

Restoration, Strengthening and Planning in Italian and German Reconstruction after World War II: Essay in Three Steps

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Abstract: Post WWII reconstruction took place at a time of fundamental importance for our understanding of the divide, theoretical and technical, between consolidation, reconstruction and restoration. Indeed, this period represents the moment in which the earliest stages of this rift emerged. In this essay, we shall attempt to provide an account of this phenomenon by citing case studies considered important within the Italian and German context: post-WWII reconstruction work in the Veneto region (at key sites such as the Basilica Palladiana in Vicenza, the Palazzo dei Trecento in Treviso and the Church of the Eremitani in Padua), reconstruction of the Alte Pinakothek in Munich, and reconstruction and work for new use of the hospital, Ospedale Maggiore, in Milan, as a seat for the Università Statale. Considering these instances provides us with an opportunity to reconsider the transition, theoretical and technical, between conservation of ruins and reconstruction of memory.

Key words: Cultural heritage, post-WWII reconstruction, cultural memory and identities, architectural restoration and conservation.

1. Introduction

As a result of the air raids of WWII, the situation for Europe's cultural heritage was one of dire emergency, given the extent of the damage and the symbolic impact on peoples of the loss of certain monuments [1-8].

As a result of the damage to cityscapes, a greater sense of urgency was felt when considering the significance of ruins and, particularly, the symbolic and architectural significance of reconstruction operations [9-15].

The architectonic response to this emergency brought into being a variety of procedures on the operational and design front, united however by an interest, commonly held, in the borderline existing between, on the one hand, the role of history in design work (hence, the role documents, pre-war images, and

sources in general) and, on the other, the role of technique (that enabled experimentation, in the realms both of technologies and of languages or idioms of expression). Operationally speaking, the fruits of such reflection underpin our relations with cultural heritage assets today. Introduction of the concept of "materiale moderno" (modern material), such as use of reinforced concrete, meant that design for cultural heritage might be open to a wide range of technical solutions. Theoretically speaking, use of reinforced concrete led to what may be described as the demise of the nineteenth-century Viollet-le-Duc/John Ruskin dichotomy [16]. The introduction of a ductile material endowed with static properties differing from those of traditional works in masonry enabled conservation of fragments of ruined architectural works alongside spaces created using reinforced concrete, enabling in turn, as a design and project aim, the reinvention of ruins [17].

In this process, technology, rather than technique, emerged as the instrument thanks to which the theoretical debate on conservation of ruins and/or

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architectural reconstruction could find a solution. This debate pitted a fracture between structural conservation and consolidation—a clash that persists to this day.

During the period of post WWII reconstruction, this clash was germinal. It is present throughout a phase characterised by a degree of ingenuousness, since the introduction of frame structures in load-bearing constructional systems created a universe of modern structures featuring suspended skeletal (i.e. passive) traditional walls and floors.

Post-WWII reconstruction therefore took place at a time of fundamental importance for our understanding of the divide, theoretical and technical, between consolidation, reconstruction and restoration. Indeed, this period represents the moment in which the earliest stages of this rift emerged.

In this brief essay, we shall attempt to provide an account of this phenomenon by citing case studies considered important within the Italian and German context: post-WWII reconstruction work in the Veneto region (at key sites such as the Basilica Palladiana in Vicenza, the Palazzo dei Trecento in Treviso and the Church of the Eremitani in Padua), reconstruction of the Alte Pinakothek in Munich and reconstruction and work for new uses for the hospital, Ospedale Maggiore, in Milan as a seat for the Università Statale di Milano.

2. “Reconstruction artistique en Italie”. Strengthening

An exhibition *La reconstruction artistique en Italie*, was hosted by the Grand Palais in Paris in 1946 [18].

The catalogue opened with a quote from Paul Valéry, from *Eupalinos ou l’Architect*: “ne faut pas que les Dieux demeurent sans toit, et les âmes sans spectacles” (we must not allow the Gods to become homeless and must not deprive souls of spectacles).

The architectural works selected for the exhibition were, significantly, those of the territory of Veneto, headed during this period by the superintendents,

Ferdinando Forlati and Piero Gazzola, who heralded an openness to the possibility of a united Europe, which in the post-WWI period constituted the objective for world peace [19-22].

The exhibition’s catalogue shows note examples of a methodology of intervention that would be taken up within the sphere of restoration over the following decades, out of which came a lexicon that has since become consolidated, including terms such as “distinguibiltà delle parti” (distinguishability of the parts)—post-war terms leading up to today’s “rapporto tra antico e nuovo” (relation between the ancient and the new).

The Church of the Eremitani in Padua, the Palazzo dei Trecento in Treviso and the Basilica Palladiana in Vicenza are iconic case studies of post-war reconstruction works—architectural works that kicked off a season of restoration-work experimentation [5, 12, 13, 16, 23, 24].

The Church of the Eremitani and the Ovetari chapel with Andrea Mantegna’s frescos, was bombed on 11 March 1944. The presbytery had collapsed, as had a portion of the facade. The nave was seriously damaged, and the adornments of the interior were all irreparably lost. The masonry surviving the collapse presented off-plumbs ranging from 32 cm to 50 cm. The image of the fragment of the facade would become the icon representing the air raids in Italy [4]. Ferdinando Forlati also dedicated a book to the Church of the Eremitani in 1945, published in the series curated by Gino Chierici, *I monumenti Italiani e la guerra* (Italian monuments and the war), which set itself the task to collect “all that might help, so that they don’t perish”. The stage consisting in collecting the rubbles began immediately—in order to recover fragments of Mantegna’s frescoes, above all. Following the war, the fragments were delivered in 109 cases to the Istituto Centrale del Restauro in Rome, headed at that time by Cesare Brandi. Here, repair work was carried out, with the lacunae integrated by adopting the “tecnica del rigatino”

(hatching). During reconstruction, all the elements recovered were placed alongside new elements in stone or brick on which the date of reconstruction was engraved, separated from the surviving parts by a black groove, in order to indicate the limits of the collapse, in terms both of time and the materials. The entire apse portion had been reconstructed already in 1946. The procedure adopted to straighten the walls was tested out here for the first time. It was then adopted for the Palazzo dei Trecento in Treviso. The masonry parts were bound with a framework of lattice beams anchored with iron ties and couplings. When the structures were released from the scarfs the couplings were turned to provide the rotation required to restore them to their original seat. Forlati commented on these operations as follows: “in about thirty minutes, stretches of wall of a width of seven metres and of a height of fifteen were gently relieved of their off-plumb, turning on an axis corresponding to the zone just above the ground” [25, 26].

The Palazzo dei Trecento in Treviso was bombed on 7 April 1944. A bomb landed on the floor of the salone (hall) and completely destroyed the Sala del Consiglio (room of the council) and the portions on the northern and eastern side. The surviving stretches of the facades were 87 cm and 110 cm off-plumb. Given these conditions, the German government ordered that the building be immediately demolished. Ferdinando Forlati, however, prevented demolition and managed to persuade the German commanding officers that consolidation and straightening of the surviving walls was technically possible. The initial stage of collecting the rubbles and constructing the works necessary for safeguarding the building commenced immediately in April 1944. On three dates (12 May 1948, 27 July 1948 and 11 July 1949) the walls were straightened (one of the walls, weighing 574 tonnes, was of a height of 12 metres). In this section, the photographs of the model illustrate the method adopted (based on that already tested on the Church of the Eremitani in Padua as we say

before): each surviving portion was secured by two frames, made up of thick boards and beams, linked by metal retention elements. The frame or cage created in this manner was anchored with ties and couplings to the beams placed along the floor. At the bottom and on the sides of the walls, rotation axes were created, within which reinforced concrete spandrel beams ran. Wooden wedges were positioned to fill the gap created by the shifting of the rotated wall. For the eastern wall and for the northern wall, the operations lasted ten hours and a little more than two hours, respectively. The workers turned the couplings on one side while loosening the wedges of the rotation axis on the other, thereby repositioning the two walls, which were sealed by grouting. These operations were followed by repair of the damaged or missing masonry, using the bricks recovered from the rubbles of the collapse of the structures. So that the restoration work could be identified—serving also as an admonition for future generations—, a groove was impressed along the edge of the damaged summits of the masonry, separating the new from the old: a slender line which can still be seen today, tracing the line of the damage caused by the bomb [27].

On 18 March 1945, the salone (hall) of the Palladian Basilica in Vicenza was destroyed during an air raid. The deflagration melted the copper cladding, burned the structure of the wooden ‘hull’, and extensively damaged the masonry, as well as the statues. On the occasion of the photography exhibition of 1946 hosted by the Metropolitan Museum in New York, the photographs of the unroofed basilica were displayed before the world of culture [28]. Out of the exhibition came the book by Emilio Lavagnino dedicated to fifty war damaged Italian monuments, *Cinquanta Monumenti Italiani danneggiati dalla guerra* (1947), in which the author stresses the urgent need for funding reconstruction work because, in the basilica, he saw “a new way of seeing and understanding the classical ancient world, a new way of understanding it in order to go beyond it and

venture into the free spaces of imagination” [4]. In 1946, a call for bids was organised for reconstruction of the Basilica’s roof [29]. The roof was reconstructed in 1948 with a reinforced concrete structure constructed with disposable formwork boxes in wood, a structure that can be seen in the site photographs in this section. During reconstruction, attention was paid to re-use of the copper elements recovered after the fire. Importantly, among the conditions set forth by Ferdinando Forlati in the announcement was that, during reconstruction, the deformations of the ‘hull’ that had taken place over time were to be imitated. Among the interventions carried out, we note construction of a reinforced concrete ring above the open galleries in order to “bolster the general structures of the building, the statics of which were always a source of some concern”. Reconstruction also included interventions on the three arches of the western corner, re-flooring, consolidation and restoration of the statues, and a general re-ordering of the square with a lowering of the walkway surface of the three steps “as Palladio had originally intended in his plan”. On 1 September 1949, on the occasion of the celebrations for the four hundredth anniversary of the monument, an exhibition (*Mostra del restauro di monumenti e opere d’arte danneggiate dalla guerra nelle Tre Venezie*), dedicated to reconstruction in Italy’s northeast, was set up in the restored Salone [30]. The exhibition was a celebration of the social implications of reconstruction and architecture, symbolizing resurrection of the nation against, to use Benedetto Croce’s words, the “brutality of destruction” [4].

3. “La grande Lacuna”. The “Cà Granda” in Milan. Conservation in Reconstruction

While World War II was looming ahead (1938) the Municipality of Milan acquired *Cà Granda*—the name given to the fifteenth-century “Spedale de Poveri” (hospital for the poor), commissioned by Francesco Sforza and designed by Antonio Averulino,

known as “il Filarete”. The debate regarded the prospect of providing a new seat for the university. During 1939, surveying took place and a restoration project was drawn up [31-33]. However, the work was interrupted when war broke out. The Ospedale was repeatedly bombed (1 February and 13-14 August 1943) [34].

Up until shortly before the air raids, Filarete’s original planimetry for the hospital had been conserved. This consisted in a rectangular plan with a central courtyard and two laterally positioned spaces providing a cross form made up of four rectangular halls facing a central space that was accordingly known as the “crociera” (or point of intersection). The conjunction of the four arms generated four minor courtyards (variously named over the intervening centuries) per side. This architectural typology became the model for construction of hospitals in Italy from that time onward, up to the modern era [35].

Considerable damage was caused to the part of the Ospedale built in accordance with Filarete’s design, including collapsed roofing. The attic storey of the facade looking onto Via Festa del Perdono was seriously damaged. The seventeenth-century loggia at the point of intersection with the Sforza “crociera”, was completely destroyed. The facade looking onto via Nazaro was likewise seriously damaged. The frontage in Via Francesco Sforza and the courtyard behind, known as the “Ghiacciaia”, were practically completely destroyed. The other Sforza courtyards were seriously damaged. In the central courtyards, the side toward Via Festa del Perdono, the southwestern side and, in part, the side attributed to Giovanni Antonio Amadeo were razed to the ground.

During the following year, the Soprintendenza ai Monumenti di Milano (superintendency of the monuments of Milan) and the Genio Civile Italiano (Italy’s civil engineering body) drew up and stipulated a plan for execution of urgently required provisional structures. Between 1946 and 1950, work was carried out on behalf of the Provveditorato alle Opere

Pubbliche (public works superintendency) under the artistic supervision of the said Soprintendenza ai Monumenti di Milano, which assigned the works to Ambrogio Annoni, a Professor at the Politecnico di Milano. A university technical board was then set up, which included Ambrogio Annoni, Piero Portaluppi, Liliana Grassi (Professors at the Politecnico di Milano), Amerigo Belloni and Adalberto Borromeo. Following the deaths of Annoni (1954) and Portaluppi (1967), Liliana Grassi worked on restoration of the *Cà Granda* until her death in 1984.

The air raids on *Cà Granda* left a huge lacuna in the urban fabric. In early 1944, the project started up for the new use of the entire building as the seat of the Università Statale di Milano. These premises, which were opened in 1958, have served this function to this day.

The first interventions undertaken under Annoni's artistic supervision, prior to 1949, were of various kinds. An attempt was made at consolidating the masonry in precarious conditions, by means of brickwork and cement repair work. A number of the more structurally damaged parts were demolished, as was the case with the penthouse floors and external structures added to the building's walls over time, demolition of which had already been planned as part of the pre-war project for the 1940s, again under Ambrogio Annoni. Alongside the structurally necessary work, some tasks were executed as per the 1940s project. We may note the clearing away of the cloisters and arcades, reassembly of the arches in line with the scheme that Annoni believed dated back to the fifteenth century, and removal of the parts considered "aggiunte" (additions). These operations were all part of an attempt to return to the hospital the *facies* as per Filarete's intentions, in line with the consolidated tradition of *Restauro Storico* (historical restoration). The following are just some of the facts and figures of reconstruction of *Cà Granda*: as much as 45,000 cubic metres of rubbles removed; 8,000 square metres of floors reconstructed with structures

in reinforced concrete; and approx. 8,500 square metres of natural stonework reassembled (anastylosis) [36-38].

In the zones hardest hit by the raids (such as the "Ghiacciaia" courtyard and the frontage looking onto Via Francesco Sforza), in 1954 (the year of Annoni's death), the gap left by the bomb damage was still visible. Only later, between 1961 and 1966, was restoration work carried out according to the solutions drawn up by Liliana Grassi, with Amerigo Belloni and Piero Portaluppi.

On the basis of a lengthy sampling campaign regarding the masonry work of the remaining left side of the facade looking onto Via Francesco Sforza, in 1962, Liliana Grassi discovered a double-lancet window and a number of mouldings in terracotta and foliage elements in the infill masonry work. The idea of the project was to recover and reassemble the fragments of the double-lancet windows in the portion of the facade to the left, by anastylosis. The lacunae of the discovered pieces were to be made up using fragments found in the rubbles of the part to the right. The remaining wall was conserved with authentic elements (small balcony, two eighteenth-century windows). The other parts were slightly set back, and feature the use of contemporary languages. The facade proceeds with the body of the reading room, set back from the body of the church, and with the seventeenth-century portal. The door "dei morti" (of the dead), linking the hospital to the cemetery was conserved in the "a rudere" (ruin) manner. In the reconstructed part of the courtyard, the facade proceeds slightly set back. The same material, bricks, is used, while the language reflects the modern nature of this work. The spaces given over to university use correspond to simple rectangular apertures, an indication of the un-reconstructed cornice, the indication being provided by means of bricks stood on end to create a series of ventilating apertures. Within the space of this facade, we may identify traces of Filarete's building (reassembled using surviving

materials) alongside the contemporary mode (as the seat of university offices), seamlessly blending, with no clash that might be detrimental either to Filarete's solutions or to the modern-mode solutions. The new and the old coexist in the form of a harmonious composition [39-41].

Restoration and arrangements for the "Ghiacciaia" courtyard—which had been consolidated during the 1940s—proceeded between 1958 and 1967, the year of Piero Portaluppi's death. We note the presence in 1958 of the only wall remained (consolidated by Ambrogio Annoni after the end of the war) and the pieces uncovered as a result of the destruction. These items were inventoried. The project took the direction of providing a record of all phases of Filarete's "crociera" plan while providing a record also of the later air raids stage.

As per the project, the wall includes all these traces, with reassembly of the arcades by anastylosis, conservation of Annoni's consolidation work and of the traces of destruction left by the air raids, and completion of a part of the "crociera" with an entirely new university wing project. On the one hand, this portion of the courtyard, in its spatial essence, accommodates the spatial proportions as planned by Filarete. On the other, the use of contemporary languages, not only harks back to but also updates the building tradition expressed by the Ospedale. The design work, too, on mobile features (railings and gates), and the masonry work for a number of surface areas, are instances of a contemporary-style reiteration of the fifteenth century elements. Choice of materials, the matching of brickwork and reinforced concrete masonry works harmonise in the use of colour (as in the consolidated tradition of Le Corbusier), the interplay between full and empty spaces [42]. The contemporary facade represents an *interpretation* of Filarete's facade, bypassing the options both of *imitation* and *revival* [43]. However, this interpretation deploys spatial expedients such as alignment of the floors, underscored by the cornice

stringcourses, which evoke the baluster of the arcade, or the marked tripartition of the facade (arcade, first floor and mezzanine floor).

We may therefore conclude that the type of operations adopted for the Ospedale varied very greatly (also due to the size of the building). We may point to the anastylosis work for the courtyards, in which, after the rubbles were cleared, the pieces were classified and reassembled; to a project for adaptive reuse of the late eighteenth-century zone, entailing insertion of new elements; and to a project for the finishing of the ruins for the parts destroyed as a result of the raids, in the Ghiacciaia courtyard and the facade looking onto Via Francesco Sforza. The parts of the building listed all vary in terms of the approach adopted to the relation between old and new, to be interpreted in the light of the varying stages of the ongoing theoretical and operational debate (since these works came about between 1944 and 1986). As we consider the interventions for the Ospedale Maggiore we may see that they attest to the extent to which *historical-critical interpretation* of an architectural work refers to the "*cifra simbolica e culturale*", or symbolic and cultural 'cipher' or hallmark quality, of the building [44, 45].

The reconstruction project, while integrating and reviving a given function of the building, aims also to conserve this symbolic "cipher", present in the ruined parts.

4. The Alte Pinakothek in Munich "by" Hans Döllgast. Planning Spaces

The 1944-1945 air raids severely damaged the entire city of Munich, partly destroying the Alte Pinakothek [7, 11-15, 46]. The building was commissioned by Prince Ludwig and designed by Leo Von Klenze. Only the perimetric walls of this art gallery remained standing. The facade to the north and the loggia facade to the south have been extensively destroyed. During the early post-war years, it was thought that the building should be demolished

entirely. This view was disputed, and work on the site was therefore blocked. The ruins marred the cityscape until 1952 [7].

The Munich gallery debate saw two opposing views. Some favoured demolition and construction of an entirely new building. Others wanted reconstruction of the *facies* of Klenze's work.

Starting on 1952, Hans Döllgast—a professor of drawing, composition and perspective at Munich's Technische Hochschule—worked on a gallery project with the premise that traces of the air raid damage should be conserved, alongside a reinterpretation and transformation of the spaces created by Klenze [47-49].

The project reintegrated the parts that were destroyed, respecting the facades but also leaving the signs of the damage visible, also in constructional terms through the use of recovered bricks and conservation both of the roughness of surfaces and the holes left by the flying fragments, shards etc. These interventions aimed to consolidate memory of the air raids.

Alongside the conservation work, the major transformations and Döllgast's intuitive vision of design practices are revealed in his idea that the entrance be moved to the northern frontage, i.e. one of the two facades that displayed the signs of the damage. He preferred this solution to Klenze's entrance to the east. He also inserted a number of stairways leading to the upper floors into the zone of Klenze's loggia—the facade to the south.

This planimetric indication enables uninterrupted viewings of the works on display and longitudinal definition of the overall plan indicated by the presence of a two-pitch roof alternating with skylights, with respect to Klenze's cloister ceiling. This made it possible to highlight continuity of the facade for the front view.

Construction of the stairways was at the centre of much debate. Following demolition of one stairway which had detached itself from the wall of the loggia

(demolition work that Döllgast opposed), a stairway ramp was built that covers the entire width of the room.

Accompanying construction/rotation of the overall planimetric arrangement was integration of the frontage entailing inclusion in 1955 of a wall in brick (the bricks are "in sottosquadro", or slightly set back so that they may be recognised). The bricks recovered from the rubble were assembled with a simplification of Klenze's profiles, thus updating the work in terms of its architectural language, while reinstating, and including in the design, the work's rhythmic character.

Döllgast also intended to obtain bare upper spaces with a smooth barrel vault and no cornices. By way of reply, the directors decided to reconstruct the space as per Klenze's project (i.e. with cornices and cloister ceilings) [50].

The building was inaugurated in 1957.

The facades were reassembled using the recovered bricks and adopting once more the proportions adopted by Klenze accompanied by formal simplification of the elements. Figuring as an element of interpretation of the facade is the intention to underscore the rhythm of the horizontal and vertical elements by accompanying them with cornices in reinforced concrete and brickwork overhangs [49-51].

Each compositional element of the facade not only takes up but also updates extant elements, creating a continuity of matching and unseparated elements, making for a single formal solution. Alongside the use of recovered materials, many parts were designed using modern building work systems (e.g. reinforced concrete). The Atrium, or anteroom, was constructed with reinforced concrete trusses, taking the place of the old vaulted-ceiling storage spaces. The walls of the interior were treated with light whitewash for a harmonious chromatic solution for the work as a whole. The design work for all the installations/systems was carefully executed (radiators, fixtures and fittings), as formal and not just as

functional elements [47-50].

Döllgast also undertook other reconstruction projects in Munich, such as the Frederick von Gärtner cemetery (to the south) in 1954 and the church of St Boniface (1971). For each of these projects, insertion of new elements took place in the light of the old, not seen as a starting point to be adhered to philologically but as a bond with tradition and as an opportunity for reflection on project and design work. Thus, we see a blending of tradition and innovation, coming about through the agency of contemporary languages [52].

No “betrayal” or denial of ones identity as a contemporary player; instead, a vision of the extant architecture as a stimulus for, rather than as a limit placed upon, design work.

5. Conclusions

Technique, as defined by Gustavo Giovannoni, is thus the “mezzo utile” (useful means) for carrying out post WWII reconstruction, a material metaphor of a country’s ability to “rinascere”, starting out from a form of interpretation of the past, that includes political, social and economic points of view. Technological innovation is the symbol of this process: to overcome an idea of the “past” towards an idea of ‘modernity’, a focus on progress and on the future that characterised the entire twentieth-century and of which monuments become symbolic and material *locus* of experimentation. Reconstruction projects can thus become an opportunity for the community to acquire a new common good through an architectural design process and at the same time rediscover a cultural identity in a new urban image. This dual approach creates a separation between the historical image of the monument and its new constructive identity—thanks to which the monument may be used after bombing. The reconstruction projects, in these case studies, and generally on the plane of theory, enable us to reflect on this link (or separation, we may say) between technique, technology and image, that correspond to the various roles of the conservation

choices, between restoration and consolidation.

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