5.13 e 5.23, prima della demolizione

Plattico del Palazzo. From the Raumbuch [from Gropius] (Gropius) room 5.11 wall c, restored project K17

Who teaches?

Compulsory courses for the three-year Science of Architecture degree are taught by lecturers on fixed-term contracts. PhD graduates in conservation from the Politecnico di Milano. The elective course is taught by a full professor.

For the master track permanent lecturers cover 14 of the total 30 credits assigned to restoration design, while two staff researchers handle 5 more. The remaining 9 credits are covered by staff under contract. Nine to compulsory courses are taught by full professors.

Exercises are carried with the help Laboratory of Analysis and Diagnostic Evaluation of Historic and Modern Buildings which is used particularly by final-year students preparing their theses.

Degree Head of Marco Colucci, Helena Pignoni, Angelo Lancia - Instrumental tests conducted by the laboratory of Analysis and Diagnostic Evaluation of Historic and Modern Building



Politecnico di Milano
Faculty of Architecture and Society
MANTUA CAMPUS

When and to what extent do we teach?

In the second year of the three-year degree there is a subject on "fundamentals of conservation of historic buildings", it is made up of 4 credits for theory and history of restoration and 4 for construction features of historic buildings. There is also an elective subject "tools and methods for research on historic buildings".
 The master degree includes workshop activities that account for 10 credits and are organized in three sections with 50/40 students each.
 In the second year of the course there are two electives worth 4 credits: "culture and history of conservation of the built environment and landscape", and "consolidation".



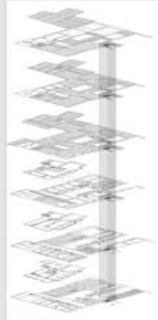
Palazzo Pisani in Mantua with Palazzo dei Podestà and Palazzo della Ragione. Preliminary feasibility studies, rehabilitation project for public use. Lift and emergency stairs in red.

Perspectives and expected reforms

When analyzing teaching results and during exams, a limitation frequently noticed is that restoration design exercises in the workshop are squeezed into the space of six months. Because of the gap separating these workshop activities from what is taught in the three-year degree course, students are usually insufficiently conscious of the links between basic knowledge and its application.

Without altering the substance of the teaching model devised and perfected in recent years, a more effective solution could be to turn the integrated course in Design Fundamentals for Historic Buildings, currently pursued during the second year of the three-year course, into first-level workshop exercises. These project design activities would be more limited in scope than the experience gained by master degree students. The programme teaches students to identify techniques and periods of construction, as well as materials used and their state of deterioration. It could be integrated with a preliminary restoration project, designed to preserve the materials of traditional buildings. The activity could be supported by in-depth seminars and by study and application of novel consolidation, cleaning and protection technologies. Steps such as these would make the whole "fabric" of acquired knowledge easier to identify and more effective, and its aim and purpose would be clearer.

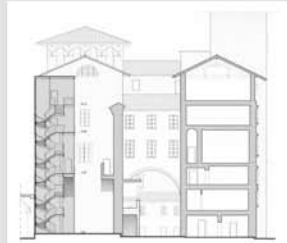
It would also mean workshop activities in the first year of the master course could deal with more complex issues, connected with statics and with new uses of buildings, considering public use in particular. Other possible areas to address are the delicate problems encountered in the conservation of existing buildings and the contemporary addition of innovative structures and service facilities. Subjects like these could be further examined in students' graduation theses. The master restoration workshop could also deal in a more systematic way with study and conservation of later 19th-century and 20th-century architecture, with its iron and reinforced concrete buildings.



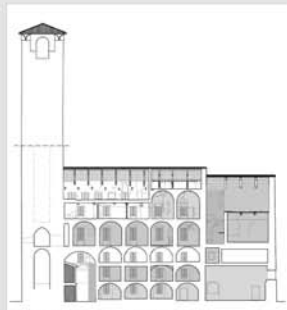
Palazzo dei Podestà. Preliminary feasibility studies, rehabilitation project for public use. Axonometric projection of uses of the different levels.



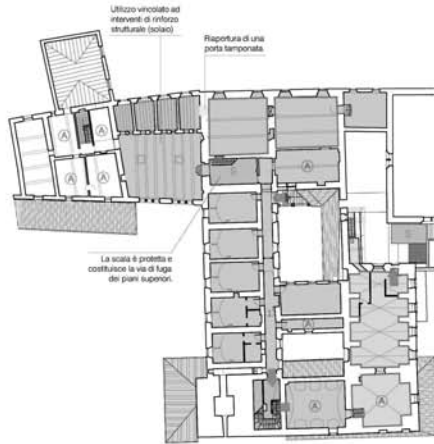
Palazzo dei Podestà. Preliminary feasibility studies, rehabilitation project for public use. Colouring of areas intended for use of the tower.



Palazzo dei Podestà. Preliminary feasibility studies, rehabilitation project for public use. Cross section, project for the new course containing the stairs in yellow.



Palazzo dei Podestà. Preliminary feasibility studies, rehabilitation project for public use. Longitudinal section with indication of use.



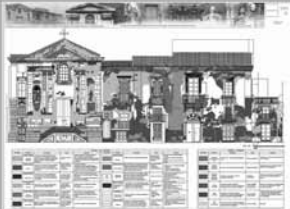
Palazzo dei Podestà. Preliminary feasibility studies, rehabilitation project for public use. Second floor, level 5, with indicator of use.

Degree thesis of Marco Colari, Verena Fignoni, Angela Laniè - Instruments tests conducted by the Laboratory of Analysis and Diagnostics evaluation of historic and modern building.

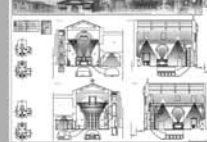
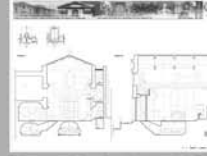
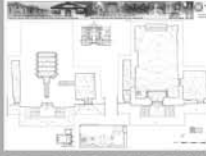


Laboratorio di Restauro Architettonico

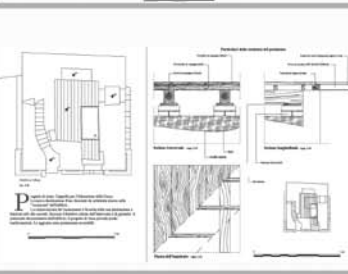
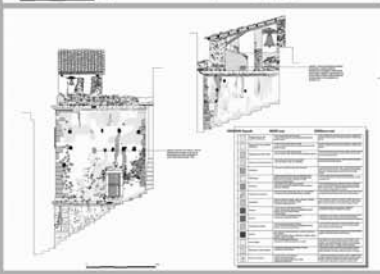
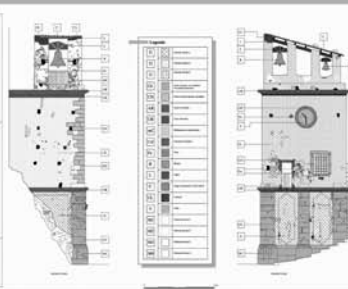
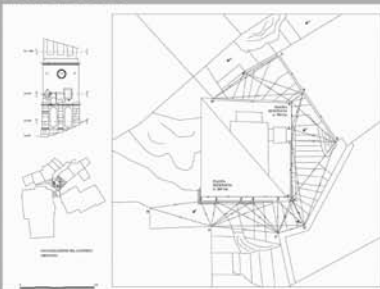
Progetto di Restauro della chiesa di Gesù e Maria del Buonvicino a Messina
 Studenti: L. Ruffino, A. Di Gennaro, L. Ruffino, D.F. Triglia - Tutor: F. Todorov



Restauro architettonico S. Vito - "Tecnologia dei materiali e chimica applicata L. Pirovano - Tecniche costruttive per l'edilizia storica"
 Di: Giorgio - Esperienze sul campo di restauro architettonico F. Di. Calvo



Progetto di Restauro della Torre Campanaria della Chiesa di S. Pietro a Fiumedinisi
 Studenti: G. Conzatti - Tutor: F. Todorov



What and why

The first Academic Program in "History, Preservation of Architectural and Environmental Heritage" was implemented in Reggio Calabria in 1982 (Largo 1982, 14.4.82), introducing the need for specific professional skills. This led the Faculty of Architecture to be introduced in Academic Program (DL 18.7.85). The Government Reform (DL 300/93), introduced the 3+2 years organization. This was the first Academic Program has been studied in a three-year and four Academic Program in History, Preservation of Architectural and Environmental Heritage and a five-year second level Academic Program in Preservation, Repair and Treasury of Architectural and Environmental Heritage. The need to preserve and treasure our architectural and environmental heritage, which is also an economic resource, led to the need to train suitable professional skills (the students can find its answer in their government, Ministers and the City Offices, but they can also practice private professions). These students are able to face problems in real terms, because they are trained in interdisciplinary teams and are able to develop preservation strategies, in an operational relationship between the university and the Territory.

The main goal is to train students to detect, understand, preserve and treasure the historical and environmental heritage by means of interdisciplinary teams to protect authenticity and identity over the years. As the Academic Program is part of the Faculty of Architecture the teacher that buildings are studied not only in their material aspects, but also in the technical, structural and functional aspects. These professional skills are achieved through an interdisciplinary training, based on scientific studies and humanities.

How

Considering restoration as an operative "task" an education and preservation as the "goal" that drives restoration, we think that it is important to be able to recognize (knowing the various investigation tools) and develop their critical skills that make it possible to program - based on professional and scientific knowledge - different intervention hypotheses, and support techniques and methods of the different choices. In the framework that our Program, the process of theory and history of restoration is connected to the laboratories of Structural Restoration and Architectural Restoration. In the latter, which includes the modules of Pathology and Geology and Chemistry of Materials, the choice of Architectural Restoration, is joined with the modules of Building Technology and Materials, Experience.

The Laboratory methodology is based on an architectural sample. The student starts with the history to understand stages of construction and their transformations using traditional and innovative survey methods. By means of technical-constructive investigations and critical and physical decay surveys, it is possible to design restoration hypotheses and their impacts. In the last year second level Academic Program, the Interdisciplinary Laboratory which is also an interdisciplinary circle of the second year, leads the student to diagnostic and laboratory investigations (the chemical-physical and micro-analytical) on heterogeneous material (archaeological) and also the Environmental studies which make it possible to pass from plan to restoration work, such as the technical relation and the real activities restoration works.

2/2 Università degli Studi *Mediterranea* di Reggio Calabria

Facoltà di Architettura



Corso di Laurea Specialistica in *Conservazione, Restauro e Valorizzazione dei Beni Architettonici e Ambientali*
 Specialist Degree in *Conservation and Development of Architectural and Environmental Heritage*

Progetto di restauro del Palazzo del Cardinale Perugino a RC
 Studenti: M. T. Benedetti, D. Filippa, A. Feli, I. Galati Randò, A. Gioia, A. Spolito, G. Massara, M. Musolino, A. Sava

In the two-year second level Academic Program, the first year restoration course of *Resto Project* is continued by the architectural design component, while in the second year the learning includes other teachings of ICAE (IC: Restorative Work Organization, Problems and Techniques in Historic Areas, Architectural Stratigraphy, Archaeological Restoration and Environmental Restoration).

Who:
 The faculty is composed of a Full Professor, an Associate Professor, three Researchers and four Lecturers. Two of them work at the Museums and Fine Arts Offices, and their presence enhances the particular link with the professional world and related needs.

Level:
 For the Academic Year 2007-2008 the Academic Program includes "Resto Project" within 10 credits for the three-year first level Program and 20 credits for the two-year second level Program, for a total of 30 credits, compared to 12 credits of the Academic Program in Architecture. Primarily the Academic Program in "Resto Project" offered 70 credits, while the architectural design and other disciplines were reduced in the Program course respectively to 14 credits and 12 credits. This cannot be considered ungenerous, if compared to the importance given to the restoration teaching in the Academic Program in Architecture. As the current restoration credits have been reduced to 10 to increase the number of architectural design courses.

Among the various activities offered, the opening courses (present a number) since 1984, taking place between April and May, in agreement with local governments and private companies) are an important one in restoring existing methods and testing professional skills. They are useful for checking on field survey techniques, and for a practical testing of a monument from an historical restoration, financial evaluation, effects on material and structural decay, and understanding the professional situation. All this is based on a clearly multidisciplinary approach.

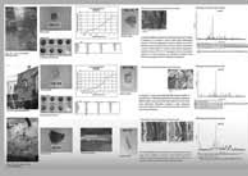
Participative and Integrated Resto
 The forthcoming implementation of the Legge 210 and the introduction of the new Class of Study (Professional Promotion and Employment class), will inevitably lead to the reduction of restoration credits if a similar scenario in the Class Architecture, considering the job offer of "minimum" credits which favour other disciplinary sectors. The presence of architectural design courses can lead to the preservation of the "integrity of the project" and the "integrity of the monument". I think that, since the preservation of historic heritage has in recent years assumed much greater importance, "operational" have carried out a study for the recovery of the professional world, which seems to be closed. However, if possible, it is suggested to "improve the study of a monument and propose intervention plans, but they cannot sign or supervise the restoration work".

Restoration teachers should have oriented a unit for a representation of the "Historical cultural general context" when the new Class of Study was introduced. This should pursue the aim of safeguarding the historic heritage that, "in the foreseeable" - is considered very important for the national economy.

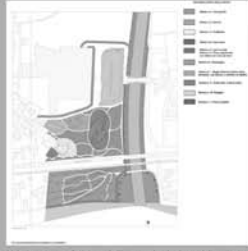
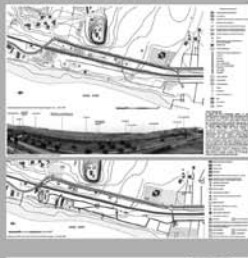
The stability of operators has become a fundamental need because since the "the restoration class" (made by IC) due to the intrinsic historical and territorial conditions connected to external conditions, there is the technique that which derived from interventions, such as preventive work, which if not properly done, may damage or jeopardize the historic heritage and its transmission to the future.

Simona Sella

Progetto di restauro di una cellula edilizia e della Porta Alfano a Calabria
 Studenti: D. Antonigi, M. Calanca, G. Casella, M. Corallo, G. Crisci, A. D'Elia, F. Guarino, M. Ivo, C. Quattrocchi, C. Ventura



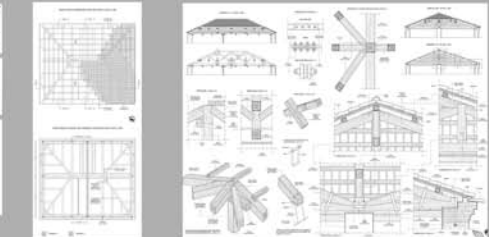
Progetto di valorizzazione e fruizione del Parco Archeologico di Kaslin (RC)
 Studenti: C. Calanca, F. Ivo, G. Marino, M.T. Rizzo



Valorizzazione e fruizione dell'area archeologica e del contesto ambientale di Lazzaro di Motta San Giovanni
 Studenti: M. T. Benedetti, I. Galati Randò, A. Gioia, A. Spolito, A. Sava

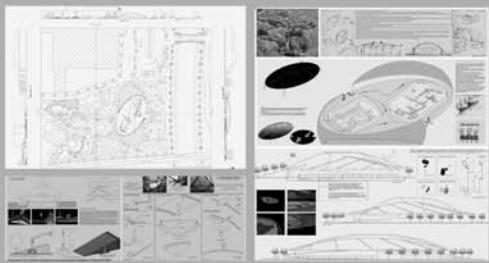
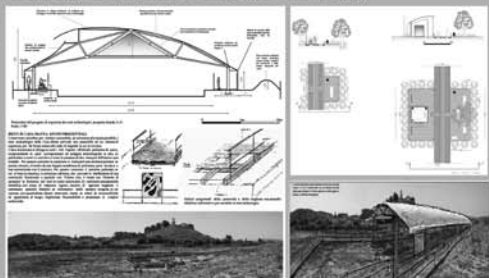
Laboratorio di Restauro dei Monumenti e dell'intorno urbano

Restauro dei monumenti e dell'intorno urbano. 5. Scritto: Strategie degli usi. Titolo: Tecniche di restauro. V. Cacciari - Anali didattiche del materiale - Invalita - Esperienze sul campo di restauro architettonico. V. A. Cacciari - Napoli (restorazione) G. Musolino



Laboratorio di Restauro Archeologico ed Ambientale

Restauro Archeologico. V. A. Cacciari - Napoli (restorazione) G. Musolino (a.a. 2006-07)



workshop del sub-network tematico sulla conservazione dell'EAAE - ENHSA

IUAV università degli studi di venezia

insegnare il restauro e la conservazione del patrimonio architettonico obiettivi, contenuti, metodi

genova 18-20 ottobre 2007

prof. arch. eugenio vassallo, prof. arch. francesco doglioni, prof. ing. arch. paolo faccio, prof. arch. mario plana, prof. arch. nullo pirazzoli
con arch. emanuela sorbo, arch. sara di resta

1 cosa e perché

L'insegnamento del Restauro viene svolto attraverso corsi monodisciplinari e laboratori progettuali. L'esperienza svolta nei laboratori ha come obiettivo l'elaborazione di un progetto di restauro per una architettura proposta dal docente o liberamente scelta dagli allievi. L'elaborazione progettuale, che viene svolta premiando la centralità della fabbrica, obbliga gli studenti a confrontarsi con i diversi momenti di un progetto: dal rilievo geometrico a quello di materiali e degrado, dall'analisi dei dissesti allo studio della vicenda storica, dalle tecniche di intervento ai temi del risuo al rapporto tra antico e nuovo. Il passaggio dal triennio alla laurea magistrale è segnato dal passaggio dai fondamenti all'intrecciarsi di temi e problemi.



2 come

L'insegnamento del restauro e della conservazione nella facoltà di Architettura dello IUAV avviene riconoscendo fondamentale importanza alla comunicazione e allo scambio diretto con lo studente che si confronta con il progetto. Ai cicli di lezioni ex cathedra, attraverso i quali si introducono strumenti, problematiche e obiettivi della disciplina e contemporaneamente si suscitano e si vanno a focalizzare i primi interrogativi insiti nella stessa, vengono affiancati incontri di revisione dei progetti al tavolo a cadenza settimanale. Questi incontri rendono l'attività dei laboratori progettuali un'occasione di confronto e di scambio di sollecitazioni lunga un semestre, che si conclude con l'elaborazione definitiva del progetto di restauro all'interno dei laboratori intensivi settimanali.



3 chi

Insegnamenti e laboratori del triennio come del biennio magistrale sono tenuti da professori di ruolo - ordinari, associati e ricercatori - cui si affiancano di anno in anno docenti a contratto preferibilmente dottori di ricerca. Nel triennio di base i laboratori sono tenuti da un solo docente, mentre nel biennio magistrale i laboratori vedono presenti almeno tre docenti di aree disciplinari diverse. Ai docenti di Restauro si affiancano docenti di semestre in semestre diversi in relazione al percorso scelto dallo studente (Conservazione; Sostenibilità; Città; Paesaggio) ed al procedere dal semplice al complesso. Questa presenza offre un terreno fertile di confronto, utile agli studenti per avere un approccio multidisciplinare ai temi del progetto.



4 quanto e in quale misura

L'offerta didattica dell'Ateneo si differenzia fortemente a seconda del piano di studi scelto dallo studente. All'interno del corso di laurea triennale la frequenza, al terzo anno di studi, del laboratorio monodisciplinare in Restauro Architettonico, organizzato in 60 ore di didattica frontale per l'acquisizione di 6 crediti universitari, porta lo studente a sviluppare un primo approccio conoscitivo della fabbrica fino ad elaborare un progetto di restauro. Inoltre, il corso di Teoria e Storia del Restauro, al quale vengono attribuiti 4 crediti formativi, seppur divenuto recentemente corso opzionale, fornisce la prima base teorica della disciplina. Le lauree specialistiche si differenziano fortemente per ore di insegnamento delle materie afferenti all'ICAR/19, partendo dalla laurea specialistica in Architettura per la Conservazione, in cui almeno 21 crediti sono dedicati a discipline attinenti al restauro e alla conservazione, a tutti gli altri corsi di laurea magistrale che riconoscono, all'interno dei rispettivi laboratori integrati, dai 4 ai 6 CFU.

5 prospettive e riforme attese

La prospettiva, quindi anche una riforma attesa, che si sta delineando all'Università IUAV di Venezia è l'istituzione ed attivazione di una Scuola di specializzazione in restauro, che consentirà di mettere bene in evidenza la potenzialità di questo Ateneo sul fronte proprio dell'insegnamento del restauro: dal primo al terzo livello. Una riforma tenuta è quella in corso di definizione conseguente agli accorpamenti di insegnamenti conseguenti la necessità di ridurre il numero delle prove d'esame come richiesto/imposto dal ministero.

studenti - nuclei privati - Stefano Pozzato - Enrico Camusso - Andrea Gallo - Giuliana Serravalle - Sarah Galina - Stefano Rossi - Stefano Venturi - Grazia Quaranta