RESILIENCE THROUGH DESIGN. INNOVATIVE ISSUES IN THE RENOVATION OF TORINO ESPOSIZIONI/

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Abstract. The historical complex of *Torino Esposizioni* was designed by Ettore Sottsass senior in the '30s, then modified by Roberto Biscaretti di Ruffia and Pierluigi Nervi in the '50s before suffering several modifications and being abandoned in the '80s. The complex is now to be renovated, becoming part of the new Architecture Campus of Politecnico di Torino and, in the main pavilion, hosting the Central Civic Library. In the first part, the essay tells the history of the complex, showing how the various interventions changed its spaces' usability and resilience, eventually contributing to its abandonment. Then, it investigates the recent history, looking at the multiple failed attempts to restore the building due to several intertwined factors – e.g., its cultural value, its structural behaviour, costs, and the overlapping of inconsistent norms – that affected its actual potential. The second part of the essay describes the renovation project, firstly introducing the strategic division of Politecnico di Torino – the Masterplan Team – and then deepening four innovative issues of the project. The design approach, introducing the architectural outputs in the political and decisional process through the continuous construction of possible scenarios. The way the various stakeholders – e.g., politicians, technical directors of the city, and the Superintendence (the cultural authority that controls and supervises the design of historical buildings – were involved in the process by means of unofficial but performative design documents. The design approach, aimed at tracing down the elements of values, turning them into a system of alive elements defining priorities and opportunities, and using this system to redesign small and big interventions that valorise the building while renovating it, promoting its resilience through design. Lastly, innovation in design actions: the whole intervention is a continuous experimentation of innovative design solutions to make all parts consistent with the renovated legacy building.

Introduction. The renovation of *Torino Esposizioni* involves the participation of various public and private stakeholders, all sharing the goal of revitalising and reactivating this important part of the city of Torino, Italy. Among these stakeholders, the Politecnico di Torino played a key role, with the goal of finding an adequate space for the Architecture Campus, in direct connection with the historic faculty of the *Castello del Valentino*. The paper aims to highlight the position of Politecnico di Torino in this regeneration process, and particularly the role of the Masterplan Team, the university's strategic design office. The work carried out by the Masterplan Team has several innovative implications, both from a procedural, design and technological perspective. These innovations enabled the development of a project that is, at the same time, functional and respectful of the significant history and heritage of the exhibition complex. Following an initial historical overview of *Torino Esposizioni* within the broader context of the Parco del Valentino, the paper will discuss the results achieved, focusing on the innovations explored during the design process.

From Palazzo della Moda to Torino Esposizioni, up to the recent history of the complex. The Valentino is the most important monumental park of Torino. Initially planned in the 19th century by the gardener and landscape designer Jean-Baptiste Kettmann, the park has been used from the beginning not only as a natural environment linked to the city but also as a highly anthropised space where numerous cultural activities occur. The cultural and academic characterisation of the park dates back to the 1880s, when a project for constructing a university campus, called *Città delle Scienze*, was carried out by the mayor Ernesto Balbo of Sambuy [1]. In the meantime, the park was already used for cultural events of various kinds. *Torino Esposizioni* is located, indeed, in a triangular plot that has been used for exhibitions since the late 19th century. The story of the complex began at the end of the 1930s when the city of Torino asked for a series of permanent spaces to host the international exhibitions and events organised in the city. In 1936, a design competition was held, which was won by the architect Ettore Sottsass Sr. [2]. Sottsass's project consisted of four pavilions around a green, open courtyard. Circular in plan, the northernmost pavilion was later renamed the *Rotonda* (literally, the rounded one) and housed the complex's restaurant. Immediately to the south, Pavilion 1 was the main exhibition hall, accessed via a monumental vestibule supported by slender reinforced concrete square columns. On the south side of the complex was the theatre, with two proscenium arches – one opening westwards to an indoor seating area for winter events and the other eastwards to an outdoor area for summer performances. Two wings connected the theatre and the exhibition hall: the narrower one, along Corso Massimo d'Azeglio, was intended for offices, while the wider one was reserved for exhibitions. Between these wings was a large rectangular garden, enclosed on all four sides by the pavilions. The complex was opened in 1938 but had limited use. In 1943, during the Second World War, it was severely damaged by bombing, especially in the southeastern part, including the theatre and the exhibition wing.

After the war, a group of local industrialists founded the "Società del Palazzo delle Esposizioni" to rebuild the complex to host major trade fairs and promote the local burgeoning industrial scene [3]. The project was entrusted to the architect Roberto Biscaretti di Ruffia and the engineer Pierluigi Nervi. In 1947, the exhibition wing, or Pavilion 2, was rebuilt - one of the most iconic works by Nervi, with a roof made of emblematic pre-casted ferrocement elements [4]. The theatre, renamed *Teatro Nuovo*, was also rebuilt, retaining, at least initially, its original design with double proscenium arches. A few years later, in 1950, the open-air theatre was replaced by Pavilion 3, also designed by Nervi. This time, Nervi created a centrally planned structure with a large pavilion roof supported by four reinforced concrete arches [5], again using pre-casted ferrocement elements as in Pavilion 2. In the mid-1950s, Pavilion 2 was extended by replicating the same vaulted ferrocement structure and extending it to the office wing

along Corso Massimo d'Azeglio, eliminating the garden initially designed by Sottsass Sr. In 1959, Nervi proposed a new façade, a monumental entrance and an office tower to replace Pavilion 1, but this plan was never realised. Despite these changes, the complex continued to host important international exhibitions, such as the Torino Motor Show. In 1960, the need for additional exhibition space led to the construction of an underground pavilion, designed by the engineer Riccardo Morandi and located about a hundred metres north of the *Rotonda*, in the direction of the XVII Century *Castello del Valentino*.

Since the 1980s, the *Torino Esposizioni* complex has gradually fallen into disuse, with occasional cultural and sporting events contributing to its partial transformation. One such event was the 2006 Winter Olympics, during which some spaces were converted, including Pavilion 2, which was turned into an ice stadium. Over the years, various extensions have been added, including Pavilion 3B in the 1970s, located adjacent to the east of Pavilion 3, now called 3A. Since 2009, Pavilion 1 has been used by *Università degli Studi di Torino* to temporarily house the Faculty of Humanities, while *Teatro Nuovo* was used as a dance school. Nevertheless, even these last uses stopped, and the complex was completely abandoned. In 2014, the City of Torino, in collaboration with the Politecnico di Torino, developed a tentative proposal for recovery. This proposal led to a feasibility study carried out by ICIS, Rafael Moneo and Isolarchitetti. The study, completed in 2017, examined the possibility of relocating the Central Civic Library (including its archives) and the School of Architecture of Politecnico in *Torino Esposizioni* – the latter in the underground Morandi pavilion. However, this scenario proved impossible due to the new structural and seismic regulations introduced in 2018, which would have imposed severe modifications to the pavilion, failing to preserve it and costing far too much. Moreover, the increasing constraints – as the pavilions were declared of monumental interest in 2022 – the clashes with the town plan – which quite curiously allowed for residences, for example, but not cultural uses – and the general crisis situation annihilate any attempt to renovate the complex. Nevertheless, the place was crucial for Politecnico, as using it was the only possibility to create a true Campus for the School of Architecture, connecting it to the historical headquarters in the *Castello del Valentino*.

Then, in 2020, Politecnico's Masterplan Team was set up to develop new proposals for the "Campus Architettura" within *Torino Esposizioni*.

The Masterplan Team regeneration project: four fields of innovation. Despite its name, the Masterplan – created in late 2016 and enormously evolved in 2019 – is not a strategic document but a research centre – a design group that continuously spatialises policies and explores possible future scenarios. The conceptual premise of the Masterplan is that every policy requires, in the end, a physical space. Hence, it is possible to work with future scenarios to translate strategic policies into physical realities, positioning the project in a tactical dimension – in Jullien's terms, such a design both follows the process and orients it [6]. The Masterplan method parallels autopoietic processes, characterised by continuous interaction between practice and conceptual reflection, allowing for flexibility and reorientation. The success of this method is also due to its agile and minimally hierarchical organisation, which ensures control over project materials and communication. Presentations, dossiers, drawings and visualisations are used to guide stakeholders through the implementation of the project, promoting its assimilation and encouraging action. The Masterplan team also navigates external variables such as policies and regulations, forging alliances to create synergies between projects in shared spaces where interactions converge, exploring their less-than-obvious dimensions [7]. Hence, it valorises the systemic dimension of design and enhances design's role in the system of society [8]. At the same time, the Masterplan produces architectural projects. It does work on the pre-design, but at the same time, it continuously anticipates design issues through the definition of architectural projects – which occasionally become the actual projects like in the case of *Torino Esposizioni*. Therefore, the creative and the strategic dimensions of design converge.

The unique working approach of the Masterplan Team has allowed the development of the Architecture Campus project, and thus part of *Torino Esposizioni*, despite the difficulties mentioned above, and in relationship with the significant cultural and heritage value of the buildings. The continuous interaction between practice and conceptualisation has allowed great flexibility and minimised the friction typically caused by bureaucracy, regulations and the diverse interests of the various stakeholders. In this way, process and project are no longer opposed but become one singular entity: the project becomes a formative act, capable of writing its own rules as it evolves [9]. FIGURE 1.

Methodological innovations. The first innovation issue is the way the process was built and oriented. In 2020, when the failure of previous projects was apparent, the Masterplan Team started elaborating new hypotheses to reuse the complex. Following the unexpected news that the Dance School had to leave its spaces, the team started developing alternative scenarios for reusing its spaces and some of the pavilions nearby, building up an architectural proposal which gave a new sense to a part of the complex. Working on just a part of the complex was paramount to make the city accept this operation, which continued to hope for a new Civic Library there – and just a year later, indeed, they had it thanks to the funds of the National Recovery and Resilience Plan (PNRR): hence, this modest approach was the winning move. And to make it winning, many scenarios involving, alternatively, various parts of the complex were designed and comparatively evaluated, giving reliability to the process. After a long negotiation, the City of Torino let Politecnico use three pavilions: Pavilion 1 – which will be named Sottsass Pavilion – Pavilion 3 – the future Nervi Pavilion – and Pavilion 3B – to be rebuilt and called the New Pavilion. This process marks one of the innovations of the *Torino Esposizioni* project: the architectural design has been used as a tactical tool, capable of seizing opportunities and highlighting the best course of action to move the project forward.

The Dossier. The second innovation issue concerns the tools used to govern the whole process and interact with the stakeholders. From the pre-design phase onwards, the Masterplan invited the participation of various stakeholders, including the Superintendence, potential co-users, the City of Torino and, obviously, the Politecnico's governance (which can be seen both as an external and an internal actant). To manage the various discussions with the city's directors – e.g., the urban planning, the green

and the environment – with the Superintendence, the various parts of the university's governance and many other stakeholders, the Masterplan only elaborated a *single* document. An all-encompassing dossier, FIGURE 2, that gathered all functional and non-functional requirements, data, reasons and solutions. This Dossier never arrived to the stakeholders in a complete form. Each time, it was crafted for a specific purpose by erasing some parts so as to enhance the tactical power of that specific interaction of the process. Moreover, this Dossier never arrived to be an official document. This informal and unofficial Dossier – which questions how documents become performative – is the primary tactical tool through which the Masterplan creates the conditions for the project to move forward and influences the actions of stakeholders [10].

Forms of action. The third innovation issue is the (way of maintaining the) position of the Masterplan in the system it acts within. The Masterplan operates in a hybrid space between policy and design, academia and practice; just as well, it operates in the middle of public and private interests. Its approach is guided by two fundamental principles: efficiency and speed. These two principles are effectively demonstrated by the timeline, FIGURE 3, which outlines the strategic approach of the Team. This comprehensive overview allows to trace the various interactions and sequential steps that contributed to the project's development, providing a clear understanding of its evolution over time. The readiness and efficiency of the Masterplan Team proved crucial when large amounts of funding from the PNRR became available after the pandemic. It is also thanks to obtaining these funds that it was possible to ensure the project's economic feasibility. However, it is paramount to underline that these timelines cannot be considered proof of causality among the actants. In full contrast with ethnographic, Latourian approaches – which fall into the *post hoc, ergo propter hoc* fallacy – these timelines get their sense only afterwards, retrospectively, in the continuous and everchanging reinterpretation of the process.

Systemic design. Finally, the Masterplan had to incorporate an incredible number of technological innovations to accommodate the new functions within *Torino Esposizioni* and valorise its historical dimension. In this case, consistently with the Masterplan approach, the innovation started in the pre-design phase, anticipating many potential issues – like the acoustic of the pavilions, the rebuilding of the glass-block façade, the structural reinforcements, issues related to thermal insulation and thermal bridging, FIGURE 4 – and involving the Superintendence since the very beginning. This required numerous technological experiments and tailor-made solutions, coordinated from the architectural design stage, ensuring optimum control of the final result. At the same time, the involvement of the Superintendence allows the team to orient the decision processes, showing alternatives and mock-ups and obtaining even unexpected successes. The case of the acoustic performance of Pavilion 3 is emblematic. According to the project, the voluminous vaulted hall will have four main functions: conference, workshop, exhibition and study. The latter function, in particular, was badly suited to the relatively poor acoustic performance of the hall. After numerous studies and research, the application of a cork-based acoustic plaster – a solution negated to similar projects – was approved, as its impact on the aesthetic of the vault was minimal compared to practical advantages.

Conclusion. Construction works began in 2024 and are expected to be completed in 2027. Throughout this period, the Masterplan plays an active role in overseeing the artistic direction of the works, ensuring the coherence and consistency of the execution of the project. When completed, the complex will include classrooms and offices in Sottsass and New Pavilions and, as anticipated, a large multipurpose hall in Pavilion 3. FIGURE 5. Being open to the city will be a critical asset for the broad community. However, above all, it will provide new, innovative and exciting spaces for the students and scholars of Politecnico di Torino, reflecting its international dimension.

In conclusion, the renovation project of *Torino Esposizioni* represents a strategic and innovative development both for the city of Torino and Politecnico di Torino. The project successfully deals with complex cultural and normative constraints, merging them in a design that considers historic spatiality, new needs, and functional necessities. This dual focus on preservation and modernisation exemplifies the Politecnico's commitment to integrating heritage with contemporary functionality. The Masterplan team's unique approach, characterised by a flexible and collaborative methodology, has been central to overcoming the complex regulatory, structural, and financial challenges that initially hindered progress. By involving stakeholders at every stage and adapting the project scope to meet evolving demands, the Masterplan has transformed architectural design into a dynamic tool for navigating policy, historical preservation, and practical requirements. This process-driven approach has enabled the project to secure funding, align with regulatory requirements, and incorporate technological solutions without compromising the integrity of the original Pavilions.

As construction continues, the *Torino Esposizioni* complex is set to emerge as a vibrant, multipurpose educational hub, offering spaces for learning, collaboration, and cultural events. When completed, it will enhance the educational resources available to the Politecnico di Torino and contribute to the city's broader cultural and academic landscape. FIGURE 6. Ultimately, the redevelopment of *Torino Esposizioni* reflects a successful model of architectural heritage adaptation, showcasing how historical sites can be thoughtfully transformed to meet modern demands and serve future generations. Furthermore, the peculiar and innovative way of acting of the Masterplan Team proved to be a winning approach to design in complex contexts.

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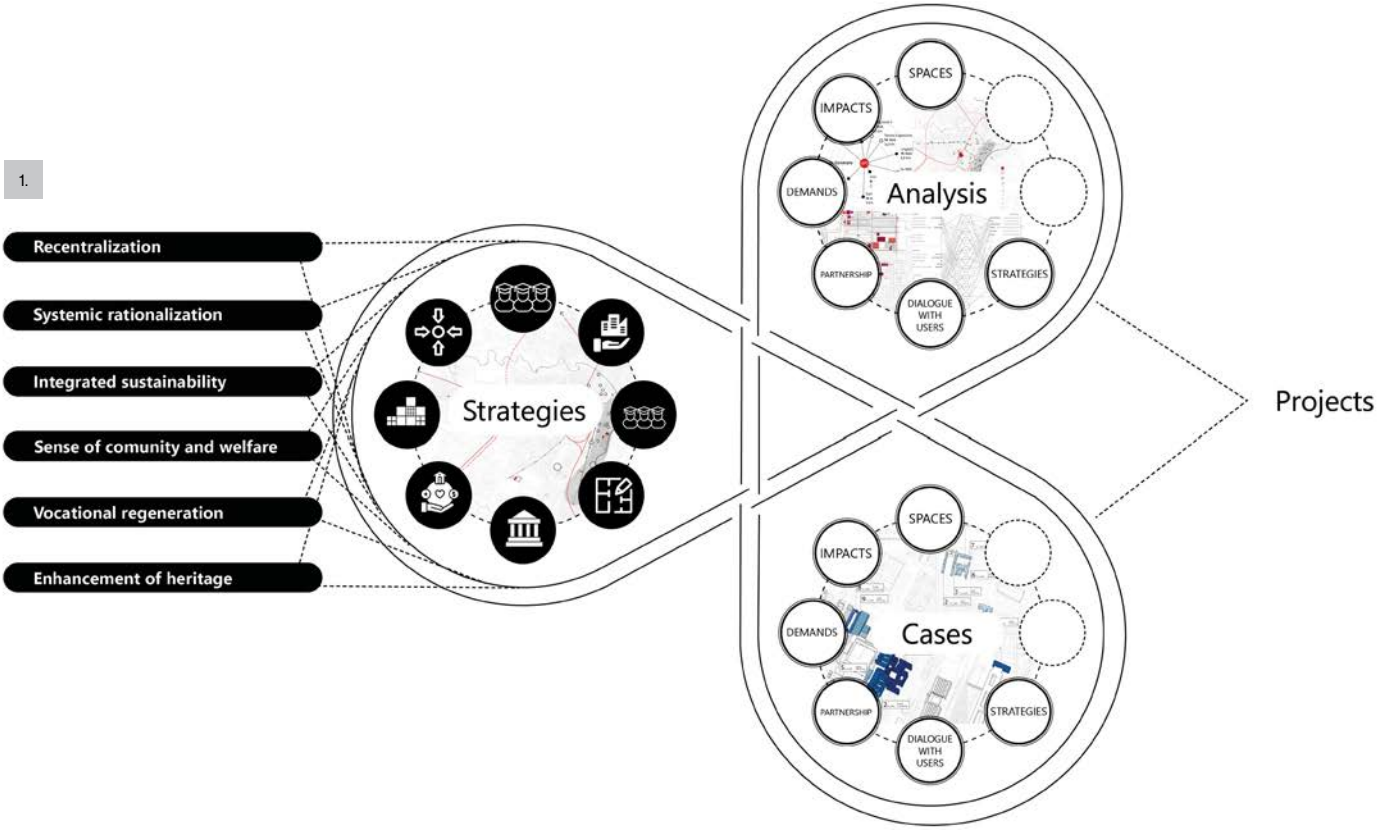
Figures.
FIGURE 1 - Masterplan Team's methodological scheme.
FIGURE 2 - Synoptic view of the Dossier.
FIGURE 3 - The timeline of the project.
FIGURE 4 - Technological innovations adopted in Pavilion 3.
FIGURE 5 - The large hall in Pavilion 3 used as a study room.
FIGURE 6 - Exploded axonometric view of the Politecnico di Torino interventions in Pavilion 1 and 3.



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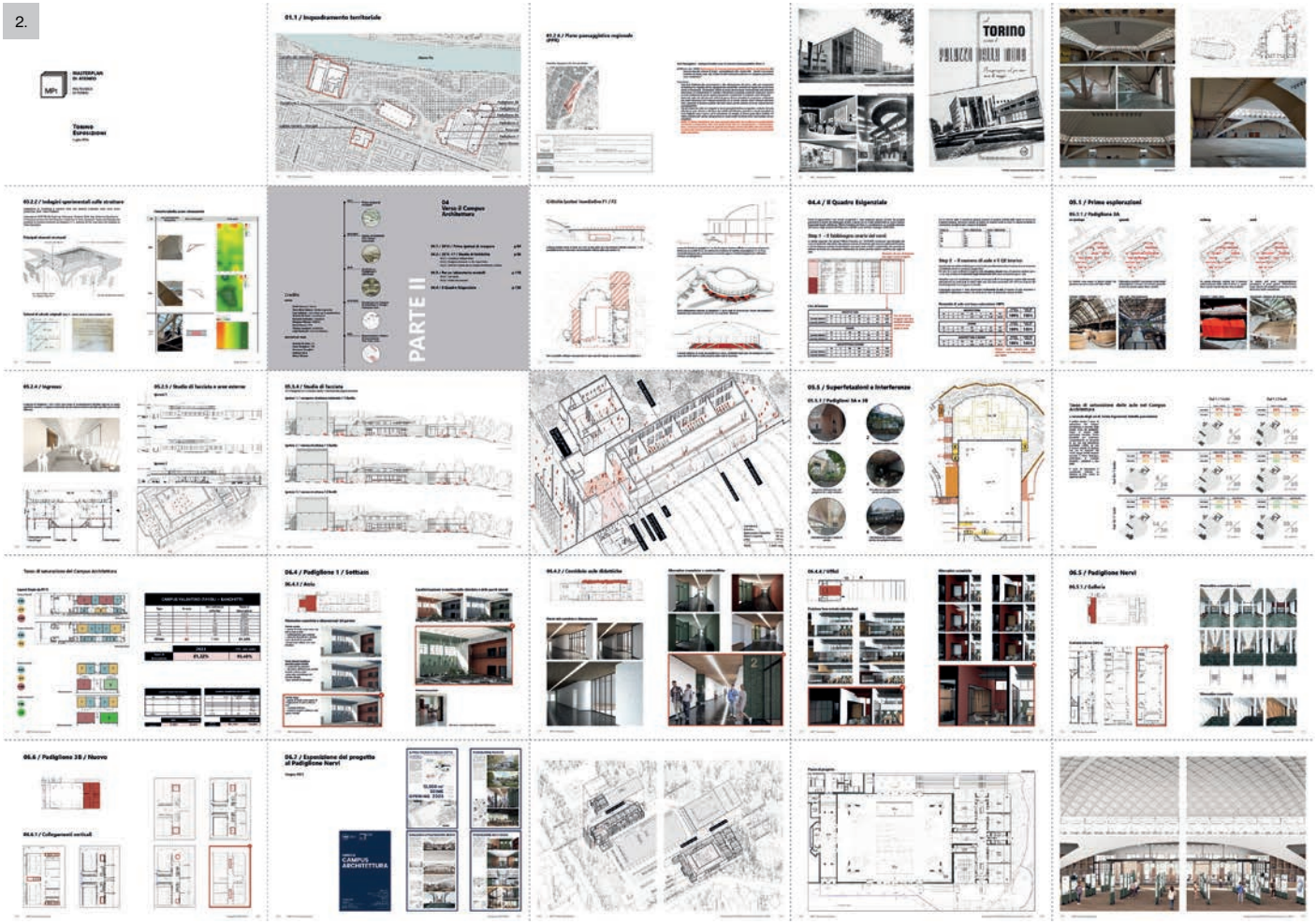
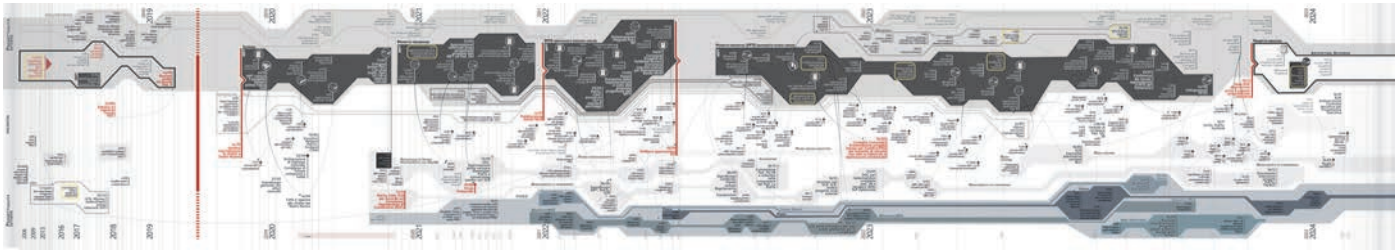

01.1 / Inquadramento territoriale
TORINO
PALAZZO DELLO SPORT
PARTE II
04
Verso il Campus
Architettura
04.4 / Il Quadro Esigenziale
05.1 / Prime esplorazioni
05.5 / Superfetazioni e interferenze
06.4 / Padiglione 1 / Settimo
06.5 / Padiglione Nervi
06.6 / Padiglione 3B / Nuovo
06.7 / Esposizione del progetto al Padiglione Nervi
CAMPUS ARCHITETTURA

3.



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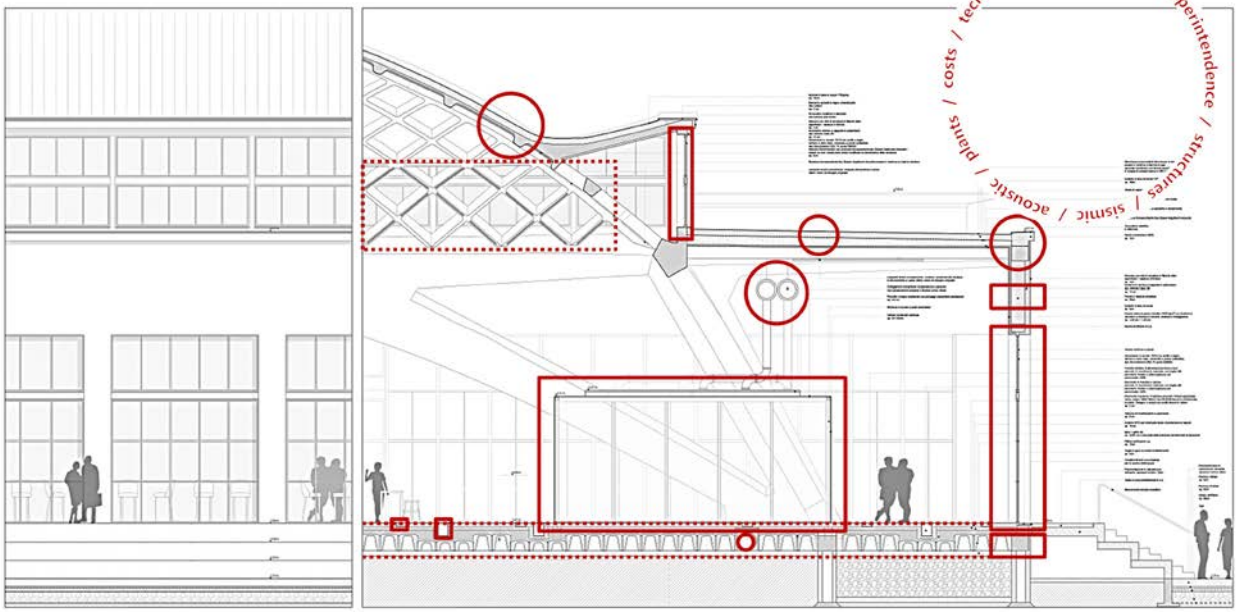
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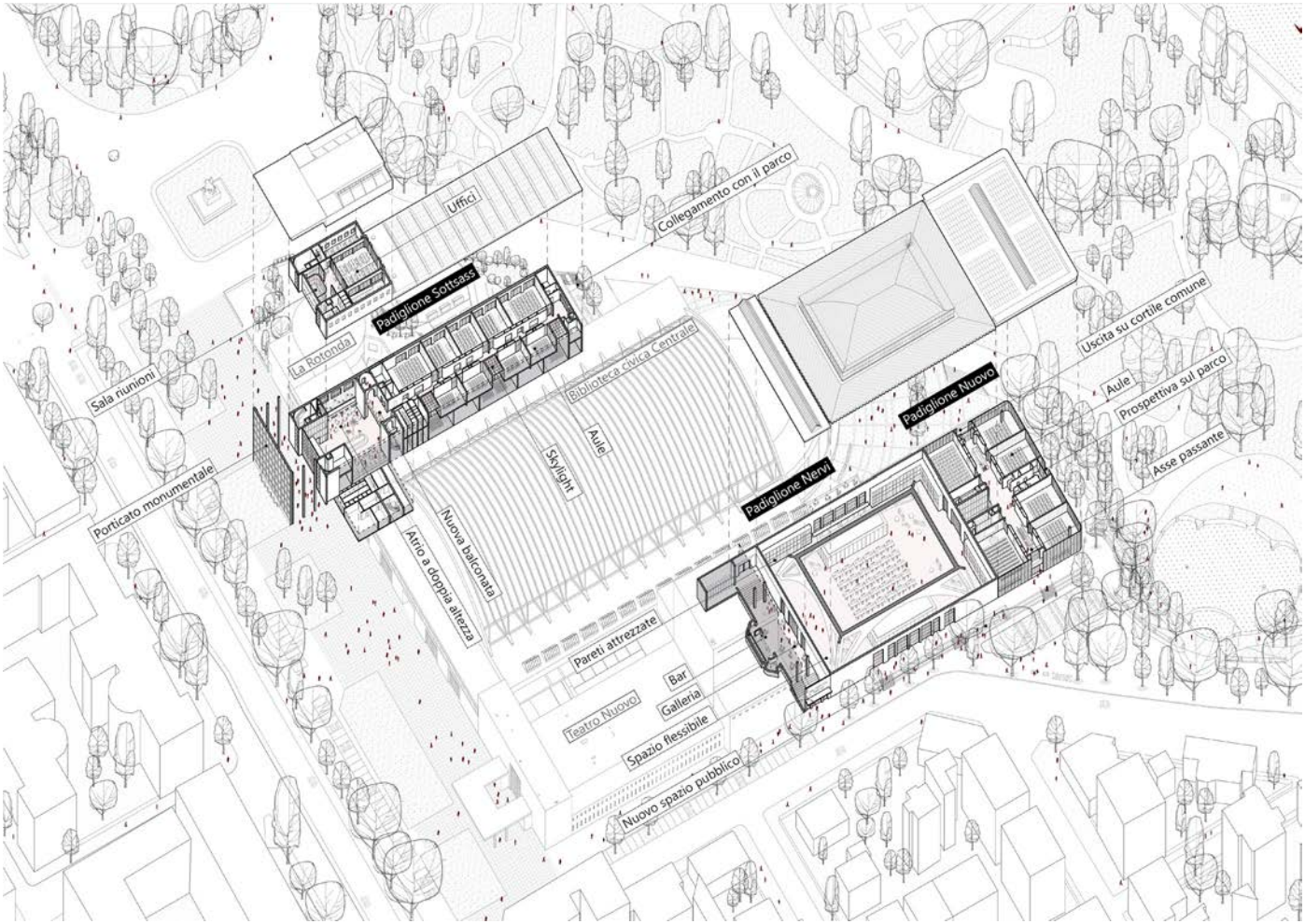
Uffici
Padiglione Sottsass
La Rotonda
Sala riunioni
Portico monumentale
Biblioteca civica Centrale
Aule
Skylight
Nuova balconata
Atrio a doppia altezza
Collegamento con il parco
Padiglione Nuovo
Padiglione Nervi
Uscita su cortile comune
Aule
Prospettiva sul parco
Asse passante
Pareti attrezzate
Bar
Galleria
Teatro Nuovo
Spazio flessibile
Nuovo spazio pubblico