Composing with Uncertainty: Formal Definition and Reliability in Architectural Design for Existing Buildings

When it restores lost parts, architectural design for existing buildings makes a decision that the culture of composition has rarely made explicit: the degree of definition with which those parts should be presented. This research argues that the decision should follow a principle of correspondence – the definition of each part should correspond to the reliability of the knowledge on which it rests – and that design, besides modifying and rewriting the existing, has the task of declaring the degree of certainty of what it proposes. Three categories, redefined on the basis of Peirce, Ginzburg and archaeological stratigraphy, describe the operations of design: assuming the imprint, ordering the weave, declaring the stratification. Two outcomes depend on the compositional relation chosen, and are described through qualitative judgments: the testimonial residue, material and spatial, and the epistemic marking. The analysis of CaixaForum, the Bourse de Commerce, Castelvecchio, the Neues Museum, Santa Maria di Siponto and the Roman theater of Sagunto, with the Tempio Malatestiano as a historical control, distinguishes material from epistemic distinguishability and tests the principle, including on eight interventions completed over the past decade. The result is a design tool, the reliability map, which turns the degree of certainty into a variable of composition.

Keywords: *architectural composition; design for existing buildings; formal definition; reliability; declaration.*

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Introduction

Every project on an existing building decides what to preserve, remove, add and recompose. When it restores lost parts, it also makes a less visible decision, one that concerns form itself: the degree of definition with which to present them – with the measure, ornament and detail of what is documented, or with the reduced precision of what is merely hypothesized. In Italian architectural culture of the second half of the twentieth century, the relationship with the existing was conceived through Ernesto Nathan Rogers's "environmental pre-existences" (1955), Vittorio Gregotti's design as modification (1966; 1984), Aldo Rossi's urban permanences (1966) and Giorgio Grassi's logical construction of architecture (1967). None of these positions, however, treated the degree of certainty as a variable of composition. The research addresses the problem where it is most pressing: contemporary design on existing buildings, disused complexes and archaeological sites, which confronts what persists, what has been transformed and what has disappeared.[1]

[1] The three positions do not overlap: for Rogers, pre-existences are a sphere of historical responsibility; for Gregotti, the territory is the material of design; for Rossi, permanences are

The paper proposes three interpretive categories: imprint, weave and stratification. The three terms come from different lexicons – the cast, the textile, geology – and must therefore be redefined on a homogeneous logical plane. The *imprint* is a material or spatial residue produced by a past process, independently of any intention to signify, which binds the building to the place where that process took place; the *weave* is the system of elements intentionally instituted by design in order to organize space and communicate a set of relations; *stratification* is the sequence of phases that the interpreter reconstructs inferentially from imprints, restoring the memory of the building and its transformation over time. For the designer, the three categories correspond to three operations: assuming the imprint, ordering the weave, declaring the stratification.

One consequence must be stated at once. Since design is an intentional activity, everything it takes up becomes part of its weave: that imprints and stratifications are assumed into it is not a result to be demonstrated, but a premise. The relevant question concerns the *modes* and *costs* of this conversion: what survives of the imprint as testimony once it has been assumed as a figure, and what remains recognizable of stratification as a hypothesis once it has been translated into a configuration.

The categories are tested on four main cases, arranged along a gradient of integrity of the pre-existing structure – CaixaForum Madrid by Herzog & de Meuron, read in comparison with Tadao Ando's Bourse de Commerce in Paris; Carlo Scarpa's Museo di Castelvecchio in Verona; the Neues Museum in Berlin by David Chipperfield with Julian Harrap; Edoardo Tresoldi's installation at Santa Maria di Siponto, read in comparison with the Roman theater of Sagunto by Giorgio Grassi and Manuel Portaceli – and on a historical control case, Leon Battista Alberti's Tempio Malatestiano.

The research question is therefore: through which operations can the architect give form to what he or she recognizes in the pre-existing structure without depriving it of its testimonial value and without presenting as certain what is hypothesized? The thesis is that the answer lies in a compositional principle: the correspondence between the degree of definition of form and the degree of reliability of the knowledge on which it rests. That design assumes imprints and stratifications into its own weave follows from the definitions; the research instead tests three hypotheses: (H1) the material and spatial components of the testimonial residue are independent; (H2) the material distinguishability of the intervention does not imply its epistemic distinguishability; (H3) the compositional relation does not determine the degree of marking, which depends on the devices chosen by the project. Evaluation is thus not the aim of the research, but the control of a design action: the criteria by which a completed project is judged are the same ones that can guide the designer.

It is first necessary to state the position from which the question is asked. The premise is that the history of architecture is made of superimpositions, each belonging to its own time, and that contemporary design should add a recognizable layer rather than return to a past form: it is through the succession

urban artifacts endowed with a persistence of their own. The paper takes up their common denominator: design as a form of knowledge of the existing.

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of layers that memory is handed down to future generations (cf. Rossi 1966). Documents and virtual reconstructions therefore do not serve to legitimize a return to the *as it was*, but to make explicit what is known, so that the new layer can be built with awareness. This is the perspective from which the paper starts, and it finds a counterpart in the operations of Herzog & de Meuron in Madrid and of David Chipperfield in Berlin; the principle of correspondence is nonetheless proposed as a general criterion, valid also for projects that start from different positions.

The paper makes four contributions: a coherent definition of the three categories, grounded in explicit semiotic and epistemological references and translated into design operations; two variables that describe the outcomes of the conversion – the testimonial residue, in its material and spatial components, and the epistemic marking – and relate them to the compositional relation chosen by the project; a compositional principle – the correspondence between the degree of definition of form and the degree of reliability –, together with the tool that translates it into design, the reliability map, and the devices through which form declares its own degree of certainty without external apparatuses; the distinction between material and epistemic distinguishability, positioned with respect to the precedents of conservation doctrine. The novelty does not lie in the cases, which are among the most studied in the literature, but in the lens through which they are read: subjected to common and graded criteria, well-known works become comparable. The paper belongs to the field of architectural composition: it takes the criteria of restoration as constraints with which design must engage, and examines their effects on the construction of form, on typological characters and on the organization of space, at the scale of the building as well as at the urban scale.

Theoretical framework and state of the art

The Weave: Relations and the organization of space

In Charles S. Peirce's semiotics, a sign is something which stands to somebody for something in some respect or capacity (Peirce 1931–1958, 2.228); the best known of his trichotomies distinguishes three ways in which a sign refers to its object: by resemblance in the icon, by physical or causal connection in the index, by rule or convention in the symbol (Peirce 1931–1958, 2.247–2.249).[2] The term "sign" retains this general meaning here, and the three categories are determinations of it: imprint and stratification belong to the domain of the index, the weave to that of the symbol. The *weave* is the system of intentionally instituted elements through which design establishes an order and communicates a meaning. The term recalls the interlacing of textiles, which Gottfried Semper placed at the origin of the wall, born as a woven enclosure before becoming a load-bearing wall (Semper 1860–1863). In architecture, what the weave

[2]In Peirce the three classes are not mutually exclusive; the attribution of the categories indicates the prevailing component.

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interlaces are first of all relations – of measure, alignment, hierarchy and path – through which design organizes space. In the tradition of composition it is what Giorgio Grassi described as the logical construction of architecture: a system of rules – type, measure, repetition, the hierarchy of elements – that makes form transmissible and verifiable (Grassi 1967).

Alberti provides its model: in *De re aedificatoria* beauty is a concord of the parts such that nothing could be added, taken away or altered without making it worse, and its principle is *concinnitas* (Alberti 1966 [1485], VI, 2; IX, 5).[3] For this reason the Albertian weave, applied to a pre-existing building, does not merely clad it: it tends to reorganize its overall meaning.

The imprint and the relationship with place

The concept of imprint makes it possible to address the relationship between architecture and the place where it stands. In Peircean terms, the imprint is one of the canonical examples of the index: a sign that signifies by virtue of its physical connection with the process that produced it. Georges Didi-Huberman described the imprint as a resemblance produced by contact, which carries the form of a past event into the present (Didi-Huberman 2008).

Precisely because it originates from contact, the imprint is inseparable from the support that receives it: it cannot be moved without losing its testimonial value, and it binds the building to the ground, to the urban fabric, to the situation in which the process took place. The term is preferred to "trace" because it makes explicit the physical link on which the index is founded. An imprint may be a masonry structure, a plan layout, a foundation, a material or a spatial relationship that persists: architectural memory does not coincide only with the preservation of matter, but also manifests itself in the persistence of configurations. This is what Rossi described as the persistence of street layouts and urban artifacts, relating it to the notion of *locus*, the singular relationship between a local situation and the buildings that stand there (Rossi 1966).

The value of the imprint, however, is not an objective datum: Alois Riegl showed that the monument is the object of different and potentially conflicting values – historical value, linked to the document, and age value, linked to the marks of time – which depend on the contemporary gaze (Riegl 1903). Recognizing an imprint already means selecting and interpreting it; for this reason the paper uses the term in an empirical and indexical sense, as the residue of a process that actually took place, whose reliability can be discussed and verified.

Stratification: memory and transformation over time

Stratification introduces time into the cognitive process and, with it, inference: the past phases of a building are not observed, they are reconstructed. The term does not designate here the mere superimposition of layers, but their

[3]Critical edition by Giovanni Orlandi, with introduction and notes by Paolo Portoghesi (Milan: Il Polifilo, 1966); on the relationship between theory and building practice see Tavernor (1998).

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ordered reading: the sequence of phases that the interpreter reconstructs from imprints and from their physical relationships – of covering, abutment, cutting – in order to trace back configurations that can no longer be observed. In conservation, stratification designates above all a value to be respected, the valid contributions of all periods (ICOMOS 1964, art. 11); here it designates the reading that makes it possible to recognize that value, and therefore operates as an epistemic category. Archaeology formalized the operation in the principles of stratigraphy (Harris 1979), and the archaeology of architecture extended them to standing structures (Brogiolo and Cagnana 2012): the resulting sequence is not a datum, but an interpretive construction, verifiable and revisable. Its foundation is the evidential paradigm described by Carlo Ginzburg, which proceeds from the decipherment of marginal details to the reconstruction of a complex reality (Ginzburg 1979),[4] and which on the logical plane corresponds to Peircean abduction: the inference that formulates the hypothesis that best explains an observed fact.

Precisely because it guides knowledge without exhausting it, stratification requires that the difference between what is materially documented and what is reconstructed by inference remain recognizable.

The culture of conservation has codified this requirement: according to the Venice Charter, restoration must stop where conjecture begins, and additions must be distinguishable from the original parts (arts. 9 and 12), a principle on which Cesare Brandi founded distinguishability (Brandi 1963);[5] the Riga Charter (2000) admits reconstruction only in exceptional circumstances and on the basis of complete documentation. For design, these formulations are external constraints, whose compositional consequences the paper assesses.

In digital visualization the issue has been addressed with more precise tools. The London Charter introduced intellectual transparency and the notion of paradata, that is, the documentation of the interpretive processes that lead from source to hypothesis (London Charter 2009); the Seville Principles require every virtual reconstruction to distinguish the real from the hypothetical according to levels of reliability (principles 4 and 7; IFVA 2011; ICOMOS 2017).[6] These tools were developed for documentation, but they already contain a design method: a scale of certainty, a code to make it visible, the obligation to trace decisions. The question remains why this requirement has stayed confined to the digital realm and has not been applied with the same rigor to built reconstructions.

[4]The essay appeared in *Crisi della ragione*, edited by Aldo Gargani (Turin: Einaudi, 1979, 59–106), and was republished in C. Ginzburg, *Miti emblemi spie* (Turin: Einaudi, 1986). The paradigm is qualitative and individualizing: it aims at the reconstruction of single cases, like the knowledge that design produces about a place.

[5]Potential unity presupposes that the work survives in fragments endowed with formal coherence; where this is lacking, as in a basilica known only from its foundations, integration becomes hypothesis. The debate on creative restoration, revived by the case of Siponto, lies on this threshold (Del Sole 2021).

[6]Approved in 2011 by the International Forum of Virtual Archaeology, the Principles were ratified by the ICOMOS General Assembly in 2017. Their notion of authenticity draws on that of the Nara Document (ICOMOS 1994), grounded in the credibility of sources.

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Precedents and position of the paper

The relationship between new and existing has been described mainly on the formal plane. Ignasi de Solà-Morales showed that every intervention constitutes an interpretation of the historical material and described the shift, during the twentieth century, from a poetics of contrast to a poetics of analogy (Solà-Morales 1985);[7] the pair contrast/analogy, however, says nothing about what the intervention allows us to know about the pre-existing structure. On this plane, conservation doctrine offers precise precedents: the Burra Charter requires reconstruction to be "identifiable on close inspection or through additional interpretation" (Australia ICOMOS 2013, art. 20), Historic England points to the risk of "a false impression of certainty" (Historic England n.d.), and reconstruction remains the most controversial issue in conservation theory (Stanley-Price 2009; Bold, Larkham and Pickard 2018).

In the culture of composition, intervention on the existing has been conceived as modification. Francisco de Gracia distinguished three levels – confined to the building, extended to the locus, of urban conformation – and classified the topological relations between new and existing, such as intersection, juxtaposition and inclusion (de Gracia 1992); Carlos Martí Arís showed that type admits variations that do not alter its identity (Martí Arís 1990). On the relationship between type and stratification, two opposite perspectives meet. Rafael Moneo read the Mosque-Cathedral of Córdoba as a building that absorbed successive enlargements without losing its identity, because its compositional principle – the repetition of aisles – allowed it to grow (Moneo 2017 [1985]): stratification appears here as a property of form. The theater of Sagunto by Giorgio Grassi and Manuel Portaceli posed the opposite case: an analogical reconstruction that restores the type without imitating the ancient material (Capitel 2002). The case shows that knowledge of type can ground a configuration; whether this remains recognizable as a hypothesis depends on the means by which the project declares it, and this is the question that epistemic marking seeks to open to discussion.

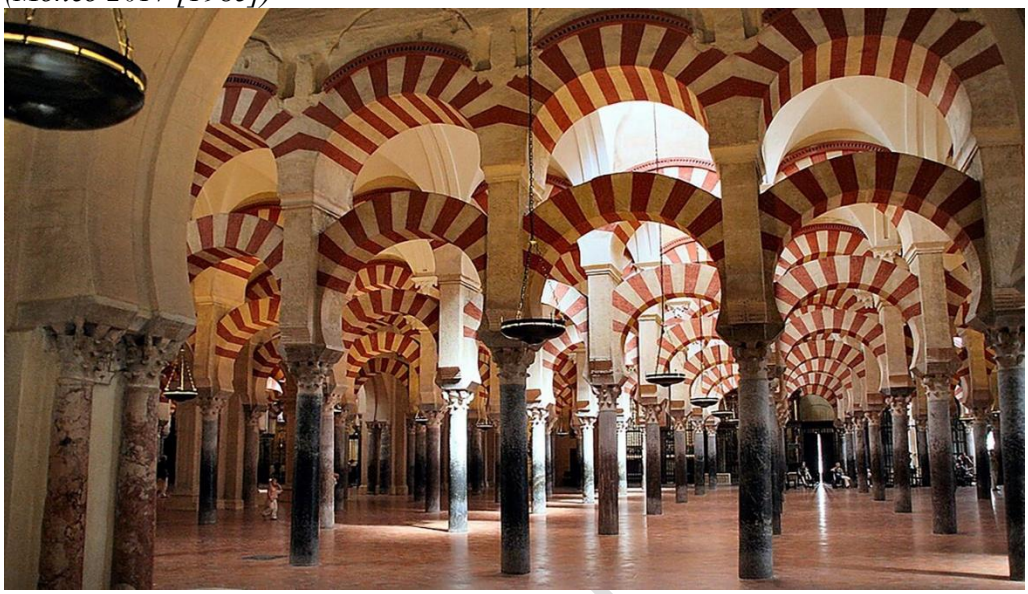
Laura A. Pezzetti's reflection on design as the rewriting of the historic landscape moves on related ground (Pezzetti 2020). The site is understood as a palimpsest, and design as a writing that continues the existing one. This paper largely grows out of the same ground: distrust of mimetic reconstruction, and the idea that reading the existing is already an act of design. Pezzetti chooses to work "on the plane of resignification rather than on that of values" and asks that interpretation remain "latent in the text" (Pezzetti 2020, 27, 48); here a narrower thread is followed, one that her reflection leaves in the background: how form can make visible the degree of certainty of what it restores. The digital reconstructions envisaged by the ICOMOS Charter on interpretation (ICOMOS 2008), which Pezzetti views with reservation, are also considered here from a

[7] Solà-Morales was also, with Cristian Cirici and Fernando Ramos, the author of the reconstruction of Mies van der Rohe's Pavilion in Barcelona (1983–1986), a possible term of comparison for future developments of the research.

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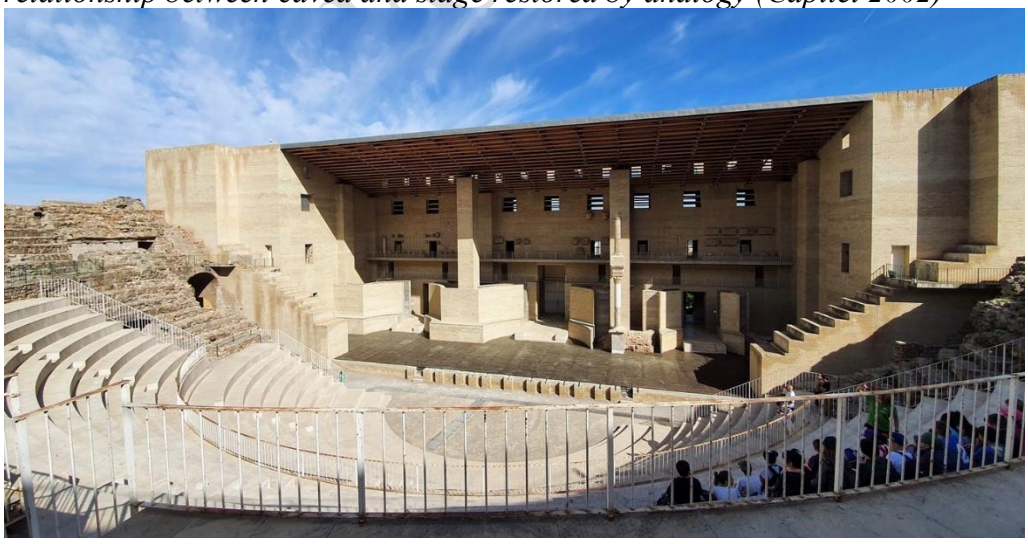
different angle, as a design tool. Alongside modification and rewriting, a third and complementary dimension of design thus emerges: declaration.

Figure 1. *Mosque-Cathedral of Córdoba: the prayer hall. The repetition of aisles on double arcades, a compositional principle that allowed successive enlargements (Moneo 2017 [1985])*



Source: https://commons.wikimedia.org/wiki/

Figure 2. *Roman theater of Sagunto after the intervention by Giorgio Grassi and Manuel Portaceli, 1985–1993. The new stage seen from the cavea: the relationship between cavea and stage restored by analogy (Capitel 2002)*



Source: https://commons.wikimedia.org/wiki/.

With respect to these precedents, the paper performs five operations. It separates two criteria that doctrine treats as one: identifying what is new and identifying what is hypothetical – material and epistemic distinguishability – coincide when the pre-existing structure is present and diverge when it is absent. It transfers the *levels* of reliability of the Seville Principles to the built project,

replacing the alternative identifiable/non-identifiable with a scale: the uncertainty scales developed for hypothetical reconstruction concern, as far as can be ascertained, only the digital model (Foschi, Fallavollita and Apollonio 2024). It distinguishes, within the testimonial residue of the imprint, a material and a spatial component: the latter, close to the attributes of authenticity of the Nara Document (ICOMOS 1994, art. 13), becomes a loss that design must measure and declare. Finally, it formulates the principle of correspondence between the definition of form and reliability.

The use of the evidential paradigm must finally be distinguished from that of Francesc Fayos, who applies it to the diagnostic phase of design: there, clues are the formal stimuli that feed the initial idea (Fayos 2017). Here, stratification is not a stimulus to invention, but a body of knowledge whose degree of reliability design has the responsibility to put into work, making it legible in form.

Operational definitions and evaluation criteria

The three operations are articulated as follows: ordering the weave, that is, refounding, connoting, assembling; assuming the imprint, that is, preserving, exhibiting, reusing; declaring the stratification, that is, reconstructing, evoking, hypothesizing.

The three categories are not mutually exclusive: the same material entity may be an imprint, as a residue; part of a stratification, as read within a sequence; and, once assumed into a new project, an element of its weave. This last step is a premise: the triad acquires operational value because it makes it possible to describe the choice made by design through one compositional variable, and to assess its outcomes along two evaluation variables:

- the compositional relation: the way in which the weave introduced by the project relates to the order of the pre-existing structure. It is not an ordinal scale but a nominal classification; it engages with the techniques of rewriting described by Pezzetti (2020), but focuses on the relationship with the order of the pre-existing structure and on the resulting cost. In the cases examined it takes six modes: absorption (a new order clads the existing), substitution (a new organism occupies the envelope), inclusion (an autonomous volume enters the existing space), montage (the phases are linked by a path), completion (the missing parts are recomposed by masses or by type) and evocation (a lost volume is restored without its matter). It is the choice proper to design, on which the outcomes measured by the two following variables depend;
- the testimonial residue: the extent to which an imprint, assumed as a figure of the new project, retains the capacity to document the process that produced it. It has two components, which may diverge: a *material* component, the survival of matter and of its constructive logic, and a *spatial* component, the survival of the configuration of space, at the scale of the building and at the urban scale;

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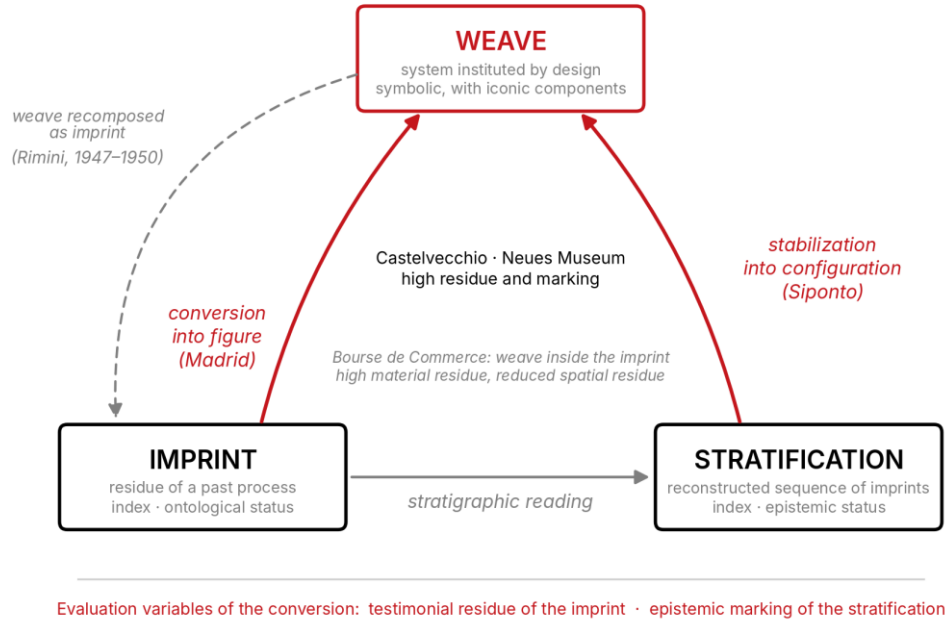
- the epistemic marking: the extent to which a configuration derived from stratigraphic reading – or inherited from a previous reconstruction – makes recognizable, in its own form or in the tools that accompany it, the difference between what is attested and what results from inference.

The cost of an intervention is the reduction, with respect to the pre-existing structure, of the testimonial residue or of the epistemic marking that the compositional choice entails: not a value judgment on the project, but the measure of what it sacrifices in order to achieve its aims. The two variables are not measured on a numerical scale, but described through reasoned judgments: the testimonial residue, separately for matter and for space, as preserved, reduced or lost; the epistemic marking as graded, by parts, entrusted to external apparatuses or absent, adapting to built work the distinction between real and hypothetical of the Seville Principles (IFVA 2011; ICOMOS 2017). The judgments can be used in two directions: *a posteriori*, to evaluate a completed project; *a priori*, to set the objectives of a project to be carried out – which residue to preserve, which marking to achieve – and to compare alternatives. The variables apply only where they are relevant: the testimonial residue where the pre-existing structure survives in matter or in configuration, the epistemic marking where the project restores or inherits configurations derived by inference; in the other cases they are indicated as not applicable.

Diagram 1 represents the passages between the categories, the two evaluation variables and the position of the cases examined.

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Diagram 1. *Imprint, stratification, weave: the passages of the conversion. In red, assumption into the weave; in grey, stratigraphic reading; the dashed line indicates the inverse path of the Tempio Malatestiano, recomposed as an imprint in 1947–1950. Author's elaboration*



Method

Approach, materials and criteria of analysis

The research adopts a qualitative, historical-critical and comparative approach, which in Groat and Wang's classification (2013) combines historical-interpretive research with case study research. It does not aim to establish an aesthetic hierarchy or causal relationships, but to verify whether the categories distinguish different modes of relationship with the existing and make the two variables assessable, and to identify the devices through which each project declares in its form its relationship with the pre-existing structure. For each case, the analysis reconstructs the pre-existing structure and the sequence of design decisions – preserving, removing, adding, recomposing, evoking –, classifies its compositional mode, identifies the devices that put it into work and describes the outcome of the conversion according to the two variables. Each subsection distinguishes a documentary part, in which data are attributed to sources, from a reading of the design operations, which is the author's responsibility.

Sources include primary documents, institutional and designers' documentation, and the critical literature on each case. The documentary base is not homogeneous: extensive for the Tempio Malatestiano and Castelvecchio,

more limited for Madrid; for the Neues Museum and the Bourse de Commerce the main source is the designers' documentation, supplemented for the Bourse by two critical readings (Ayers 2021; Privitera 2021). Unless otherwise stated, translations of quotations are the author's.

The sketches and diagrams are the author's own elaborations with a cognitive function: they do not reproduce the designers' drawings, which appear as separate documentary figures. The color code is constant: black for attested elements, grey for the pre-existing structure, red for the nodes of the argument, blue for paths. Redrawing is here a method and not an illustration: reducing different works to a homogeneous graphic code is the step through which judgments are formulated, because it makes the relationships between parts comparable regardless of the designers' language. Redrawing also has a design function: it compares the solution as built with the possible ones.

Case selection and function

The cases were selected according to a logic of maximum variation with respect to three criteria: (a) the degree of material integrity of the pre-existing structure, from an intact building in use to an organism known only through its foundations; (b) the scale of intervention, from envelope to entire complex, from threshold to volume; (c) the prevailing operation – cladding, removal and addition, recomposition of stratification, completion, reconstruction by type, evocation.

The cases do not carry the same weight. The four main cases form two opposing pairs with respect to the variables described above: in Madrid the testimonial residue is reduced to a minimum, at Siponto the epistemic marking; at Castelvecchio and at the Neues Museum both remain high – in the former, marking is conferred retroactively on an inherited reconstruction, in the latter it is graded according to the reliability of the parts. Finally, eight interventions from the past decade are used as a concise test of the principle.

The Bourse de Commerce in Paris is treated as a term of comparison for the Madrid project: it too converts a building composed of successive phases without reconstructing any part of it, but inserts the new weave inside an imprint that fully preserves its own matter; the comparison articulates the testimonial residue into its two components. The Roman theater of Sagunto plays the same role with respect to Siponto: it too restores a lost volume starting from the foundations, with full material distinguishability, but through an architectural project grounded in type; the comparison tests whether epistemic marking depends on the compositional mode or on the means by which the project declares it. The Tempio Malatestiano is a historical control case, not an object of evaluation: it belongs to a horizon that predates the modern distinction between restoration and design and, with it, the need to make the new distinguishable from the old. It is included in order to isolate, by contrast, what is specific to the contemporary condition: the obligation to declare residue and marking.

UNDER PEER REVIEW

- Main case A — CaixaForum Madrid (Herzog & de Meuron, 2001–2008): conversion of a power station through selective preservation of the envelope, removal and vertical extension. Comparison case — Bourse de Commerce, Paris (Tadao Ando with NeM and Agence Pierre-Antoine Gatier, 2017–2021): insertion of an autonomous and reversible volume inside a nineteenth-century rotunda.
- Main case B — Early Christian basilica of Santa Maria di Siponto (Edoardo Tresoldi, 2016): three-dimensional evocation of a lost organism on the basis of archaeological remains.
- Comparison case — Roman theater of Sagunto (Giorgio Grassi and Manuel Portaceli, 1985–1993): consolidation of the remains, cladding of the cavea and reconstruction of the stage by typological analogy.
- Main case C — Museo di Castelvecchio, Verona (Carlo Scarpa, 1957–1975): critical recomposition of a complex of superimposed phases, including a period-style reconstruction from the 1920s.
- Main case D — Neues Museum, Berlin (David Chipperfield Architects with Julian Harrap, 1997–2009): completion of a nineteenth-century building reduced to a ruin.
- Control case — Tempio Malatestiano, Rimini (Leon Battista Alberti, from c. 1450): transformation of an intact medieval building through a new envelope endowed with its own compositional and symbolic order.

Siponto is the work of an artist, promoted as the enhancement of an archaeological park. It is included because it takes to the extreme the relationship between stratification and spatial configuration, a relationship that has also been read from the perspective of creative restoration (Del Sole 2021). Here, instead, it is taken as a test bench for a more general distinction. It is compared with the theater of Sagunto and with the Neues Museum, two architectural projects that address the same problem with different outcomes. The cases have exemplary and comparative value, not representative value.

Scope of the research and further developments

The study adopts a qualitative approach on a limited number of cases, chosen to exemplify the proposed categories and to put them to the test rather than to generalize them. The judgments are formulated by the author on the basis of the sources and argued case by case: they thus remain open to discussion and to comparison with other readings. Epistemic marking also depends in part on the perception of those who inhabit and move through the works. This opens the way to user studies capable of verifying how the proposed distinctions are actually recognized. Finally, the cases examined concern buildings intended for cultural or exhibition uses. Extension to other programs (housing, services, productive spaces) is a natural development of the research and will make it possible to measure the general scope of the categories.

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Case study analysis

CaixaForum Madrid: the imprint as figure and its testimonial residue

Documentary evidence. The Central Eléctrica del Mediodía was designed in 1899 by Jesús Carrasco-Muñoz Encina with the engineer José María Hernández: two naves on metal trusses, enclosed by load-bearing solid brick walls set on a granite plinth (Garnica 2010). The 1997 General Plan of Madrid protected the four brick façades. Acquired by the Fundación "la Caixa", the building was transformed by Herzog & de Meuron and opened as a cultural center in 2008; the brief required the floor area to be multiplied roughly fivefold (Fundación "la Caixa" 2008; Garnica 2010).

Figure 3. *The Central Eléctrica del Mediodía before its transformation. The masonry in its original tectonic condition*



Source: https://www.herzogdemeuron.com/

The project restores the brick envelope, removes the stone plinth, opens a plaza towards the Paseo del Prado and adds new volumes; roof and interiors are demolished, and the vertical extension is clad in oxidized cast iron of a hue akin to the brick (Cohn 2008b). The load of the envelope is transferred to a post-tensioned concrete wall placed against the inner face of the masonry, while the upper volume rests on three structural cores; the restoration of the façade involved the replacement of about one third of the bricks (Garnica 2010).

Figure 4. *CaixaForum Madrid: the building raised above the plaza. The historic masonry appears suspended above the covered public space. Herzog & de Meuron, 2001–2008*



Source: https://www.herzogdemeuron.com/

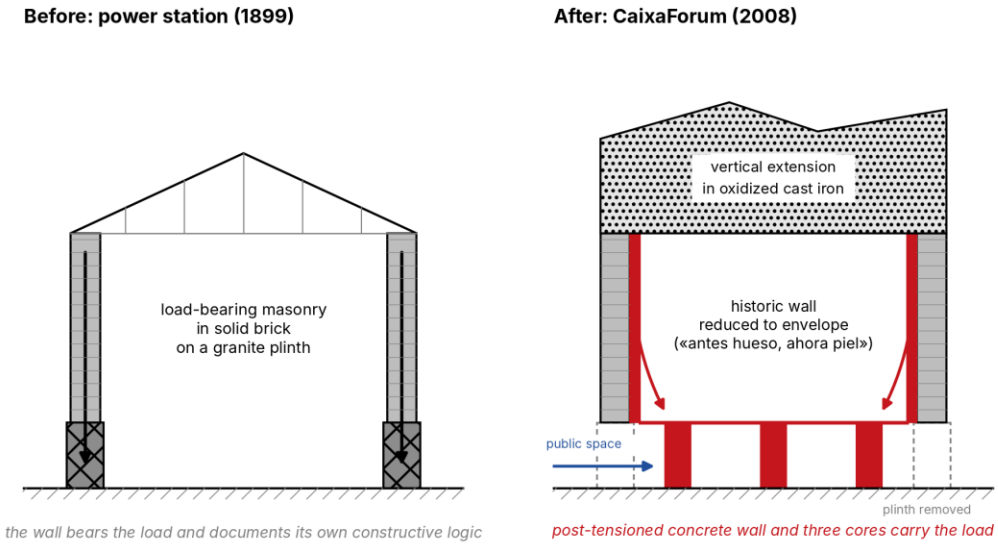
Reading of the design operations. The masonry keeps the memory of the power station recognizable and, once the plinth is removed, the building seems to lift off the ground, freeing a covered public space continuous with the plaza. The industrial imprint becomes the generative resource of a new urban identity. In compositional terms the project changes the type: a hall of naves closed on a base becomes a volume raised above a plaza, and the vertical circulation entrusted to the cores replaces the unitary space of the power station. At the urban scale the plaza transforms a productive enclosure into a threshold between the Paseo del Prado and the fabric behind it. The documentary cost is high, but it is the cost of a layer of its own time, assumed and made legible: the masonry does not simulate the power station, it becomes its surface.

The testimonial residue of this imprint, however, is greatly reduced. By removing the plinth and hollowing out the interior, the project deprives the masonry of its tectonic role: a load-bearing wall on a base becomes an envelope supported by a new structure. Julio Garnica condensed this inversion into a formula – "antes hueso, ahora piel" (formerly bone, now skin), that is, in Semperian terms, from structure to cladding – and read the effect of suspension as an illusionistic device (Garnica 2010); David Cohn judged the intervention among the least respectful of a protected historic structure (Cohn 2008b).[8] The

[8] Cohn's judgment concerns the material substance of the building, not the urban quality of the intervention, which he does not deny: the documentary value of the constructive logic is sacrificed to image value and use value (Riegl 1903).

regulatory fact is significant: protection concerned the façades, and the project preserved exactly what was protected, namely the image. The imprint survives as a surface that displays the age of the building, not as a document of its constructive logic.

Diagram 2. *CaixaForum Madrid: the tectonic inversion of the imprint and the change of type. On the left, the load-bearing masonry on its plinth; on the right, the wall turned into an envelope, supported by the new structure (in red). Author's elaboration based on Garnica 2010 and Cohn 2008b*



Comparison case: Bourse de Commerce, the weave inside the imprint

Documentary evidence. The building originated as the *halle au blé*, Nicolas Le Camus de Mézières's circular grain market (1763–1766); the courtyard was covered by a timber dome (1782–1783) and, after the fire of 1802, by François-Joseph Bélanger's metal dome (1809–1813). Between 1886 and 1889 Henri Blondel transformed it into a commodities exchange, with a cycle of paintings at the base of the dome (Universalis n.d.; Ville de Paris 2021). The conversion into a museum for the Pinault Collection (2017–2021) is by Tadao Ando with NeM and with Agence Pierre-Antoine Gatier for the restoration (Ayers 2021).

At the center of the rotunda Ando inserts a concrete cylinder 29 meters in diameter and 9 meters high, which continues below ground with an auditorium. The engineers describe it as detached from the existing structure and reversible (Setec n.d.); at the points of contact with the pre-existing structure the project inserts without touching, using shadow joints, and the dome and the painted cycle are restored (Ayers 2021).[9]

[9]The theme of architecture within architecture recurs in Ando's work; he had already explored it for the same client at Punta della Dogana (Ayers 2021; Privitera 2021).

Figure 5. *Bourse de Commerce: the cylinder beneath the dome. Material integrity of the rotunda and occupation of its central void. Tadao Ando with NeM and Pierre-Antoine Gatier, 2017–2021*



Source: https://www.domusweb.it/it/architettura/2019/01/16/tadao-ando-a-parigi-la-sfida-del-confronto-tra-passato-e-presente.html.

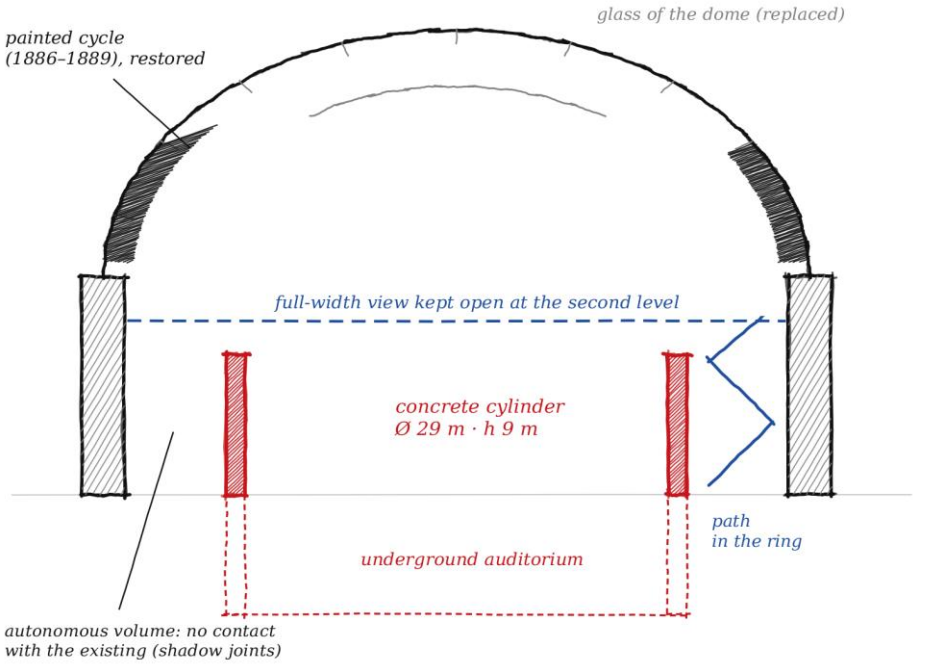
Reading of the design operations. The Bourse represents the condition opposite to Madrid. The imprint fully preserves its matter and its tectonic role, and reversibility guarantees its permanence: the material testimonial residue is at its highest. The weave presents the twofold component discussed above: iconic, because the cylinder repeats the geometry of the rotunda through concentricity (Privitera 2021); symbolic, because concrete, "a sort of non-material, a form of abstraction" in Ando's words (Ayers 2021), unambiguously declares its own time. Typologically, the intervention confirms the central plan of the rotunda and doubles its center with a second enclosure: the annular path between the two walls becomes the distributive device of the museum. At the urban scale the rotunda retains its role as a pivot at the western end of Les Halles: the new weave remains entirely internal. Detachment and shadow joints put reversibility into work as a perceptible meaning, and not merely as a technical performance.

The case, however, reveals a cost that material integrity does not measure. The rotunda was a great unitary void beneath the dome; the cylinder occupies its

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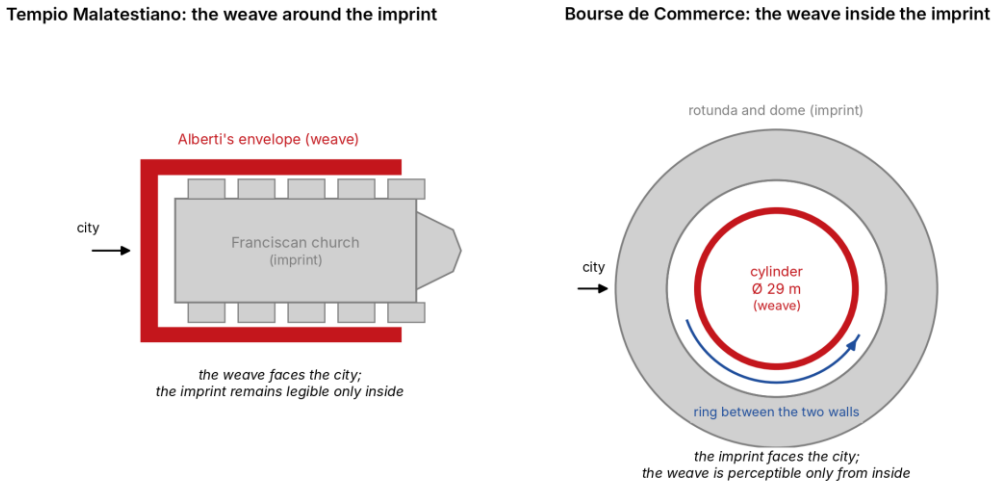
center and reduces it to a ring between two concentric walls and to a view from above. The designers were aware of this: Lucie Niney explained that the team insisted on keeping open, at the second level, the view across the entire width of the building, without which the original perception of the space would have been lost (Ayers 2021). The imprint preserves its matter, but not entirely its spatial configuration.

Sketch 1. *Bourse de Commerce: the weave inside the imprint: central plan doubled and annular path, in section. The cylinder (in red) does not touch the rotunda; in blue, the ring of the path and the cross view kept open. Interpretive sketch by the author*



Interpretive sketch by the author, section; it does not reproduce the design drawings by Tadao Ando and NeM.

Diagram 3. *The weave around the imprint and the weave inside the imprint. On the left, the Tempio Malatestiano; on the right, the Bourse de Commerce; in red the weave, in grey the imprint. Author's elaboration*



Santa Maria di Siponto: stabilized stratification and its epistemic marking

Documentary evidence. Siponto, a Roman colony and later the seat of an important diocese, was abandoned in the thirteenth century; in 1223 its population was moved to Manfredonia (Innaco 2019). The archaeological park preserves the remains of an Early Christian basilica, with a first phase from the fourth century AD and a rebuilding in the following century, next to the Romanesque church of Santa Maria Maggiore (Ministero della Cultura n.d.). In 2016 Edoardo Tresoldi, commissioned by the Ministry and the Superintendency, created the permanent installation *Dove l'arte ricostruisce il tempo* (Where art reconstructs time): a structure in galvanized welded wire mesh about 14 meters high that recalls the forms of the last phase of the building (Feiffer 2016).

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Figure 6. *Edoardo Tresoldi's installation at Santa Maria di Siponto. The uniformity of material and definition of the entire figure*



Source: https://commons.wikimedia.org/wiki/.

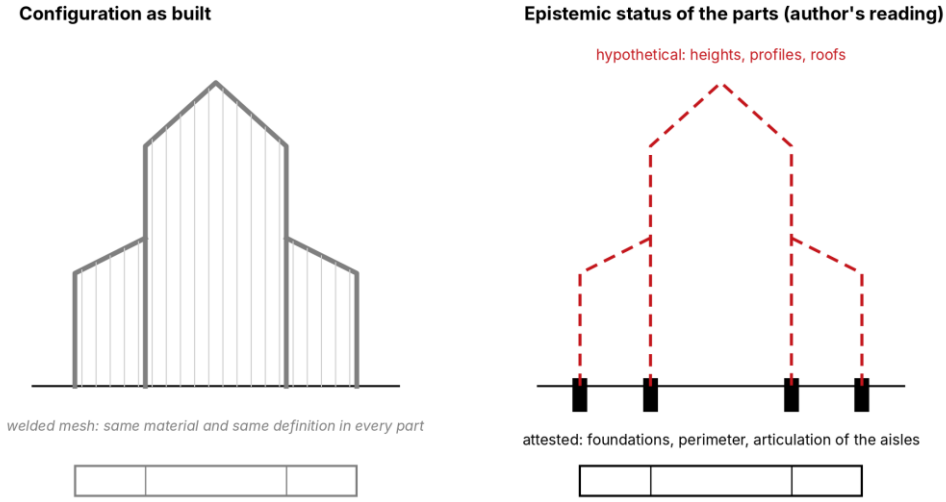
Reading of the design operations. The structure makes the spatial configuration of the basilica perceptible without reproducing its mass; transparency distinguishes the contemporary construction from the remains and keeps visible the relationship with the Romanesque church and the landscape. The foundations, read as imprints of a stratification, become the starting point of a perceptual reconstruction that makes absence experienceable (Innaco 2019; Iacobone 2021). Compositionally, the mesh restores the basilican layout – aisles, clerestory, roof – as a pure volumetric figure, devoid of thickness and tectonics. At the scale of the landscape the figure once again becomes a landmark in the coastal plain, next to the Romanesque church.

The stratification legible in the foundations, however, documents only the plan and, in part, the articulation of the building; the elevation is necessarily hypothetical. To this a selection is added: of the two attested phases, the installation evokes only one, reducing the sequence to a single image. Cesare Feiffer argued that, since nothing is known of the basilica's appearance, any configuration would remain arbitrary, and pointed to virtual reconstruction as the alternative capable of presenting hypotheses without fixing them in a permanent artifact (Feiffer 2016); Francesco Del Sole related the case to the debate on creative restoration (Del Sole 2021).[10]

[10] For the artist's position see Tresoldi (2021); for favorable readings, Innaco (2019) and Iacobone (2021). The readings agree on the perceptual quality of the intervention and diverge on

The case makes visible a distinction that the culture of conservation tends to treat as a single one. The transparency of the mesh ensures material distinguishability: no one can confuse the metal structure with the ancient material. It does not, however, ensure epistemic distinguishability: nothing in the perceived configuration distinguishes what is grounded in evidence – the perimeter, the articulation of the aisles – from what is hypothetical – heights, profiles, roofs. The epistemic marking is nil: the whole figure has the same definition and the same evidence, regardless of the reliability of its parts.

Diagram 4. *Santa Maria di Siponto: configuration as built and epistemic status of the parts. On the left, the uniform figure of the installation; on the right, the same section divided into attested parts (in black) and hypothetical parts (in dashed red). Author's elaboration based on Feiffer 2016 and Innaco 2019.*



Imprints, ordered into a stratification, can therefore ground a spatial experience that would otherwise be inaccessible; but the device chosen – a uniform figure, without degrees – puts the hypothesis into work as a finished configuration. The problem is not the transparency of the mesh, but the absence of an internal difference within the figure.

Comparison case: the Roman theater of Sagunto, stratification recomposed by type

Documentary evidence. The theater of Saguntum was built around the middle of the first century AD on the slope of the castle hill and transformed in the third century; what remained were the cavea, partly worn, and the foundations of the stage building. The project by Giorgio Grassi and Manuel Portaceli (1985–1986), carried out between 1990 and 1993, consolidates the remains, clads the tiers of the cavea with new stone elements and reconstructs

the legitimacy of its reconstructive component, which the distinction proposed below seeks to open to discussion.

the stage as a great wall, into which ancient fragments of moldings and columns are incorporated; the upper orders, of which no documentation survives, are not reproduced but evoked by approximation. The designers stated that they sought to restore not the monument but the space of the theater, that is, the relationship between cavea and stage (Cohn 2008a). The intervention was judged to be in breach of the Spanish law on historical heritage, which forbids reconstruction except for the use of original parts of proven authenticity (art. 39.2); the demolition, confirmed at several levels of jurisdiction, was not carried out (Capitel 2002; Cohn 2008a).

Reading of the design operations. Sagunto is the case that the culture of composition most often sets against mimetic restoration: the reconstruction is grounded in type, not in the imitation of the ancient material. Compositionally, the relation is one of completion: as at the Neues Museum, the lost volume is recomposed by masses, and knowledge of the type – the relationship between cavea and stage – replaces undocumented ornament. At the urban scale the stage wall gives the theater back a figure recognizable from the town below. The testimonial residue is uneven: the spatial component is restored, but more on the basis of type than of evidence for the elevation – hence an uncertain assessment –, while the material component is reduced where the cladding covers the worn stone of the cavea, and the reversibility claimed by the designers was contested in court. The epistemic marking, by contrast, is formal and by parts, and the device that puts it into work is reduction by type: the new stage is distinguishable from the remains, the incorporated fragments remain recognizable as ancient, and the hypothetical elevation is declared through abstraction, because the type is restored without the orders that once clad it.

The comparison with Siponto clarifies the proposed distinction. In both cases a lost volume is restored starting from the foundations, with full material distinguishability. At Siponto, however, the hypothetical elevation has the same definition as the attested plan, and the figure presents itself as complete; at Sagunto definition diminishes where evidence ceases, and the hypothesis remains recognizable as such.

Museo di Castelvecchio: the epistemic marking of an inherited reconstruction

Documentary evidence. The castle was built between 1354 and 1356 by Cangrande II della Scala on the Adige, incorporating a stretch of the communal walls; in the Napoleonic period a barracks wing was inserted. Between 1924 and 1926 Antonio Avena and Ferdinando Forlati turned it into a museum through a period-style intervention, which gave the barracks façade the appearance of a small Gothic palace with stone elements taken from demolished Veronese palaces. Licisco Magagnato then entrusted Carlo Scarpa with the transformation of the museum, carried out between 1957 and 1964 and continued in 1967 and 1975 (Magagnato 1982; Murphy 2017; Spirito n.d.).[11]

[11]On the genesis and phases of the intervention see Murphy (2017), based on the museum's corpus of drawings; the first catalog is Magagnato (1982). Scarpa's judgment of the 1920s

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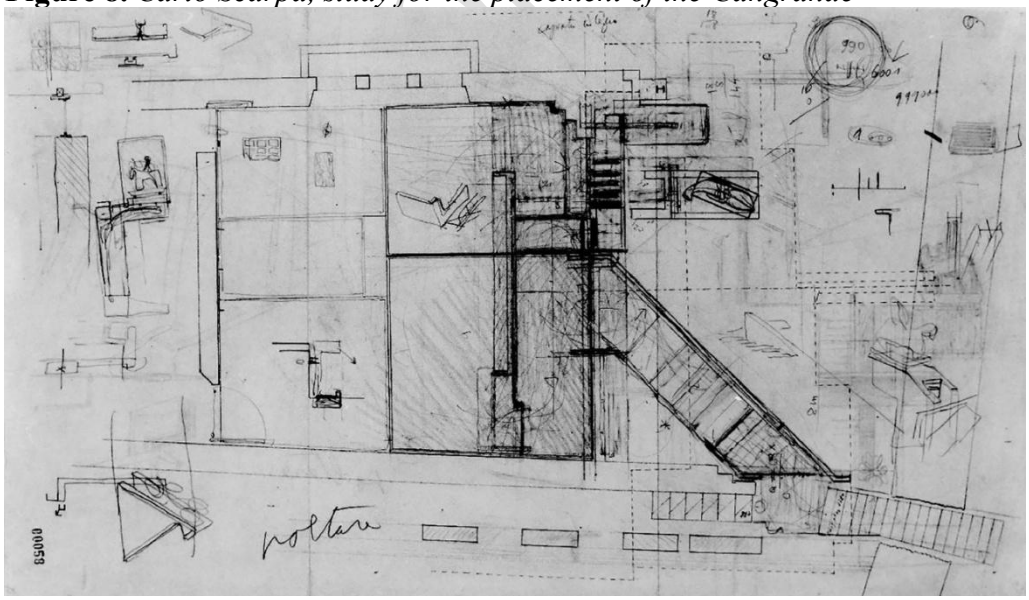
The project separates the complex into distinct nuclei through cuts and caesuras, places the entrance asymmetrically, detaches the stairs from the walls and connects the phases with paths in modern materials. The last bay of the Napoleonic gallery is demolished: in the void the Porta del Morbio of the communal walls re-emerges, and the equestrian statue of Cangrande I finds its place on a concrete bracket; openings in the floor reveal the underlying layers (Spirito n.d.; Murphy 2017).

Figure 7. *Castelvecchio: the gallery façade towards the courtyard. The Gothic elements of 1924–1926 and Scarpa's window frames, with the asymmetrical entrance*



Source: https://commons.wikimedia.org/wiki/.

Figure 8. *Carlo Scarpa, study for the placement of the Cangrande*

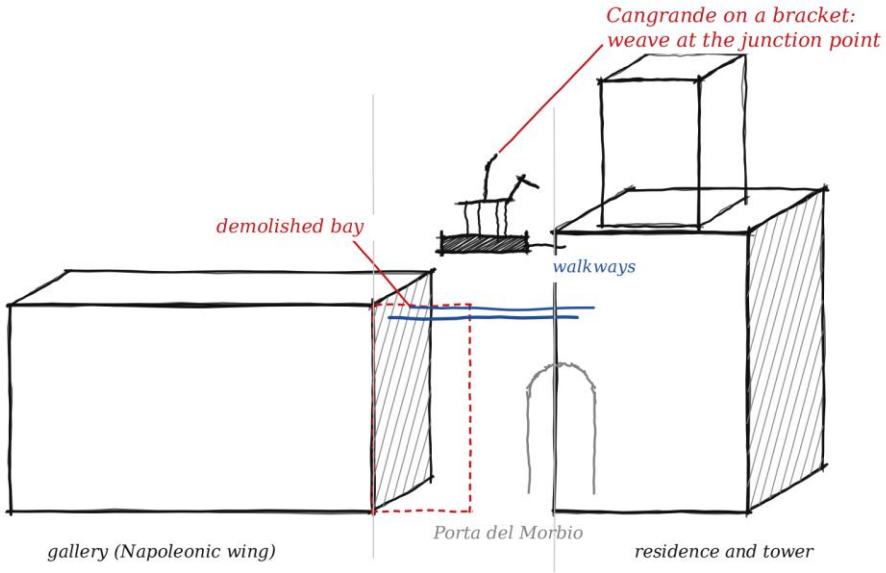


Source: https://dati.cultura.gov.it/lodview-arco/resource/HistoricOrArtisticProperty/0500321712.html

intervention as a fake recurs in the literature; what matters here is the way in which it is translated into built form.

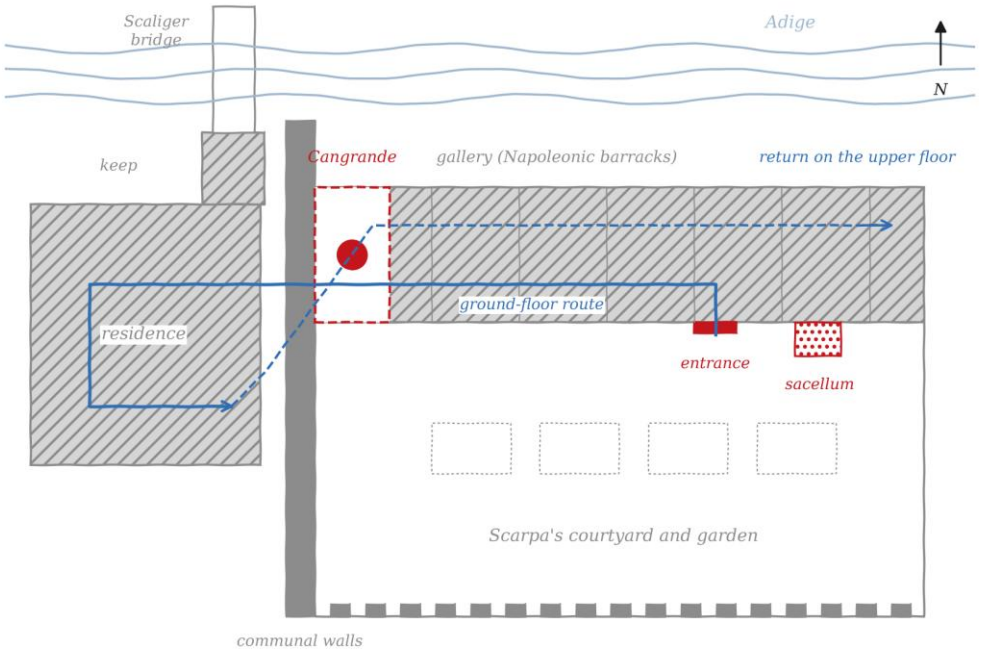
Reading of the design operations. Castelvecchio is the only case in which the three categories operate simultaneously and explicitly. The Scaliger, communal and Napoleonic phases left a system of imprints; the excavation and the demolition of the bay work as a built stratigraphic reading that makes their sequence visible; the Cangrande, suspended at the junction between the phases, is the node of an Albertian weave which, however, does not absorb the pre-existing structure into a new order, but articulates its parts and makes them distinguishable. The compositional principle is montage: the museum route crosses the phases without merging them and becomes the instrument through which the historical sequence is ordered and made legible, together with the urban relationship between castle, Scaliger bridge and Adige.

Sketch 2. *Castelvecchio: the node of the Cangrande in the montage of the phases. The void of the demolished bay (in dashed red), the Porta del Morbio (in grey), the walkways (in blue). Interpretive sketch by the author*



Interpretive sketch by the author, axonometric view; the proportions of the volumes are indicative.

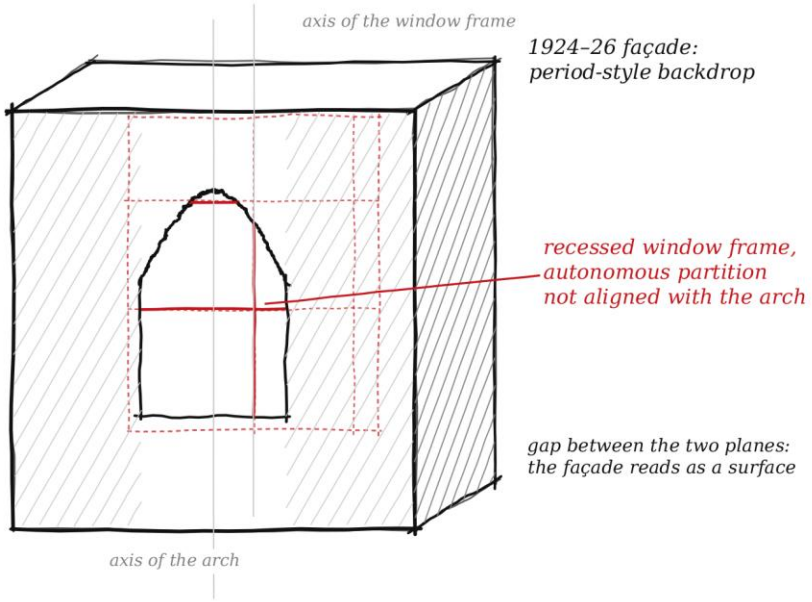
Sketch 3. *Castelvecchio: the montage of the phases in plan. The museum route (in blue) crosses the gallery, the void of the Cangrande (in red) and the communal walls up to the residence, and returns on the upper floor. Interpretive sketch by the author*



The decisive point concerns the intervention of the 1920s: a case of falsified stratification assumed into the weave without any epistemic marking, that is, a medieval phase the complex had never had, presented as a restoration. Scarpa, who considered it a fake, neither erases it nor restores an original phase; he makes legible its nature as a stage-set construction. The asymmetrical entrance contradicts the symmetry of the façade; the window frames, set back and designed according to an autonomous partition, make it appear as a backdrop; the cuts separate it from the volumes behind. Epistemic distinguishability is conferred *a posteriori* on an inherited reconstruction, and it is put into work entirely through built form.

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Sketch 4. *Castelvecchio: the façade as a backdrop. The offset between the axis of the arch and that of the recessed window frame (in red) makes the façade read as an applied surface. Interpretive sketch by the author*



Interpretive sketch by the author; it does not reproduce Scarpa's design of the window frames.

Neues Museum: graded completion

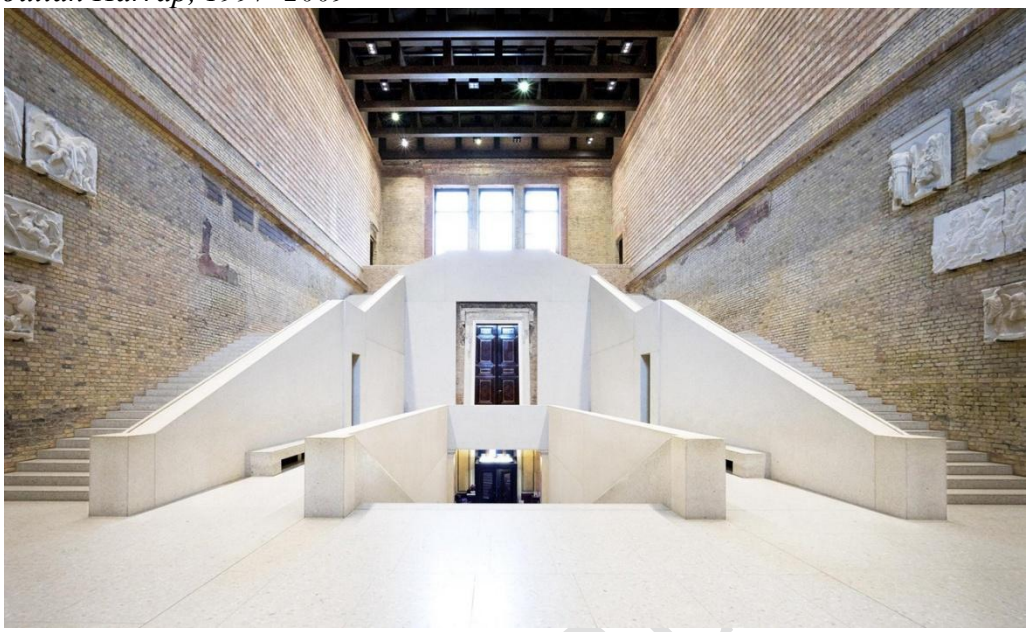
Documentary evidence. The Neues Museum was built by Friedrich August Stüler between 1841 and 1859 on Berlin's Museum Island. Damaged by bombing, it remained a ruin for more than fifty years. After a competition concluded in 1997, the project was entrusted to David Chipperfield Architects with Julian Harrap; the museum reopened in 2009. The designers state that they pursued neither an exact reconstruction nor a contrasting addition, but restored what had survived and added new material only where necessary to recompose the coherence of the volume, respecting all the phases of the building's history, including that of the ruin (David Chipperfield Architects n.d.).[12]

The missing parts of the north-west wing and of the south dome are rebuilt in reclaimed brick; the central hall survives as a brick volume stripped of its ornament; the main staircase repeats its form in white precast concrete with marble aggregate; the new rooms are also in white concrete. The principle is summed up in the formula according to which the new reflects what was lost without imitating it (David Chipperfield Architects n.d.).

[12]The documentation is mainly that of the designers.

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Figure 9. *Neues Museum: the main staircase and the central hall. Historic surface, completed volume and new element. David Chipperfield Architects with Julian Harrap, 1997–2009*



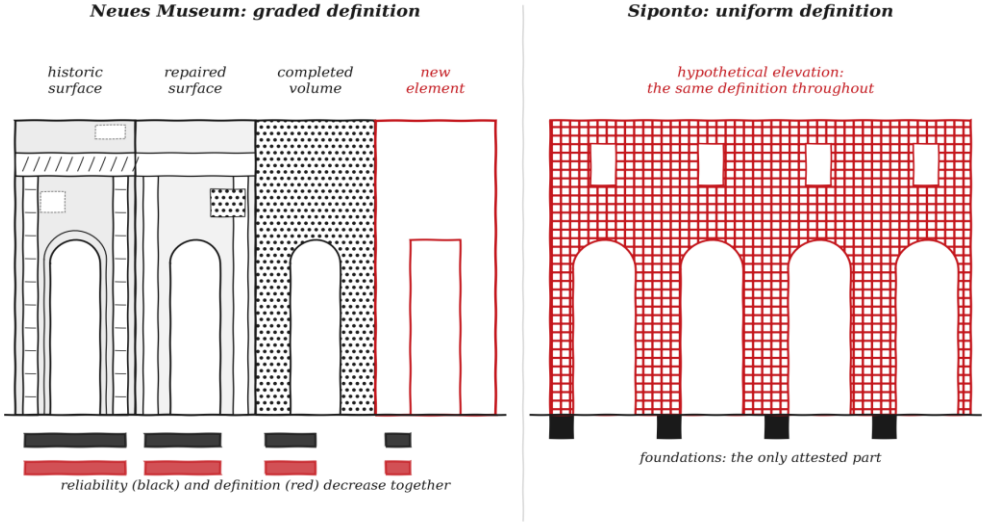
Source: https://divisare.com/projects/368557-david-chipperfield-architects-celia-uhalde-neues-museum#lg=1&slide=0

Reading of the design operations. The Neues Museum is the case in which epistemic marking takes its most articulated form. The project distinguishes at least four conditions: historic surfaces preserved with their lacunae and the marks of war; repaired surfaces; volumes completed in reclaimed brick, which restore mass without ornament; new elements in concrete. The degree of formal definition decreases with documentary reliability: where documentation is certain, form is restored; where ornament is lost, it is not reinvented. It is first of all a contemporary layer, which engages with the previous phases without imitating them, and it puts into work the levels of reliability of the Seville Principles. The criterion is also compositional: the volume is recomposed by masses, and Stüler's hierarchy of spaces is restored before, and independently of, its decorative apparatus. At the urban scale, completion gives the building back its role in the sequence of museums on the island, which the ruin had interrupted.

The staircase, an element of the weave with a strong iconic component, repeats the original form, but the change of material declares its status as a quotation. The testimonial residue is high, because the imprint preserves the history of its own destruction and stratification remains legible up to the phase of the ruin. The limit of the case is that such subtle marking is legible mainly to an expert observer.

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Diagram 5. *Neues Museum and Santa Maria di Siponto: formal definition as a compositional tool. At the Neues Museum the same bay passes from the historic surface, with its order and its lacunae, to the completed volume without ornament and to the new element; definition decreases with reliability. At Siponto the entire elevation has the same definition, above the only attested foundations. Author's elaboration.*



Control case: the Tempio Malatestiano and the weave as a principle of rewriting

Documentary evidence. The Tempio Malatestiano originated from the transformation of the Gothic church of San Francesco in Rimini. The works promoted by Sigismondo Pandolfo Malatesta began in 1447; around the middle of the century the design of the exterior was entrusted to Leon Battista Alberti, while the building site was run by Matteo de' Pasti (Ricci 1924; Hope 1992).[13] The foundation medal, dated 1450, documents a larger project, with a great dome; at Sigismondo's death in 1468 the building remained unfinished.

Figure 10. *Foundation medal of the Tempio Malatestiano, 1450. The façade according to Alberti's design, with the dome that was never built. Bowdoin College Museum of Art*



Source: https://commons.wikimedia.org/wiki/

[13] The date 1450 on the medal has a celebratory value. Hope (1992) proposed a revision of the chronology and of the roles; Brandi (1956) remains a reference for the critical reading of the building.

The project does not replace the medieval organism, but clads it with a stone envelope endowed with its own order: the façade derives from the Arch of Augustus in Rimini the motif of the arch framed by half-columns (Wittkower 1949), and along the flanks a sequence of arches houses the sarcophagi of the illustrious men of the court. In his letter to Matteo de' Pasti of 18 November 1454, Alberti defends the proportions of his design against changes made on site: "what you alter makes all that music discordant" (*ciò che tu muti si discorda tutta quella musica*; Alberti 1973, *Lettere*, no. 2; Grayson 1957).[14]

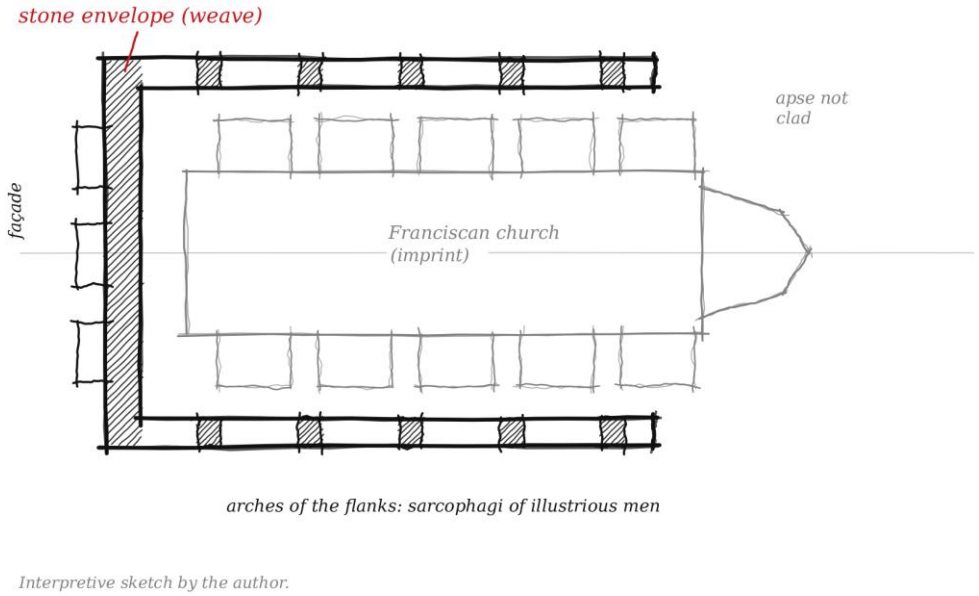
Figure 11. *Tempio Malatestiano: the north flank with its arches. The envelope as a weave superimposed on the Gothic imprint. Slide by André Corboz, 1986; Iconoteca USI*



Source: https://commons.wikimedia.org/wiki/

[14]The autograph is kept at the Morgan Library & Museum in New York (MA 1734) and was published by Cecil Grayson (1957).

Sketch 5. *Tempio Malatestiano: the envelope as an order superimposed on the church. In grey the Franciscan church, in black Alberti's envelope. Interpretive sketch by the author*



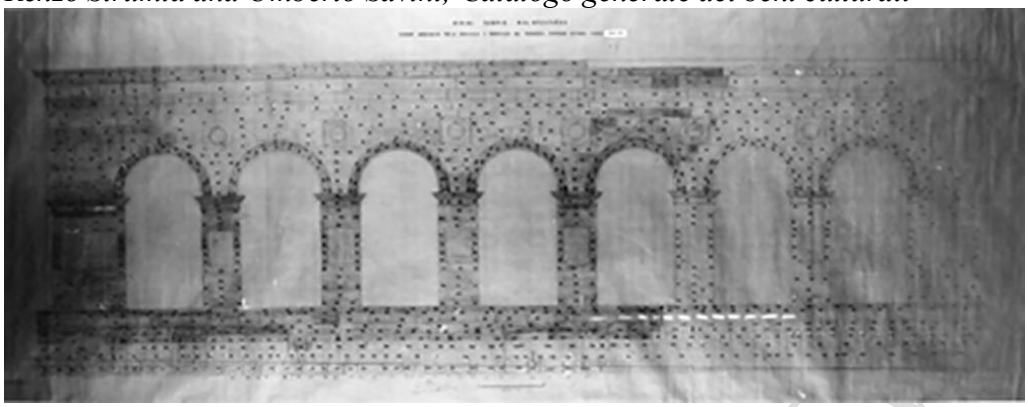
Reading of the design operations. The classical language operates as an ordering structure and a symbolic device: it transforms a conventual church into a dynastic *templum*, so much so as to draw the censure of Pius II (Pius II 1984).[15] The letter shows that the Albertian weave is a system of relations in which a part cannot be modified without compromising the whole: *concinnitas* becomes a criterion for the building site (Tavernor 1998). In compositional terms the envelope is a superimposed order: an autonomous system of arches on piers that measures the Gothic building without coinciding with its structure, and builds towards the city a monumental front that the conventual church did not possess.

Damaged by the bombings of 1943–1944, the Tempio underwent between 1947 and 1950 an anastylosis that involved dismantling and reassembling the marble facing (Turchini 1998; Catalogo generale dei beni culturali n.d.).[16] The Albertian weave that we see today is thus, in turn, a recomposed imprint, which adds a phase to the stratification of the building: conversion between the categories also works in the opposite direction.

[15]This fact documents the contemporary reception of the weave, perceived as a refoundation of the building's identity; the condemnation must also be read in the light of the political conflict between the pope and Sigismondo, excommunicated in 1460.

[16]The restoration was also made possible by funding from the Samuel H. Kress Foundation (La Voce di New York 2026); for the interventions for the 2000 Jubilee see Muscolino and Canali (2007).

Figure 12. *Drawing for the dismantling and reassembly of the marble facing. The postwar anastylosis that turned the Albertian weave into a recomposed imprint. Renzo Strumia and Umberto Savini; Catalogo generale dei beni culturali*

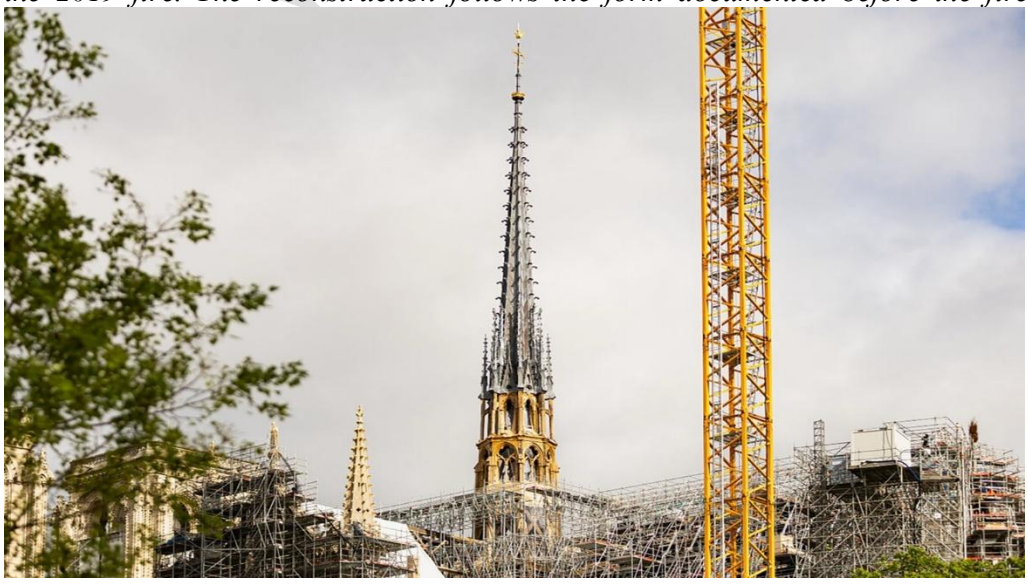


A Test on Recent Interventions

Finally, the principle and the categories were compared with eight interventions completed over the past decade, read in summary form.

Notre-Dame de Paris (2019–2024) and the al-Hadba minaret in Mosul (2018–2024) fully restore destroyed parts. In Paris the spire and the roofs are rebuilt in the form they had before the fire, on the basis of surveys and drawings that documented it: the principle of correspondence does not forbid integral reconstruction and admits it where reliability is full, but does not present it as a model: it is the limit case in which design renounces adding a layer of its own time. In Mosul the same full definition, including the inclination, awaits verification against the sources.

Figure 13. *Notre-Dame de Paris: the spire and roofs rebuilt over the crossing after the 2019 fire. The reconstruction follows the form documented before the fire*



Source: https://commons.wikimedia.org/wiki/

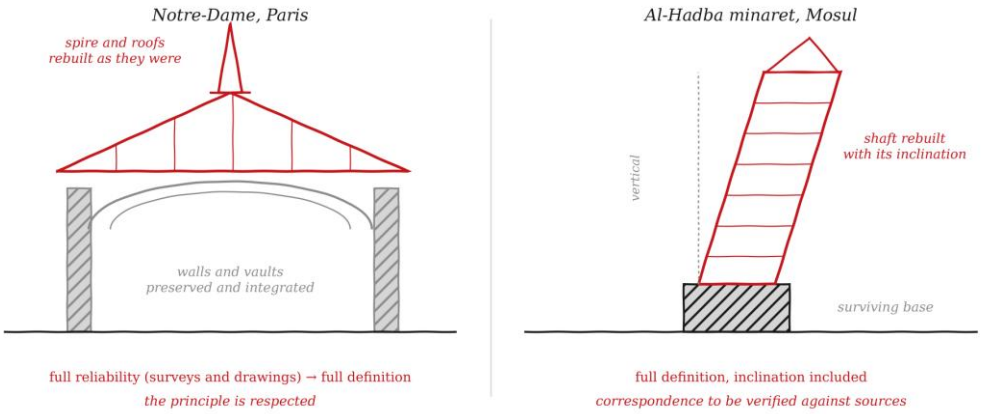
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Figure 14. *Al-Nuri Mosque, Mosul: the rebuilt al-Hadba minaret, 2024. The shaft is restored with the inclination that characterized it before its destruction in 2017*



Source: https://commons.wikimedia.org/wiki/

Diagram 6. *Integral reconstructions. In Paris the spire and roofs are restored with full definition on the basis of complete documentation; in Mosul the shaft of the minaret is rebuilt with its inclination above the surviving base. Author's elaboration*



The Paulinum in Leipzig (Erick van Egeraat, 2017) evokes the university church demolished in 1968 through an abstract figure, and brings back into it the

altar and the epitaphs that had been saved: as at Siponto, the lost volume is restored as a figure, but the attested parts are reinstated and the rest is declared through abstraction. The tower of the Garnisonkirche in Potsdam (2024), by contrast, restores the Baroque form with uniform definition and entrusts declaration to an exhibition inside.

Figure 15. *Paulinum, Leipzig (Erick van Egeraat, 2017): the façade on Augustusplatz. The abstract figure evokes the university church demolished in 1968*



Source: to be specified

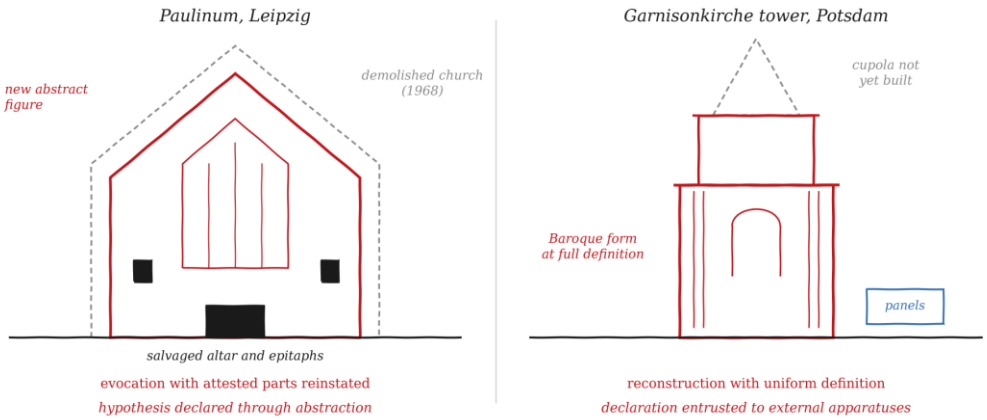
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Figure 16. *Tower of the Garnisonkirche, Potsdam (2024). The Baroque form is restored at full definition; the cupola has not yet been built*



Source: https://www.reddit.com/r/CitiesSkylinesModding/comments/1wxjlsd/wip_potsdams_former_garrison_church/?tl=it#lightbox

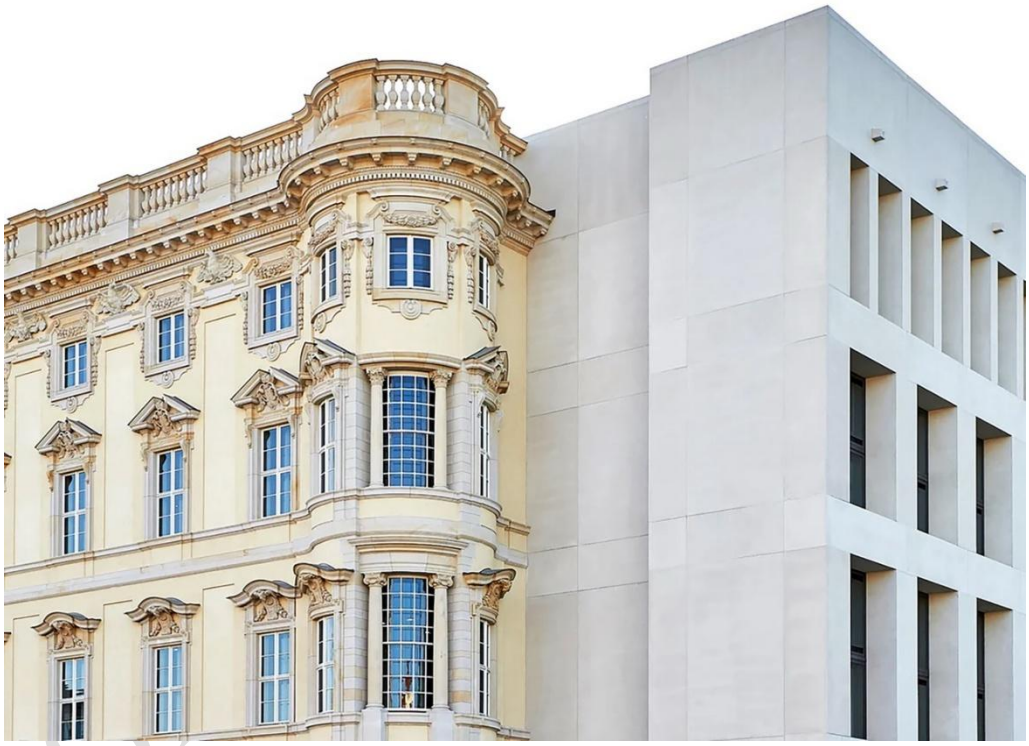
Diagram 7. *Evocation and reconstruction. In Leipzig the new abstract figure reinstates the salvaged parts of the demolished church; in Potsdam the tower is restored at full definition and declaration is entrusted to external apparatuses. Author's elaboration*



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The Humboldt Forum in Berlin (Franco Stella, 2020) reconstructs three Baroque façades of the Schloss with their ornament and entrusts the declaration of the new to the fourth, modern façade: the marking distinguishes the reconstructed from the new, but does not grade reliability within the reconstructed part. The Castle of Novara (Paolo Zermani, 2016) recomposes the demolished west wing on the Roman wall found during excavations and on the surviving medieval fragment: a completion by masses grounded in the layout, as at Sagunto.

Figure 17. *Humboldt Forum, Berlin (Franco Stella, 2020): the meeting between the reconstructed Baroque façades and the new east façade. The transition from reconstructed to new is the only declared distinction*



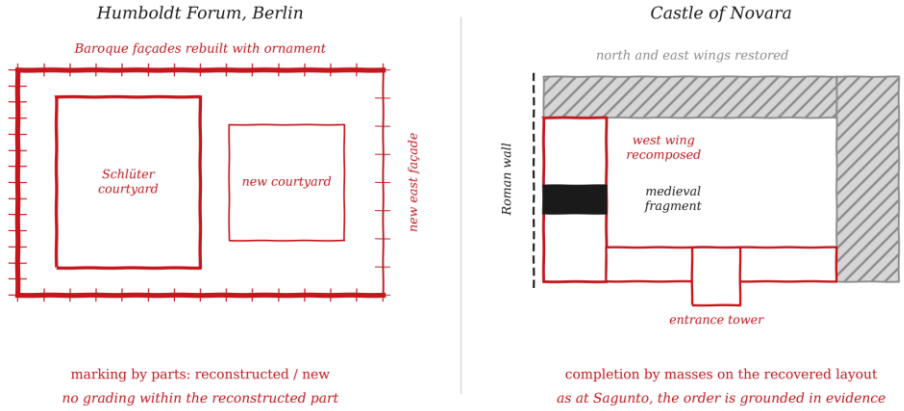
Source: https://www.artribune.com/dal-mondo/2020/11/apre-lhumboldt-forum-berlino/.

Figure 18. *Castle of Novara (Paolo Zermani, 2016): the west wing recomposed on the Roman wall. The surviving medieval fragment is incorporated into the new façade*



Source: https://ilcastellodinovara.it/restauro/.

Diagram 8. *Completions. In Berlin the Baroque façades are reconstructed with their ornament and the east façade is new; in Novara the west wing is recomposed by masses on the Roman wall and on the medieval fragment. Author's elaboration*



St. Hedwig's Cathedral in Berlin (reopened in 2024) closes the opening towards the crypt that organized Hans Schwippert's postwar interior: the matter is largely preserved, but the spatial configuration of a twentieth-century stratification is erased. Zeitz MOCAA in Cape Town (Heatherwick Studio, 2017) carves its atrium out of the bundle of grain silos: a relation of subtraction that the proposed classification does not include and that suggests a seventh

mode. None of the eight cases contradicts the hypotheses; Notre-Dame and Zeitz MOCAA clarify their limits.

Figure 19. *St. Hedwig's Cathedral, Berlin: the interior after its reopening in 2024. The opening towards the crypt is closed and the altar is placed at the center of the hall*



Source: https://commons.wikimedia.org/wiki/.

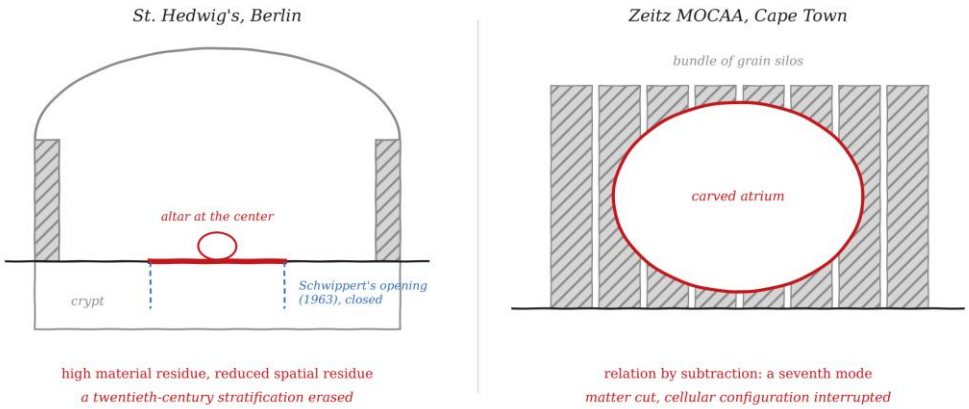
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Figure 20. *Zeitz MOCAA, Cape Town (Heatherwick Studio, 2017): the atrium carved out of the grain silos. Subtraction cuts through the matter and interrupts the cellular configuration of the silos*



Source: https://commons.wikimedia.org/wiki/.

Diagram 9. *Spatial residue and subtraction. In Berlin the closing of the opening towards the crypt preserves the matter but erases the spatial configuration of 1963; in Cape Town the atrium is carved out of the bundle of silos. Author's elaboration*

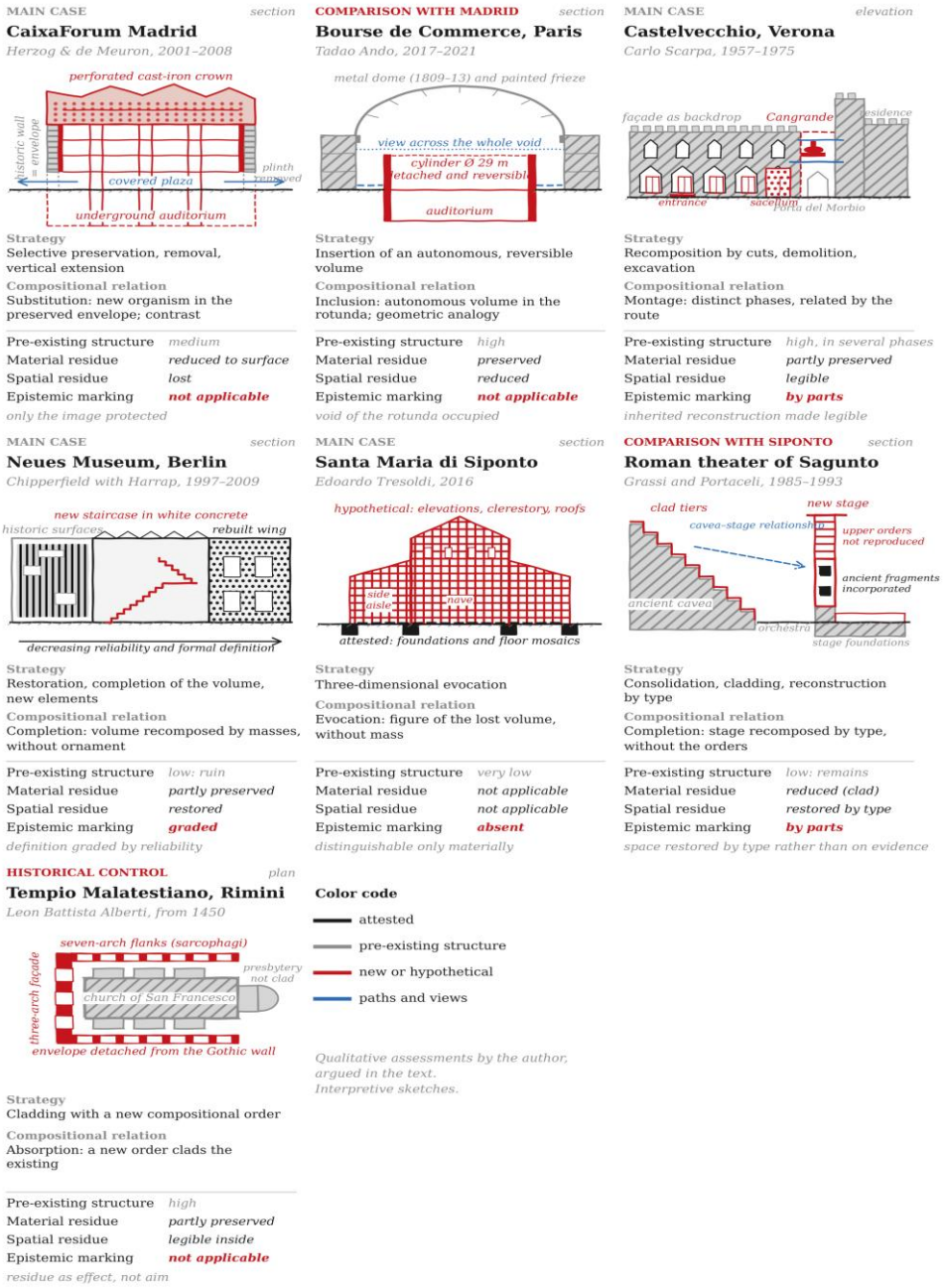


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Comparative synthesis

Table 1 summarizes the comparison.

Table 1. *Comparative synthesis of the case studies. For each case, an interpretive sketch by the author, the compositional relation and the qualitative assessment of the two variables.*



Strategies vary from case to case, but the two variables order the cases more precisely than the contrast/analogy pair alone. The compositional relation explains their divergences: in Madrid substitution empties the envelope and erases its internal configuration, at the Bourse inclusion preserves it while occupying its center; at Siponto evocation, and at Sagunto and the Neues Museum completion, shift the problem onto epistemic marking; at Castelvecchio montage distributes the cost between the two variables; in Rimini absorption preserves the church within a new order.

Discussion

From acknowledging the conversion to evaluating it

In each case the intervention implies a stance towards the pre-existing structure, and every selection has a cost. In Madrid the urban image costs documentary value, at the Bourse the integrity of matter costs the unity of space, at Siponto the experience of absence exceeds the evidence, at Sagunto the theatrical space covers the ancient stone, at Castelvecchio the communal walls cost the last bay. Design is a critical act also because it takes responsibility for the losses it entails and makes them legible in its own form.

That in all cases the outcome belongs to the weave of the project is not a result of the research, but a consequence of the definitions. Within the limits of an exemplary sample, the cases instead confirm the three hypotheses. H1: the Bourse and Madrid, sharing a poetics of contrast, diverge on the two components of the testimonial residue – matter intact and space reduced in the former, both reduced in the latter. H2: Siponto, the Neues Museum and Sagunto restore a lost volume with the same material distinguishability, but with nil, graded and by-parts marking respectively. H3: Sagunto and the Neues Museum share completion, but achieve different marking. The compositional relation does not predict the outcome, but indicates its direction: the same poetics of contrast produces opposite costs depending on whether the new replaces or includes.

The spatial component has a consequence that goes beyond the cases examined. The criteria of restoration – minimal intervention, reversibility, distinguishability – are formulated in relation to matter; the Bourse satisfies them all, and yet substantially transforms the experience of the historic space. The spatial component thus points to a field of evaluation that those criteria do not cover and that the Italian tradition of permanence, from Rossi to Gregotti, had placed at the center of its reflection on design.

Material distinguishability and epistemic distinguishability

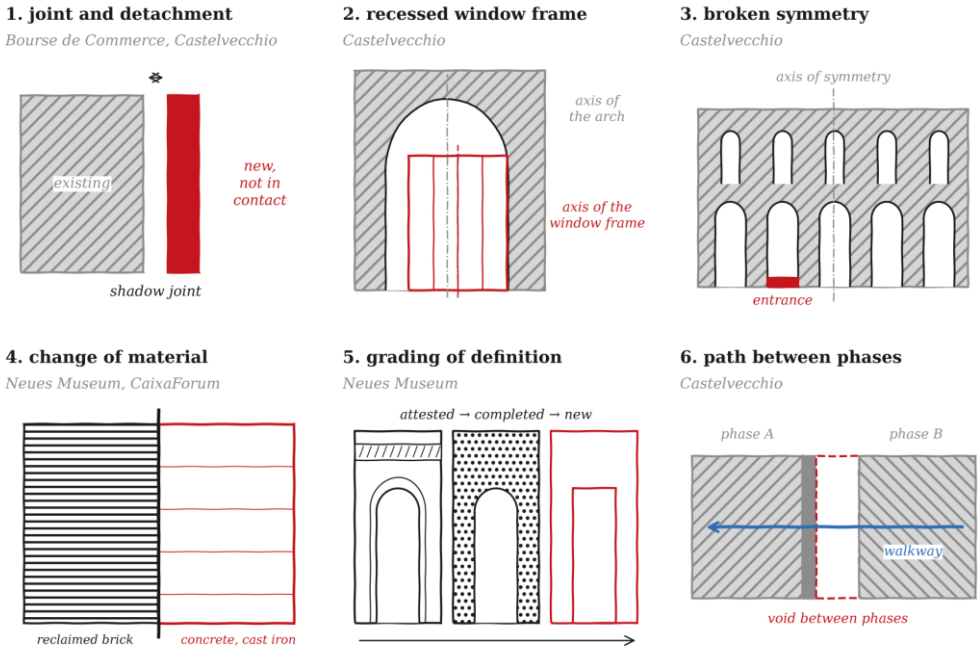
The legibility of the intervention therefore has two dimensions. *Material distinguishability* concerns the possibility of telling the old from the new: it is the principle codified by the Venice Charter and by Brandi. *Epistemic distinguishability* concerns the possibility of telling the documented from the

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hypothesized: it corresponds to the principles of transparency of the London Charter and the Seville Principles, formulated for the digital realm and rarely applied to built work.[17]

The two dimensions coincide when the pre-existing structure is present and diverge when design operates on what has disappeared. That doctrine has formulated the epistemic requirement only for the digital realm can be explained as follows: the virtual model is perceived as a representation, and is therefore subject to an obligation of transparency about its sources; the built artifact is perceived as a thing, and its physical presence seems to exempt it. The Riga Charter offers the negative criterion; the levels of reliability of the Seville Principles offer the positive one, which can be transposed to built work.

Diagram 10. *Compositional tools of epistemic marking. Six devices through which design can make legible the difference between attested and hypothetical without apparatuses external to the work, each with the case that employs it. Author's elaboration*



Castelvecchio, the Neues Museum and Sagunto show that the transposition does not require apparatuses external to the work. Here lies the most delicate responsibility of contemporary design: to make legible not only the difference between periods, but the degree of certainty of its own interpretations.

[17]The distinction does not replace the principles of restoration theory, but makes explicit one of their implicit components: when the ancient material is present, distinguishing the new from the old amounts to distinguishing the documented from the reconstructed. The coincidence fails when the pre-existing structure is absent or fragmentary, as at Siponto.

A Compositional principle: correspondence between definition and reliability

The cases make it possible to formulate a principle that directly concerns composition. At the Neues Museum, at Sagunto and, by contrast, at Siponto, what distinguishes the attested from the hypothetical is not the material, but the degree of definition of form: the precision with which a part is determined in its dimensions, articulation, ornament and detail. A principle of correspondence can therefore be stated: in a project that restores configurations derived by inference, the degree of definition of each part should correspond to the degree of reliability of the knowledge on which it rests. Where evidence is full, form can be restored; where it is partial, recomposed by masses or by type; where it is only inferred, indicated by a trace line; where it is lacking, left empty. What is inferred is thus given a line, not a volume: the line "inexplicable, therefore probable, there where it could have been and was not" with which Daniele Del Giudice describes the preliminary image (Del Giudice 1985, 21); the task of design is to transpose these invisible lines into tangible forms, deciding whether or not to take distance from them.[18]

The principle introduces into composition an order that adds to the traditional ones of measure, proportion and hierarchy: an epistemic order of form. From Durand onwards, composition has reasoned on the scheme – axes, grids, the juxtaposition of simple figures – and compositional research, in Durand's reading, ignores thicknesses;[19] the principle introduces a variable that the scheme does not see, the degree of definition of each part. Albertian *concinnitas* requires that nothing can be added or removed; the principle of correspondence requires instead that form remain unfinished where knowledge is, and makes declared incompleteness a designed outcome, not a defect. Siponto shows the violation of the principle – a uniform definition on heterogeneous evidence –, the Neues Museum its most articulated application, Sagunto a version reduced to two degrees; Notre-Dame shows that the principle does not exclude integral reconstruction where reliability is full: a limit case rather than a model.

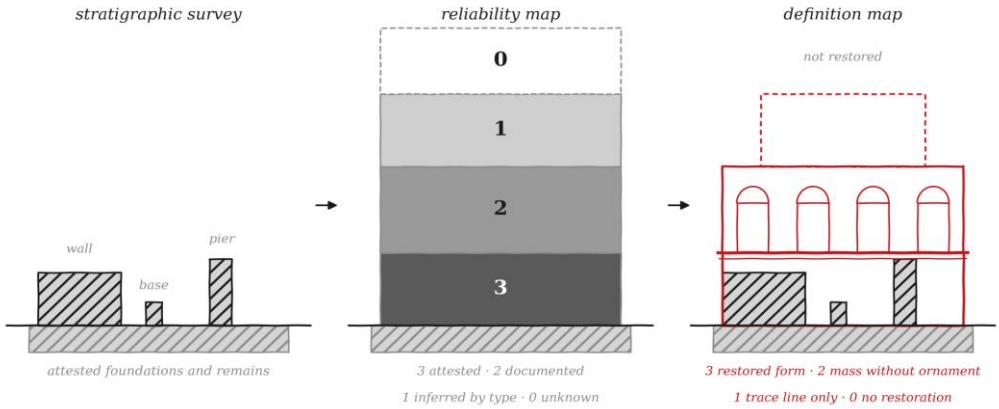
The principle has an instrumental translation. From the stratigraphic survey, design can derive a reliability map, which assigns each part a level on the model of the Seville Principles, and from this a definition map, which attributes to each part the corresponding degree of formal determination. The passage from one to the other makes verifiable, before construction, what the analysis of the cases evaluates afterwards. Definition can be graded by different means: geometric precision, from the molded profile to the plain surface; the scale of detail; tectonics, from the articulated structure to the mere volume; material, from dressed stone to reclaimed brick and concrete; light. It is not an automatic procedure: like Rogers's "case by case" method, a flexible system grounded in the designer's critical capacity rather than in the pursuit of a certain outcome,[20] the principle establishes what to declare, while design decides how. The opposite risk is what Federico Soriano described as an architecture "without

[18][reference removed for blind review]
[19][reference removed for blind review]
[20]On Rogers's method: [reference removed for blind review]

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gesture", grounded in diagrammatic procedures, and more generally without scale, form, weight, plan and detail (Soriano 2004):[21] the principle of correspondence brings detail back to the center, as the place where design declares its own degree of certainty.

Diagram 11. *The principle of correspondence as a design tool. From the stratigraphic survey (left) the reliability map is derived, which assigns each part a level (center); the definition map (right) translates each level into a degree of formal determination: restored form, mass without ornament, trace line, no restoration. Author's elaboration on a hypothetical case.*



Digital visualization as a design tool

If the levels of the Seville Principles can be transposed to built work, digital visualization changes its role: from a tool of documentation it becomes a tool of design. In the model, hypotheses are formulated and corrected before being built, and the code through which visualization declares uncertainty – color, transparency, blurring, the outline in place of the volume – offers design a repertoire of degrees of definition. The digital serves here to select the variants to be assimilated into the composition of the project, not to produce virtual images.[22] The paradata of the London Charter have, in turn, an equivalent in the culture of design: the log of the journey undertaken, which records the rules adopted at the outset and their replacement along the way,[23] and links every formal choice to the source or inference on which it depends. Peter Eisenman took this idea so far as to make form the record of its own process: in House II the house collects and materializes the geometric operations of the process that generates it,[24] and in the Giardino dei passi perduti, installed in 2004 at the Museo di Castelvecchio, he superimposed on Scarpa's work a temporary intervention, recognizable as an addition. Design for existing buildings can adopt

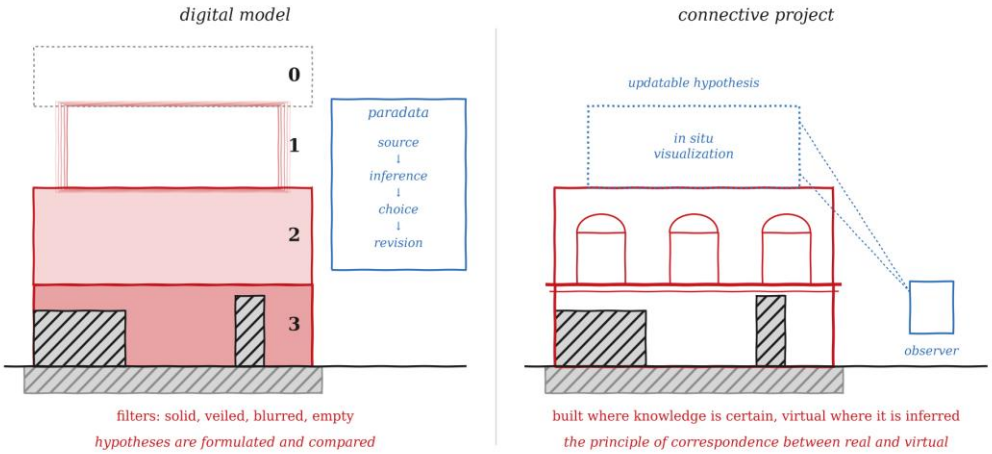
[21]Cf. [reference removed for blind review]
[22]Cf. [reference removed for blind review]
[23]Cf. [reference removed for blind review]
[24]On House II cf. [reference removed for blind review]

the same transparency about process, while directing it to the distinction between what is documented and what is hypothesized.

The architect can be understood as the mediator of a "connective space", which relates real and virtual space and transforms them into habitable realities;[25] virtuality, in turn, as a game capable of making visible what is absent alongside what exists, through a vision by filters that emphasizes some realities, leaves out others or blurs them.[26] In design for existing buildings this idea acquires a precise meaning: the filters of visualization correspond to the degrees of the reliability map, and blurring becomes the proper form of the hypothesis.

This opens the possibility of a project in which the built and the virtual do not replace each other, but complement each other according to the principle of correspondence. The attested part is built at full definition, the documented part is recomposed by masses, while the part that is only inferred is entrusted to a visualization designed together with the work, which shows it *in situ* without fixing it in matter and can be updated as knowledge advances. Siponto shows the opposite risk: a figure that has the nature of a virtual model but is built with the stability of a building: an image "without shadow", to use Jean Baudrillard's expression,[27] in which the hypothesis leaves no trace of its own uncertainty. The digital, in this sense, is not an external apparatus: it is the place where design can keep open what knowledge has not yet closed.

Diagram 12. *Digital visualization as a design tool. In the model (left) the levels of reliability are rendered through filters – solid, veiled, blurred, empty – and decisions are recorded as paradata; in the connective project (right) the attested and documented parts are built, while the part that is only inferred is entrusted to an in situ visualization that can be updated. Author's elaboration on a hypothetical case*



[25]Cf. [reference removed for blind review]
[26]Cf. [reference removed for blind review]
[27]The expression is discussed in [reference removed for blind review]

FOR REVIEW

The devices of declaration

The cases can also be read as a repertoire of decisions. Joint and detachment, at Castelvecchio and at the Bourse, separate the parts without isolating them; the grading of definition, at the Neues Museum, makes a different precision of form correspond to each degree of reliability; path, reduction by type, cladding and suspension act respectively at Castelvecchio, Sagunto, Rimini and Madrid. Putting into work must also be understood literally, as construction in its tectonic value (Frampton 1995).

Each device has a field of validity and a cost: detachment protects matter but not space; grading makes reliability legible, but mainly to the expert observer; reduction by type declares the hypothesis, but does not settle the fate of the ancient material it covers. The choice of device specifies the compositional relation: it is the point where decision becomes construction.

Implications for practice

Some implications for design follow. The first concerns analysis. The reading of the pre-existing structure cannot stop at matter and at the sequence of phases: it should also reconstruct its typological, distributive and morphological characters. It is against these that the spatial component of the testimonial residue is measured – what the building continues to say even where its matter is lost. The second concerns the brief of the project. The two variables and the reliability map can be used *a priori*, not as an *a posteriori* check. They serve to establish which residue to preserve and which degree of marking to achieve, and to compare alternatives on the same footing before choosing one. The choice thus becomes explicit, and therefore open to discussion.

Conclusions

The paper has proposed a definition of the categories of imprint, weave and stratification – the relationship with place, relations and the organization of space, memory and transformation over time – grounded in Peircean semiotics, the evidential paradigm and archaeological stratigraphy, and has tested their effectiveness on four main cases, two comparison cases and one historical control case, reading them as design operations.

On the theoretical plane, the paper shifts the question from acknowledgment to evaluation, and from evaluation to choice. The comparison shows that the conversion of the existing varies along two independent dimensions: the testimonial residue of the imprint, articulated into a material component and a spatial component that escapes the criteria of restoration, and the epistemic marking of stratification. The compositional relation – absorption, substitution, inclusion, montage, completion, evocation – explains why interventions sharing the same poetics produce different costs. From this follows the distinction

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between material and epistemic distinguishability, which transfers to the built project the principle of transparency already codified for the digital realm.

On the plane of composition, the paper proposes adding an epistemic order to the traditional orders of form. Alongside the geometric, constructive and typological orders, which govern how the parts are arranged, stand up and are organized, this order establishes how far each part can be defined in relation to what is known about it. It is governed by the principle of correspondence: the degree of formal definition increases with reliability and fades where knowledge turns into conjecture. Drawing thus becomes legible also as a measure of what is known.

From this follows a dimension that design for existing buildings can recognize in itself alongside modification, which acts on the context, and rewriting, which continues a text already begun: declaration. Design does not merely transform, nor merely continue: it makes visible, in form itself, the grounds of what it proposes. What design adds thus becomes a hypothesis exposed to the gaze and scrutiny of those who come after, rather than a statement that presents itself as certain.

In conclusion, architectural design can be understood as a process through which built reality is understood and transformed without necessarily being deprived of its memory. It is the architect's task to put into work what he or she has understood: to translate it into a configuration of space, into materials and joints, and to take responsibility for what form makes legible as memory and for what it proposes as hypothesis. Declaring the degree of certainty is what allows the new layer not to be confused with those that precede it, and to belong to its own time. It is in this responsibility, rather than in adherence to a doctrine, that design for existing buildings finds its disciplinary foundation.

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