

MOVING TOWARDS CONSCIOUS PRESERVATION OF THE ARCHITECTURAL HERITAGE: CREATING A NEW PROFESSIONAL ROLE

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ABSTRACT:

Nowadays, the unsettled dispute over preservation and restoration is alive and well. The main issue is that there is a great deal of uncertainty in the architecture field, thus rendering it difficult to the communication of what comes true. Technical knowledge pertaining restoration works needs to be extensively and scientifically documented, as it affects the future of buildings under repair. Since 2001, a case study analysis has been carried out on public and private programmes of eighteenth-twentieth century historic building repairs. Significantly, attention needs to be paid to whom may best gather and manage technical data from building sites, in order for future generations to be provided with basic technical know-how.

Analyzing the Italian law on public works, it does not provide for an official in charge of creating the “consultivo scientifico”, who should declare the works to be closed. Building site supervisors are to draw up a technical and scientific report when the work is completed. However, guidelines on how to draw up the report have not yet been provided.

The research has been consistent in suggesting this set of hypotheses: creating a new kind of professional; analyzing the staff just operating on building sites; employing skilled workers from other sectors.

Accordingly, the best solution seems to be that site supervisors are given the task of gathering and classifying all information regarding the building site – product brands, the way these are used, implementation timing, weather conditions during works, etc.

Current problems relating to the architectural world are clearly related to the preservation and restoration of the existing architectural heritage. In order to solve these problems, a broad culture relating to maintenance is required and, in particular, a precise method which takes into account the “background” of the handmade item must be used. This element assumes actual sharing of information of technical/operational nature, starting with knowledge of the material used for the construction and of the application method used at the time of first building; an analysis must also be implemented with regards to the interventions which were necessarily executed in the past and which have interacted with the existing item - this is not a simple matter given that this information may only be discovered during the work yard phase. The operational modalities that are actually implemented by the builder or the restorer are often not recorded within the official documents relating to the intervention.

Restoration interventions are planned so as to guarantee an elevated qualitative level by postponing or even avoiding a restoration on the existing item. The starting point involves setting a “time zero” which potentially coincides with the recent restoration as well as imposing serious and constant monitoring in the sense of control activities which are implemented with visual or instrumental means and which aim to evaluate - by verifying indicator parameters - the “state of health” of the asset and the behavior of the implemented interventions over time. For this purpose, it will be necessary to use applicable tests on site which allow for the acquisition of information on microscopic phenomena by verifying markets and any opportune indicator parameters; this would allow for an assessment of the compatibility and curability of the utilized technical choices by implementing a comparison on a “sample”

whose scale is equivalent to that of the whole asset. As a result, it is important to implement direct and constant observation during the work yard phase in order to identify utilized products and procedures as well as the environment and the requirement of additional information for the purposes of conscious maintenance over time.

The time of restoration is considered an exceptional opportunity for gaining in-depth knowledge of the asset given that it allows human and economic resources to become available and brings together the specialized skills that are required for conducting experiments in addition to providing access to parts of the work which would otherwise not be easily examined and which allow for direct field work.

The research method of the group - operational within the ISET Department of the Polytechnic of Turin - is based on these ideas and is applied to real case studies that are based on the collection of data from both historical and modern construction work yards (Figure 1, 2). The primary objectives include the supply of specifications for an appropriate maintenance methodology which will be applied to the work in the phase following that of restoration and which must be part of the process which leads to overall management even in terms of maintenance through knowledge of the asset and of its issues, problems and executive intervention specifications.

The primary requirements for preparing maintenance methodologies which allow the asset to be efficiently maintained and reduce the need for additional emergency restoration interventions - in addition to a complete knowledge of the state of the asset at the end of the intervention (i.e. very specific knowledge of the asset but also all the technical specifications of the intervention to which it was subject) -

includes the capacity for forecasting the effects of the treatments over time that are implemented during the data collection period of the work yard phase. This forecast may be implemented from the time of collection and comparison of data or through appropriate monitoring or examined case studies; these are implemented over a significant time period and are compared to the forecasted duration of the utilized products and to the dynamics which govern the alteration phenomena that are caused by the environment on the construction materials.



Figure 1. "Castello del Valentino" in Turin.
(photo Marika Mangosio)



Figure 2. "Villa Garrone" at Spotorno (Savona), one of the collection data case studies.

The experimentation which was designed by the work group has begun more than ten years ago and is structured into three distinct phases: the first phase corresponds to a large-scale theoretical operation for the identification of case studies followed by an investigation relative to the asset in question and finally a third phase for the recording of the data collected in the work yard. In order to obtain the authorization which is required for access to the work yard, the professionals which manage the planning of the works as well as the various Work Management Offices and the public bodies overseeing the supervision have been contacted.

The documentation relative to the intervention project - in addition to that required for its drafting and essential in the first phase of the research - has only been acquired through the collaboration of technical staff which made their printouts available. In conjunction with the outcomes of historical documentation research as well as the dimensional geometric survey and an analysis of the work materials and of the level of deterioration, the onsite and laboratory analyses have been

examined in order to verify the conditions of the asset and to implement deterioration diagnoses. Finally, the project printout concerning the intervention modalities relative to the work have been acquired.

During the second phase - based on an analysis of the asset - an in-depth analysis of the sub components was implemented in order to acquire the most complete knowledge possible. The information provided by the designers have therefore been reviewed and, in certain cases, integrated; this information was collection at the time of drafting of the project*.

The most important element derived from the results has been the possibility to implement onsite surveys which have allowed use to gain access to materials and technological systems that are no longer used; this has allowed for hypothesizing on historical methods and construction techniques. A diagnostic overview of the entire building was then formulated.

All of these operations have included a targeted photography which has provided clear information on the conditions prior to the restoration, thereby providing images of the provisional status of the works and serving as a parameter for comparison with the final result of the restoration. These images also turned out to be useful for the reconstruction operations relative to technological systems and construction methods given the lack of adequate planning and iconographical documentation.

The third phase was the most direct and included the registration of all the data which was recorded in the restoration work yard; this data provided information on the criteria for the selection of interventions, descriptions of their application phases and a detailed description of the phase noted during the course of the survey (Figure 3). Particular attention was also given to reporting on the type of utilized products, instruments and utensils as well as the identification of methods and application times of the treatments, any shrewd methods used by the operators and the description of the environmental conditions in which the intervention was observed.



Figure 3. Registration of data during the restoration work yard.

Due to this patient large-scale work, it will be possible to implement supervisory actions on the interventions through the acquisition of new data collected during the work yard phase and their subsequent critical archiving; this will then contribute

* By means of research of archived historical documentation, it has been possible to collect information on the designer of the works as well as on planning and construction events, the suppliers of materials and manpower that were involved in the construction and the ordinary and extraordinary maintenance interventions following the construction.

to enriching the knowledge of the planner. A collection of planning solutions will be available to operators in the sector; given that all their specifications are known, the outcomes at the end of the intervention and any medium to long-term developments of these solutions are therefore available.

The creation of an archive (Figure 4) of verified intervention procedures and supervisory control methods may therefore serve, in this sense, as a valid support for the drafting of integrated intervention strategies relative to the construction.

Patologia	Materiale e sistema tecnologico	Pietra Artificiale Lavori sul basamento di Villa Garrone (Sv).
	Descrizione sintetica dei fenomeni rilevati	Fenomeni di distacco
	Classificazione del fenomeno	Macchie e distacchi di vario tipo, a causa dei fenomeni atmosferici e della risalita di umidità dal terreno si sono verificati dei distacchi parziali della pietra artificiale del basamento.
	Descrizione della manifestazione	Il basamento in pietra artificiale si presentava, prima dell'inizio dei lavori, con problemi di fessurazioni e cavillature presenti in vari punti della superficie.
	Stima della velocità di evoluzione nel tempo	Il fenomeno si evolve ciclicamente, peggiorando di anno in anno.
	Rappresentazione in scala opportuna	-
	Documentazione fotografica	
	Individuazione delle cause di alterazione e descrizione del meccanismo di degrado	La superficie della pietra artificiale per la particolare posizione in cui si trova è stata soggetta all'azione di degrado natura e di degrado che si è protratto per più anni. Il materiale si presenta ancora in buono stato, è stata notata però la presenza di ampie cavillature e segni che, con i cicli di gelo e disgelo e a causa dei venti predominanti, accentuano l'effetto anno dopo anno.
Fattori influenzanti	Il fenomeno è di origine naturale, influenzato dalla posizione particolare del basamento e dalla sua altezza rispetto al suolo.	

Figure 4. Page from “Villa Garrone” data collection.

Despite being aware of the fact that it is not possible to extend the validity of a choice relative to a specific asset to all interventions - given that each planning solution is the result of a comparison of technical-cultural needs, technical/scientific knowledge and economic causes which are interpreted in light of the planner's sensibilities and applied to the unique asset subject to intervention - it seems however absolutely necessary to have a knowledge base which can support planning in accordance with criteria of close similarity.

By analyzing the Italian legislative situation with regards to public works, it should be noted that only a generic “scientific consulting report” (as defined by Article 221 of the Implementation Decree relative to the “Merloni” Framework Law, Ministerial Decree no. 554 of December 21st, 1999) - drafted by the director of the works at the end of the latter and including a technical/scientific report - is required. There are currently no precise indications or targeted technical requirements for this report. The research group has therefore identified three potential solutions for creating the role of an operator who would manage the collection of data during the work yard phase. These three solutions are as follows: creating a new type of professional; hiring workers who are trained in other sectors and who are used to collecting data in an accurate manner (e.g. the industrial, medical, mechanical sectors...); analyzing and identifying a manager amongst the professional that are already operating within the work yard.

The most simple and immediate solution would involve the proposal of a new type of professional who is capable of attending the works and therefore supervising the whole process of the work yard. This would be possible by simply proposing that the purchasers entrust themselves to a third party that is

external to the those operating in the work yard in order to ensure that this party is not “compromised” in any manner and enjoys full freedom and autonomy.

The specified supervisor would therefore be entrusted with the task of supervising the works of the work yard in an educated and professional manner, noting the planned operational choices and drafting the “scientific consulting report” at the end of the works. The negative aspect of this choice consists in an increase in costs and the fact that it would currently not be applicable to a limited number of work yards.

In light of the Italian situation, it would therefore be possible to only use such a professional for large public work yards or only for representative buildings, thereby extremely limiting the amounts of comparative elements which can be used for research and for the improvement of the quality of future interventions.

The solutions which have been so far taken into consideration include the professional that is entrusted with the task of documenting the intervention after the work yard operations have started or even after their completion: in this case, the professional must reconstruct the individual phases and the various modes of operation within the work yard.

This solution has been tested on the field in a recently completed pilot work yard; the individual work phases were reconstructed by contacting - both separately and together - the planner of the intervention, the director of the works, the contractors, the executing parties and the purchasers. It was immediately noted that the data which emerge from operations of this type are less reliable since they are linked to the memories and notes taken by individuals. In addition, it is not possible to verify whether a certain procedure was actually implemented. Assuming even a very in-depth level of planning and execution of the works - as well as the good faith of the interviewed parties - it was noted that single or particular details were inevitably lost.

The research therefore analyzed other operational sectors, particularly within the industrial area which is generally organized with pre-defined methods and which includes certain professional roles - in Italy - that are exclusively dedicated to supervision and quality control of the production. These professionals observe and assess (and, in a certain sense, certify) the individual parts of an assembly chain or the individual phases of production. Within the medical sector, new professional roles are being created in Italy for monitoring and control and various companies avail themselves of professionals who deal with activities that are very similar to the ones we have proposed.

Another interesting reference includes naval shipyards given that the various phases of the latter are constantly monitored by managers of each individual area and certain complex operations - such as boat welding - are closely supervised while the results of the carefully implemented tests are always collected and recorded. The process also includes the presence of a certifying entity whose task initially involves control over the planning component and subsequently the outcome of the work yard.

Even in this second solution, however, it is important to distinguish a production in series - such as in industrial manufacturing - from a “production of prototypes” that is found in architecture. In addition, it should be noted that although the building is considered “unique” and non-repeatable, it is possible to break it down into repeatable elements. As a result, standardizing operational procedures of a work yard or the fact that there could be certifying entities with this level of detail in the building sector is currently difficult to imagine.

For the purposes of the first research phase - which is still underway - it has been noted that it is essential that a solution be found which is compatible with both the costs as well as with the current regulatory framework, thereby tackling the problem in a constructive manner.

According to currently effective laws, the only professional who retains the power to attend all operational phases and who is entrusted with the task of supervision is the Director of the Works. The tasks of this complex professional role are outlined in the Decree of the President of the Republic of December 21st, 1999. The director verifies the perfect execution of the works and is responsible for the approval of the materials, thereby guaranteeing that they have the qualitative characteristics that are required by the project. The various tasks of the Director of the Works include the accounting relative to the work yard where the Purchasers serve as direct references.

In accordance with Article 4, paragraph c) of the abovementioned Decree of the President of the Republic, the director must manage the constant supervision over the effectiveness of the maintenance plan, , [...] modifying and updating the contents once the works are completed.

The advantage of having only one professional of reference is that all information which is collected with the proposed method can be brought together in a manner that is useful for potential comparisons and subsequent data transmission. By calibrating the collection procedures on forms and grids which can easily be expanded, it is possible to adapt to all the peculiar features of the work yard—regardless of whether the intervention involves a new construction or restoration works. In order to prevent the emergence of problems relative to the type of information that will be analyzed, the professional is guided during the collection of data; the latter may be implemented and supported by appropriate photographic documentation.

One of the advantages of this method consists in the fact that it can be implemented with graphical outlines and free-hand drawings which allow the various methods and techniques to be noted and summarized. In order for this to be optimal, the conclusion was reached that the party entrusted with this task must be a technical staff member who is trained in engineering or architecture, i.e. who has the appropriate technical and theoretical knowledge.

The result of the above is the complete management of collected data as well as proper structuring of the latter by utilizing a professional role that is already operational within the work yard and which does not belong to the building staff and has received specifically targeted training. In this sense, it is possible to describe a new type of professional or even a new role for those supervising professionals that already operate in the work yard.