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EDITORIAL

An operational history of civil architecture

The foundation of a new Construction history research centre¹ in one of the three Italian polytechnic universities has brought to light issues similar to those discussed in past editorials of *Aedificare*. Given the way these issues have interacted with the specific characteristics of the Italian academic system, particularly architectural education, it may be appropriate to deal with them here. A few weeks after the second conference held by the group (the first was a *tour d'horizon* for group members only), when a wider community of scholars gathered to discuss a monographic theme² we venture a few considerations, as we believe this experience to be not only of local significance.

1 Construction History Group (CHG), Politecnico di Torino, Dipartimento di Architettura e Design. I am indebted to all colleagues who generously participated in the constituent phase of the group; unable to name them all, I refer to the membership list as published in Edoardo Piccoli, Mauro Volpiano, Valentina Burgassi (eds.), *Storia della costruzione: percorsi politecnici*, Turin, Politecnico di Torino, 2021, p. 19.

2 For the first conference proceedings: Edoardo Piccoli, Mauro Volpiano, Valentina Burgassi, *op. cit.* The second meeting (18-19 February 2022) was dedicated to *Scale e risalite nella storia della costruzione in età moderna e contemporanea*; the origin of its participants points to a possible geography of Italian schools and individual scholars interested in construction history. The map, however, barely overlaps with that outlined in 2018 by Riccardo Gulli (Id., "Construction History in Italy", in Antonio Becchi, Robert Carvais, Joël Sakarovitch, *L'Histoire de la Construction. Relevé d'un chantier européen*, Paris, Classiques Garnier, 2018, vol. 1, p. 247-290). Is this discrepancy a sign of vitality or fragmentation? It is perhaps both. For other recent insights on this topic: Alberto Grimoldi, "Storia della costruzione, storia materiale del costruito, tutela e conservazione del patrimonio architettonico", in Id. (ed.), *Ricerca/Restauro: conoscenza dell'edificio, metodo e contenuti*, Rome, Quasar, 2017, p. 481-493; Antonio Becchi, "Histoire de la construction, un regard italien" (2010) now in: Antonio Becchi, Robert Carvais, Joël Sakarovitch, *op. cit.*, vol. 2, p. 1013-1020.

TAKING THE LIFT IN ST. PETER'S BASILICA

Among the problems still high on the agenda of the Politecnico di Torino Construction History Group two years after its foundation are how to deal with the convergence of several disciplines around a single field of study, and the difficult definition of a status if not for construction history itself, at least for those who seek to deal with it. In an interdisciplinary environment such as that of a polytechnic university, a spectre haunts any group that proposes more than occasional incursions from associated disciplinary fields: the fear of non-recognition by one's own corporation and its anonymous avatars in charge of research evaluation procedures. For the field of construction history in Italy, this concerns those who approach the historical disciplines from mathematical sciences or design practices, as well as those architectural historians who wish to leave the safe havens of authorial research and of the uncontested primacy of architectural drawing. The risk of being exiled *in partibus infidelium* is still real, albeit unevenly distributed. Ironically, it could be said that in Italy the history of construction is now legitimate, as long as it remains within certain limits. Asking questions about the dome of St. Peter and its "incidents" involves taking part in a sophisticated literary genre. A less obvious, and perhaps risky activity (is this really history?) is to hop on the rattling, incongruous elevator zooming up the shaft of one of the spiral staircases of the gigantic basilica.³ Similarly, just as research on the construction of palaces in Malta or Palermo can be justified by the contributions made to the chronological history of the building, and the publication of a few suggestive original drawings,⁴ it is hard for mining engineers to accept that one of their own might devote his energies to the study of the stones used in ancient altarpieces

3 Pascal Dubourg Glatigny, *L'architecture morte ou vive. Les infortunes de la coupole de Saint-Pierre de Rome au XVIII^e siècle*, Rome, École Française de Rome, 2017. The contrast between the dome and the elevator was raised by Valentina Florio's paper at the CHG conference in 2022: *La risalita all'Ottagono di Simon Mago nella Basilica di San Pietro in Vaticano: dalla chiocciola michelangelolesca all'ascensore degli anni Duemila*.

4 The reference is to the studies, intersecting architectural and construction history through the lens of Mediterranean stonecutting traditions, conducted by the group directed by Marco Rosario Nobile in Palermo for the 2013-2016 COSMED research. (<http://www.cosmedweb.org/>, accessed 28 March 2022).

or colonnades. And it is not to be taken for granted that the detailed history of the air-conditioner and the radiator⁵ can be considered, in the eyes of Vitruvian scholars, on the same level as that of the acanthus leaf and the *scamilli impares*. The risk, in short, lies not in providing new insight on what has already been delivered to history, but in the definition of new objects, which would raise doubts about those existing hierarchies. And yet, it is precisely on this point that, even in Italy, research should be more intense.

Only where architectural historiography was originally built on the relationship with technological innovation can we speak of a greater integration between architectural history and the history of construction. However, even in studies focusing on 20th-century modernity it is extraordinary to note how much space is available for new research. Let us consider the exceptional work done by the team led by Tullia Iori and Sergio Poretti: interacting with other parallel experiences,⁶ their research has given continuity and coherence to a collective heritage that was known only in parts and fragments. The SIXXI report's five volumes,⁷ intended to give an entirely new definition of their research object, have established vital reference points, precisely because they are grounded on premises and research methodologies, rather distant from those of their predecessors, such as Edoardo Benvenuto and his by now classic treatise.

5 The Milan 'school' seems to be the only one in Italy today capable of assembling a series of original contributions on the subject of technical installations in early modern and 19th-century buildings: Alberto Grimoldi, Angelo Giuseppe Landi (eds.), *Luce artificiale e vita collettiva. Pratiche di illuminazione nell'Italia del Nord tra Settecento e Ottocento*, Milan, Mimesis, 2022; Carlo Manfredi (ed.), *Architettura e impianti termici. Soluzioni per il clima interno in Europa fra XVIII e XIX secolo*, Allemandi, Turin, 2017. For an original view on this topic in the 20th century, see the well-documented essays by Manfredo Nicolis di Robilant, such as "Ceiling", in Rem Koolhaas (ed.), *Elements of architecture*, Cologne, Taschen, 2014, p. 206-385.

6 Such as Paolo Desideri, Alessandro De Magistris, Carlo Olmo, Marco Pogacnik, Stefano Sorace (eds.), *La concezione strutturale. Ingegneria e architettura negli anni cinquanta e sessanta*, Turin, Allemandi, 2013; Carlo Olmo, Cristiana Chiorino (eds.), *Pier Luigi Nervi Architettura come sfida*, Milan, Silvana Editoriale, 2010; Michela Comba (ed.), *Maire Technimont, I progetti Fiat Engineering* (vol. 1: 1931-1979; vol. 2: 1980-2008), Milan, Silvana editoriale, 2018. Finally, the quasi-microhistorical monograph on the "house of the Obelisk" and its builder: Maria Luisa Barelli, Davide Rolfo, *Il palazzo dell'Obelisco di Jaretti e Luzi, Progetto e costruzione*, Rome, Gangemi, 2018.

7 Tullia Iori, Sergio Poretti (eds.), *SIXXI, Storia dell'ingegneria strutturale in Italia*, Rome, Gangemi, 2014-2020, 5 vol.

FABRICATING CONSTRUCTION HISTORY IN THE LECTURE HALL

In construction history, the issue of legitimacy has often been addressed by invoking the constitution of a specific disciplinary status. Yet we do not think that the history of construction must at all costs be configured as a discipline. In the words of Vittorio Gregotti, “disciplines sometimes suffer from the fact of forgetting that they are the result of a historical construction, and of thinking they are a thing in themselves”.⁸ Indeed, while disciplines, as organisational categories of knowledge and pedagogy, may justify their existence in practice, the habits of the corporate groups to which they are linked cannot be seen as a goal to aim for. For this reason, it did not seem productive to engage a battle that would have led to birth dates, executive decisions, professorships and also, very quickly, to exclusion mechanisms, walls and trenches. The federative nature of the international associations in construction history and the many disciplines and professions represented in their meetings encourage us, for now, in maintaining this line.

Another factor, specific to Italian higher education in architecture, plays in favour of a federative approach. In Italy, multidisciplinary courses and design studios are an integral part of many university programmes in architecture and “building engineering-architecture” (*ingegneria edile-architettura*: hybrid programmes, usually provided by engineering schools, and potentially leading to master’s degrees in either profession). These are also the programmes where construction history is mostly practised: at times in embryonic forms, or disguised under various course titles. Although the matching of multiple disciplines is also influenced by the complicated requirements of academic authority, the *ars combinatoria* does allow some courses to function properly and address original problems. At the Politecnico di Torino, where the participation of architectural history in a number of design studios is an established (if controversial) practice,⁹ integrated courses and multidisciplinary studios

8 Vittorio Gregotti, *Contro la fine dell'architettura*, Turin, Einaudi, 2008, p. 50.

9 The attempt to set up design studios based on dialogue between disciplines, as opposed to the subordination of technical and historical disciplines to design practices, is outlined

have been formed to work as laboratories of construction history, targeting tomorrow's architects. The history of their development, in fact, parallels that of the new research centre.¹⁰ The emphasis on practical activities and field exercises leads students to appreciate these experiments, even if the prevalence of operational character over theoretical speculation should be considered both a strength and a weakness.

Of course, interdisciplinarity should not resolve itself into an imitation game. The pact between the participants in the Turin project is based on mutual incursions, whose boundaries are constantly renegotiable. For the architectural historians, participation in these courses leads to questioning the reassuring grounds of typology, chronology, authorship. This makes it possible, on the other hand, to establish new hierarchies, investigating new sources and topics, and restoring a critical function to history, tailored to the object of investigation. For scholars of other disciplines, the incursion primarily lies in accepting the objectives of a historical project. Construction scientists, restoration and preservation experts, technologists, are sometimes accustomed to receiving from history precise information or consolidated interpretations (which are good news, if compared to the "historical notes" sought by other professionals merely to legitimise technical operations or design exercises); they must now come to terms with a kind of historical research which does not only serve the project or the structural analysis, but accompanies them: a research full of uncertainties and questions usually not contemplated by the scenarios of their own disciplines. Shifting regimes of temporality and changing statutes of proof can also be disorienting at a polytechnic school. In fact, an underlying challenge seems to characterise our whole experiment: the roots of challenge history can be genealogically traced back to the engineering schools, and yet, today, its development takes place almost entirely within architecture courses. In a context dominated by information technology and the universality of digital languages, a school that was born in materiality seems to be on the verge of forgetting it.

by Pierre-Alain Croset, "From Torino to Suzhou", *Domus* 987, 2015, p. 34-37.

10 In the current year (2021-2022), Architectural History meets Construction Science in an optional 6-credit course; it also joins Building Strengthening in Restoration and Architectural technology in two other 10-credit courses, mandatory for the Master's in Architecture for heritage. There are 120 students involved. But the number of teachers is still too small to give this experience a structural value.

BEYOND THE “MAGNIFICENT AND PROGRESSIVE FATES”¹¹

*“To recognise a [polytechnic] history, beyond the study it requires, implies recognising that a season has ended: the long season of stability of technical and productive, institutional and social systems, on which rested the certainty of delegating the tasks of studying the effects of choices based on the primacy of scientific self-regulation”.*¹²

For some time now, construction historians have no longer identified with the “fully qualified Whig historian” as Jacques Heyman ironically put it in 2005.¹³ In Italy, in fact, an approach to construction history guided by explicit forms of scientism and positivism has never been a dominant feature. Since the 1980s, Edoardo Benvenuto observed that even the history of mechanics “will not fit tidily into a narrative model based on the growth of empirical knowledge”.¹⁴ At that time, Anna Maria Zorgno (professor of architectural technology, and a major figure in an intense season of research on construction at the Turin Politecnico) tackled the theme of 19th-century innovation by stripping it of rhetoric, and clarifying how much it was conditioned and shaped by long-lasting phenomena, resistance from technical cultures, and the “relativity, characterising all architectural production”.¹⁵

What seems to be underway today, however, goes beyond those premises. Disruptions, conflicts, accidents polarise the attention of scholars,

11 Giacomo Leopardi, “La Ginestra, o il fiore del deserto”, from Id., *Canti*, Florence, Raineri, 1845, p. 120 (transl. author).

12 Carlo Olmo, Francesco Profumo, “Una storia, non una tradizione? Un dibattito aperto dal centenario del Politecnico di Torino”, in Antoine Picon, *Tra utopia e ruggine. Paesaggi dell'ingegneria dal Settecento a oggi*, Turin, Allemandi, 2006, p. 9-15, p. 14.

13 Jacques Heyman, “The History of the Theory of Structures”, in Santiago Huerta (ed.), *Essays in the history of the theory of structures. In honour of Jacques Heyman*, Madrid, Instituto Juan de Herrera, CEHOPU, 2005, p. 1-8, p. 3.

14 Edoardo Benvenuto, *An Introduction to the History of Structural Mechanics*, New York-Berlin, Springer-Verlag, 1991, vol. 1, p. 3 (Italian ed., *La scienza delle costruzioni e il suo sviluppo storico*, Florence, Sansoni, 1981). No less relevant are the publications in the 1980s by Pietro Redondi, founder of “History and Technology” (see “Foreword”, *History and Technology*, vol. 4, 1987, p. 1-6) and author of the influential *Galileo eretico*, Turin, Einaudi, 1983.

15 Anna Maria Zorgno, *La materia e il costruito*, Rome, Alinea, 1988, p. 247; Maria Luisa Barelli, Michela Comba, “Percorsi di storia della costruzione al Politecnico di Torino”, in Edoardo Piccoli, Mauro Volpiano, Valentina Burgassi, *op. cit.*, p. 35-48.

stealing the show from an orderly, taxonomic and positive history.¹⁶ A historian can only rejoice. And yet the reasons lie not merely in a better understanding of the slow and imperfect penetration of modern science into construction practices. In a society obsessed with safety, worried about the future, and sceptical of the ability of institutions to control the built environment, the historical study of failure and error might be seen as a legitimate scholarly practice; providing, perhaps, the basis for a new kind of *historia magistra*. It is up to the quality of the research not to become a passive echo of these demands. But research is necessary. The aging of the vast heritage of early and recent modernity, seismic risk, and hydrogeological instability are ubiquitous, urgent issues in Italy, posing specific problems of historical definition and methodology.¹⁷

Catastrophes, phenomena endowed with dissonant temporalities, seem to come first, in casting doubt on the consolidated geographies and chronologies of historiography. These issues are all bundled together in the Morandi – Polcevera bridge failure: a paradigmatic case, though not a *unicum*, as the Grenfell Tower and Notre-Dame fires remind us, both discussed in *Aedificare*. The 2018 event remains incomprehensible if examined in the light of the sole legal responsibilities and the short time elapsed between the most recent maintenance cycles and the collapse. And yet the history of the bridge is opaque even if observed through the prevailing filter of authorial narratives. As Tullia Iori clarifies in her case for a better understanding of this case, Morandi’s “project” is in itself a process: a cloud of documents, with uncertain boundaries, that does not allow itself to be fully grasped in reality.¹⁸

16 Among the many recent volumes and essays that refer to the heuristic value of failures and accidents: Federica Ottoni, *Delle cupole e del loro tranello: la lunga vicenda delle fabbriche cupolate tra dibattito e sperimentazione*, Rome, Aracne, 2012. *Ponti in pietra nel Mediterraneo in età moderna*, special collection in “Lexicon”, n. 20, 2015; the recent conference, “*Sulla ruina di sì nobile edificio, crolli strutturali in architettura*”, Rome, 5-6 March 2020, by Claudia Conforti, Maria Grazia D’Amelio, Marica Forni, Nicoletta Marconi, Francesco Moschini (forthcoming). Finally, Edoardo Piccoli, “Liti, incidenti e improvvisazioni. Le crisi del cantiere barocco”, in Edoardo Piccoli, Mauro Volpiano, Valentina Burgassi, *op. cit.*, p. 103-115.

17 Emanuela Guidoboni, “Terremoti e storia trenta anni dopo”, *Quaderni storici*, N. 3, 2015, *Storia applicata*, p. 753-784.

18 See Tullia Iori’s essential contribution to this subject, “Questioni di ponti e di fonti”, *SIXXI, op. cit.*, vol. 5, 2020, p. 7-12.

Beyond these catastrophic events, the murmur of countless earthquakes (the entire Italian territory is now subject to anti-seismic legislation) has become the real background noise in recent decades, and the most widespread and extraordinary test bed for our concerns. Leaving others to discuss the moral lessons of these disasters (*Pour le bonheur du monde on détruit vos asiles / D'autres mains vont bâtir vos palais embrasés*),¹⁹ Italian engineering schools have since the 1990s promoted the historical observation of these phenomena. In addition to uncovering myriads of precise facts, this season of research has shed light on the risk-mitigation strategies implemented by traditional construction cultures, which were far from resigned to the unpredictability of these natural events. If it were not an overused term in today's media, resilience would be a suitable word to define this field of study. Against the background of the recent disasters at L'Aquila and in Central Italy, a combination of archival and field research has led to new insight into the transformations of both ordinary and exceptional structures, and to a heightened consideration of the impact of every-day actions, such as maintenance, and cyclical interventions (including, since the 19th century at least, restoration practices, which are by now inextricably connected to the material history of Italian heritage sites, from Sicily to the Alps).

This is precisely the operational history advocated by Antonino Giuffré,²⁰ with full knowledge of the facts and respectful attention to methodological requirements. This form of "applied history"²¹ does not

19 Voltaire, *Poème sur le Désastre de Lisbonne. Ou examen de cet axiome, tout est bien*, in Id., *Poèmes sur le désastre de Lisbonne, et sur la loi naturelle, avec des préfaces, des notes, etc.*, Geneva, [Cramer], 1756, p. 10.

20 Antonino Giuffré, "L'intervento strutturale quale atto conclusivo di un approccio multidisciplinare", *Quaderni ARCo*, n.1, 1995, p. 5-16, now republished in: Caterina Carocci, Cesare Tocci (eds.), *Antonino Giuffré. Leggendo il libro delle antiche architetture. Aspetti statici del restauro. Saggi 1985-1997* Rome, Gangemi, 2010, p. 18. In the wake of the method defined by Giuffré, come such exemplary essays as: Roberto Masiani, Cesare Tocci, "Ancient and Modern Restorations for the Column of Marcus Aurelius in Rome", *International Journal of Architectural Heritage: Conservation, Analysis, and Restoration*, 6/5, 2012, p. 542-561; Caterina Carocci, "Giuseppe Damiani Almeyda's Architecture: Constructing the Modern Restoring the Ancient. The Cathedral of Marsala", in Karl-Eugen Kurrer, Werner Lorenz, Volker Wetzck (eds.), *Proceedings of the Third International Congress on Construction History*, Cottbus, Brandenburg University of Technology, 2009, vol. 1, p. 305-312.

21 "È questo dunque il vero fine della storia applicata. La comunicazione della storia non si risolve nella divulgazione della storia tradizionale, ma nella costruzione di oggetti complessi che implicino il dialogo tra diversi universi scientifici disciplinari. Occorre

imply a decrease in value but rather an opportunity: the close examination of a building's inner fabric and construction processes has repercussions for traditional historical knowledge and provides new categories for interpretation. In Cairoli Fulvio Giuliani's essay on the Pantheon and Vittorio Nascè's analysis of the Turin Mole Antonelliana,²² for instance, the largely mythical unity of the two world-famous "monuments" is surpassed, if not reversed, by consideration of their various states of equilibrium. Equally relevant are the studies applied to new and original subjects, such as the early technical installations investigated by the Milan research group led by Alberto Grimoldi, and the scaffolding and centring techniques scrutinised in Rome by Nicoletta Marconi.²³

From our specific point of view, therefore, we do not believe it illegitimate or anachronistic for a construction historian to sneak into transformation processes, or to wish to consider the "performativity" of historical structures, measuring it against the calculation systems of the past.²⁴ Of course, the involvement with practice is rarely well received by other actors, and frequently leads historians to uncomfortable positions: in the view of many, history should be a neutral, marketable commodity, and the life cycle of buildings should be reduced to a reassuring background from which nothing is learned. But the alternatives to any form of commitment are brutal: who in Italy has not witnessed the dismantling of roofs, historic technical installations, staircases or windows of inimitable quality in the name of regulatory

in altri termini creare nuove forme di storia che mettano le competenze del nostro mestiere al servizio delle domande sociali che ci pongono oggi lo sviluppo scientifico e le condizioni sociali" (Angelo Torre, "Premessa", *Quaderni storici*, N. 3, 2015, *Storia applicata*, p. 621-628, p. 627).

- 22 Cairoli Fulvio Giuliani, "Problemi costruttivi del Pantheon e della Basilica Neptuni" (2015), now in Id., *Metti che un muro... Scritti scelti*, Rome, Quasar, 2020, p. 237-272. Vittorio Nascè *et alii*, "La mole antonelliana. Indagine numerica sulla struttura originaria", in Franco Rosso (ed.), *Alessandro Antonelli 1798-1888*, Milan, Electa, 1989, p. 125-143.
- 23 Nicoletta Marconi, *Edificando Roma barocca: macchine, apparati, maestranze e cantieri tra XVI e XVIII secolo*, Città di Castello, Edimond, 2004; for other more recent references to the same author and on this topic, Stefan Holzer, *Gerüste und Hilfskonstruktionen im historischen Baubetrieb: Geheimnisse der Bautechnikgeschichte*, Berlin, Ernst & Sohn Verlag, 2021.
- 24 Pascal Dubourg-Glatigny, *op. cit.*, p. 16-17, is of a different opinion. And yet, in the contrast between the more focused histories told by the specialists and the intellectual history of the *savant*, capable of capturing all the "innombrables interdépendances du phénomène architectural" (Ibid., p. 17), the dialogical and constructive value of "applied" history is lost (see above, notes 20-22).

diktats, or unsophisticated conservation projects? Not to mention the discomfort one feels in entering buildings battered by the tumultuous 1980s and 1990s, when the availability of money and the rush to large scale “reconversions”²⁵ of historical buildings sometimes perpetrated vast and unnecessary damage.

Other lesser-known catastrophes are taking place in Italy as we write, in the name of “energy saving” practices: a concept made toxic by State economic incentives, heralded as capable of reaching a mythical ceiling of 110%, thus exceeding the cost of the intervention itself.²⁶ In attributing sustainability to a parameter and not to a process, the temporalities of construction – which also must include the time necessary to understand the construction on which to intervene – are assimilated to a deadweight loss. But what reasons, if not those rooted in time, can allow the conservation of a building’s complex meanings and functions, as well as its embodied energies? In this sense, construction history within a Polytechnic school, where curiosity about materiality should return to the centre of attention, can take up its stance in favour of a new ideal of *architettura civile*.

Edoardo PICCOLI
Politecnico di Torino

25 A history of that brief span of time in the late 1980s and early 1990s, when Italian engineering firms and general contractors were able to negotiate unusually large contracts in the building preservation sector, often by lobbying at the highest levels of national politics, remains to be written.

26 Agenzia delle Entrate, *L’Agenzia informa*, official newsletter, September 2021, *Superbonus 110%* (<https://www.agenziaentrate.gov.it/>, accessed 28 March 2022).