

Introduction

The decline of industrial production has left Italian cities with a vast legacy of factories, warehouses and productive complexes that have lost their original function. After the end of industrial activity, these sites have followed different trajectories: some have been demolished, others have remained abandoned or underused, while others have been preserved and adapted to new functions. This thesis focuses on a specific group within this wider landscape: former industrial buildings that have been converted into cultural and exhibition spaces, approached from the perspective of architectural history. The research asks how former industrial buildings become exhibition spaces, and what happens to their architecture and to the memory of their productive life when they do.

The thesis originated in the architectural analysis of three complexes: Pirelli HangarBicocca in Milan, Città della Scienza in Naples and Museo del Tessuto in Prato. Each is examined as the history of a building: its origins and productive function, its architecture, the transformations undergone during its industrial life, the circumstances of its closure, and the project that turned it into a cultural venue, always in relation to the surrounding territory. The cases differ in scale, geographical setting, industrial history and cultural mission. HangarBicocca occupies part of the former Breda works in the Milanese industrial belt and is now a centre for contemporary art. Città della Scienza stands in Bagnoli and forms part of a much broader process of transformation of a former industrial area. Museo del Tessuto is housed in the Campolmi textile complex and is closely tied to the industrial history of Prato.

What emerges from this analysis is that, although all three buildings now host exhibitions, they have been adapted in very different ways. Each reconciles the existing structures with the demands of its new function to a different degree: in what was preserved, altered or added, and in how visible the industrial past remains to visitors. The thesis takes this variety as its subject. Its aim is to show that the conversion of industrial buildings into exhibition spaces is not a single operation but a range of

solutions, shaped by the original architecture, the history and context of the site, and the choices made in the conversion project. The present cultural use is therefore treated as the latest stage of a longer architectural history.

The histories of the three sites are reconstructed through published studies, institutional documentation and archival material, complemented where available by architectural drawings, historical photographs and project descriptions, as well as by direct contact with the institutions responsible for the management of the sites. Visits to all three sites made it possible to compare the documented history of each building with its present spatial organisation.

The literature relevant to this research brings together several interconnected fields, particularly industrial heritage, urban transformation and adaptive reuse. Studies of industrial archaeology contributed to recognising industrial buildings not only as obsolete productive structures, but also as historical records of architecture, labour and collective memory. In this context, Eugenio Battisti's *Archeologia industriale* (1977) represents an important reference for understanding the cultural and historical value of industrial remains. From the 1980s onwards, the debate increasingly addressed the transformation of the existing city and the opportunities offered by abandoned industrial areas. Vittorio Gregotti and Bernardo Secchi questioned approaches based on replacement and *tabula rasa*, proposing instead to consider existing structures and urban voids as part of processes of modification and transformation. This perspective was further developed in studies by Massimo Grandi and Michelangelo Russo, which examined the consequences of industrial decline and the potential of disused areas within broader processes of urban regeneration.

A second body of literature concerns the reuse and transformation of existing buildings. Kenneth Powell's work on the conversion of historic buildings for new uses, together with the studies of Bie Plevoets and Koenraad Van Cleempoel, provides a theoretical basis for understanding adaptive reuse as a process that negotiates between the existing building and the requirements of a new function. Their research highlights the tension between preservation and transformation, which is particularly

relevant when dealing with structures whose original function has disappeared. In the Italian context, studies by Cesare Sposito further address strategies for the recovery and adaptation of disused industrial buildings and areas. This literature provides the conceptual framework through which the architectural transformations examined in this thesis are interpreted.

The reuse of former industrial buildings for cultural and exhibition purposes represents one of the possible outcomes of these processes. International examples such as the Tate Modern in London and the regeneration of the Ruhr area demonstrate how industrial structures and sites can acquire new cultural and social functions while retaining elements of their industrial identity. However, these transformations involve different degrees of preservation, adaptation and reinterpretation, depending on the characteristics of the existing structure, the new programme and the wider urban context.

Building on these approaches, this thesis focuses on the transition of former industrial buildings from productive structures to cultural spaces. Rather than considering the new cultural function independently from the history of the building, it examines how the original architecture, industrial identity and traces of previous use interact with the requirements of the new programme. Through the comparative analysis of three Italian cases, the research therefore brings together historical reconstruction and architectural analysis to investigate how industrial heritage is preserved, transformed and experienced when given a new cultural use.

Chapter 1 establishes the historical and theoretical framework. It traces the transformation of industrial production and the emergence of the industrial void, the development of industrial heritage as a field of study and conservation, and adaptive reuse as a response to abandonment. It concludes with a selection of European examples of industrial heritage reuse, which broadens the geographical scope of the discussion and situates the three Italian case studies within a wider context of industrial transformation and cultural reuse.

Chapter 2 examines Pirelli HangarBicocca, Città della Scienza and Museo del Tessuto through a common structure: historical-industrial context, original architecture, subsequent transformations, process of conversion and current cultural use. For each case, it considers the elements of the industrial structures that were retained or modified, as well as the relationship between the reused buildings and their surrounding territories.

Chapter 3 opens by framing adaptive reuse as a negotiation between preservation and transformation, rather than as the simple assignment of a new function to an existing building. It then compares the three cases, looking at the degree of preservation and adaptation, the visibility of the industrial character, the new architectural elements introduced and the experience of users. It closes by placing these observations within the wider Italian context of industrial abandonment and cultural reuse, including recent national initiatives concerning abandoned cultural heritage and disused industrial areas.

By following three buildings from their productive origins to their present condition, this thesis brings together historical reconstruction, architectural analysis and comparison, dimensions that are often treated separately in the existing literature. Its contribution is to show how former industrial buildings can retain traces and meanings of their productive past even after their function has changed. These persist, to different degrees, in their structures, materials and architectural traces, as well as in their relationship with the surrounding territory.

CHAPTER 1 – The Industrial Legacy: From Abandonment to Urban Resource

1.1 Defining the Industrial Heritage: From Abandonment to Opportunity

The topic of adaptive reuse of abandoned industrial heritage constitutes a broad and multifaceted field of research. It represents a wide range of disciplines, including urban studies, architecture, planning policies, and heritage studies, while also drawing upon history, geography, and economic analysis in order to fully grasp the complexity and dynamic nature of the phenomenon. This is because the interdisciplinary approach is connected to the fact that it is not possible to understand the phenomenon of the abandoned industrial area through the analysis of only one factor, but rather through the combined analysis of spatial, social, economic, and cultural factors.

From the 1970s onwards, the significance of abandoned industrial spaces became increasingly evident: that is because the productive functions for which these areas had originally been conceived progressively ceased, partially or entirely, they began to be perceived not merely as remnants of a declining era, but as potential resources for urban transformation. The impact of the industrial crisis stimulated, by the 1980s, an extensive body of scholarship in both Europe and Italy, reflecting a growing awareness of the strategic value that these spaces could hold within the large metropolitan city¹.

These spaces, no longer functional within the existing productive system, began to be perceived not only as remains of a declining industrial era, but also as opportunities for new uses. This scheme emerged as a direct consequence of profound shifts within post-industrial society, which was undergoing significant economic, social, technological and political changes. According to Grandi this transition is described as a move away from an economic system centred on commodity production and a social model structured around the Taylorist production methods and the factory–city paradigm: the industrial urban model in which the factory constituted the central organising

¹ Massimo GRANDI, *La città del dopo-crisi. Riconversione urbana e nuovi processi di valorizzazione: una verifica sull'area pratese*, Firenze, Alinea Editrice, 1991, p. 16

element of the urban system, linking production, housing, and infrastructure within a single functional and economic logic². From the late 1970s and early 1980s, the decentralisation of production processes and the growing importance of the service sector initiated a phase of metropolitan disaggregation that progressively undermined the value system of the industrial age, resulting in vast areas of industrial development that saw their spatial and symbolic functions challenged in the urban fabric. To fully understand the phenomenon of industrial abandonment and its contemporary reinterpretation, it is necessary to adopt a long-term historical perspective since it's not a recent invention or an expectational condition linked exclusively to industrial decline. On the contrary, processes of adaptation, reappropriation and transformation have accompanied the evolution of settlements and cities since their earliest forms, constituting a recurrent and, to some extent, structural dimension of urban development.

In *Il "riqualificar facendo" e le aree dismesse*, Imbesi proposes a historical reading that frames reuse as a continuous and non-disruptive practice. Referring to the ancient city, she underlines how the lack of use of individual buildings or entire urban sectors was frequently triggered by events such as wars, epidemics or changes in political power³. However, these episodes did not lead to a crisis of the settlement system; rather, they activated processes of adaptation already present in the existing urban structure, producing a continuity of transformation rather than a rupture. In this regard, the relationship between the "new" and the "old" is not conceived in oppositional terms, but as an integrative process in which pre-existing forms are reinterpreted and re-signified.

This long-term perspective is confirmed by a broader body of scholarship on adaptive reuse. As Powell observes, the reuse of existing buildings is above all a matter of common-sense economics, and it is a process that has unfolded throughout history⁴. One of the most emblematic examples of

² M. GRANDI, *La città del dopo-crisi... cit.*, p. 20

³ Paola Nicoletta IMBESI, *Il "riqualificar facendo" e le aree dismesse. Il senso di un'esperienza di progettazione partecipata*, Gangemi Editore: Roma, 2012, p. 19

⁴ Kenneth POWELL, *Architecture reborn. Converting old buildings for new uses*, New York, Rizzoli International Publications, 1999, p. 10

this early transformative logic is the conversion of pagan temples into Christian churches, a phenomenon that developed primarily during Late Antiquity and, to a more limited extent, in the early Medieval period. This practice clearly demonstrates how transformation operated through reinterpretation rather than replacement. Similarly, during the Renaissance period, classical monuments were transformed for new uses, while during the French Revolution religious buildings were transformed for industrial functions or military uses after they had been confiscated and sold⁵. In all these cases, the driving force behind reuse was essentially functional and financial, with little or no concern for the historical character of the building being transformed⁶.

This pragmatic attitude persisted well into the early modern period, Stone observes that until the eighteenth century the prevailing approach was simply to add to or modify any building in the style of the time, treating transformation as a natural and unremarkable process⁷. The dissolution of English monasteries between 1536 and 1541, which led to the widespread conversion of religious buildings into private dwellings, is a telling example of how ideological and economic change could radically reshape the built environment without any preservationist concern. In these historical phases, reuse was therefore not perceived as an exceptional intervention, but rather as an ordinary and legitimate mechanism of urban evolution. What emerges from this overview is that the relationship between buildings and their transformation has never followed a single logic or a linear trajectory. Across different historical periods and cultural contexts, reuse has been declined through fundamentally different attitudes: adding to existing structures in the prevailing style of the time, converting them for radically new functions, or selectively reinterpreting their spatial and material qualities. What these approaches share, however, is a recognition, whether conscious or not, that the built environment is not a static inheritance but a dynamic resource, continuously renegotiated in response to changing economic, social and cultural conditions. It is precisely this long-term

⁵ Bie PLEVOETS, Koenraad VAN CLEEMPOEL, *Adaptive reuse as a strategy towards conservation of cultural heritage: a literature review*, in *WIT Transactions on The Built Environment*, vol. 118, WIT Press, 2011, p. 156

⁶ K. POWELL, *Architecture reborn...*, cit, p. 15

⁷ Sally STONE, *Undoing Buildings: Adaptive Reuse and Cultural Memory*, London, Routledge, 2020, p. 5

continuity of adaptive practice that makes the transformations introduced by the Industrial Revolution in the nineteenth century not a rupture with the past, but rather a new and more complex chapter in an enduring history of urban change.

Industrial production, which had previously been widely diffused within the urban fabric, was progressively relocated and concentrated in specific areas, often on the periphery of consolidated city centres. This process introduced new dynamics of functional reorganisation and unprecedented forms of spatial expansion, reshaping the relationship between production, residence and public life in ways that had no precedent in earlier urban history. The economic logic of industrialisation was inflexible: buildings and areas that could no longer serve the needs of modern production were progressively marginalised, and the drive towards new construction increasingly overshadowed the adaptive reuse of existing structures⁸.

It was only in the twentieth century that this tendency found a fully theorised formulation. The functionalist and rationalist paradigm, most explicitly articulated in the urban planning discourse of the 1920s and 1930s, then further discussed in documents such as the Athens Charter of 1933, promoted an understanding of the city based on efficiency, strict functional separation and zoning. Within this framework, the modernist vision tended to treat the existing city as an obstacle rather than a resource: old buildings were associated with obsolescence, and large-scale demolition and new construction were seen as the natural instruments of urban progress⁹. It was precisely this destructive approach to the city that would eventually provoke a strong cultural and architectural reaction, laying the groundwork for a renewed interest in the reuse and transformation of existing buildings.

The post-war period brought further pressures on the existing urban fabric, though the nature of these pressures varied significantly across different national contexts. In several Northern European and Anglo-American cities, reconstruction strategies were at times guided by a radical logic of tabula

⁸ K. POWELL, *Architecture reborn...* cit., p. 16

⁹ K. POWELL, *Architecture reborn...* cit., p. 16

rasa, favouring the systematic demolition of pre-existing structures, considered obsolete or decayed, in favour of standardised and “rational” new developments. This approach contributed to the formation of extensive areas of functional obsolescence and to a profound rupture with the accumulated layers of urban history.

In the Italian context, however, the trajectory was substantially different. The urban fabric of Italian cities, even where severely damaged by wartime bombing, remained largely intact in its morphological structure: reconstruction generally followed pre-existing street patterns and building alignments rather than imposing entirely new layouts. The pressures on the built environment were expressed instead through intense speculative expansion on the urban periphery, which paradoxically left many consolidated central areas in a state of progressive abandonment and underuse. It is in this context that the economic crisis of the 1970s acted as a cause, prompting a broader cultural and disciplinary rethinking of the relationship between cities and their existing fabric, and opening new perspectives centred on reappropriation, reuse and the redesign of degraded and abandoned spaces.

1.2 Deindustrialisation and the Formation of Abandoned Areas

This historical background provides the basis for analysing the more recent dynamics that led to the widespread formation of abandoned industrial areas. Understanding why these spaces became vacant is a necessary step in order to address their contemporary reuse. However, as emphasised by Russo, the complexity of these transformations makes it difficult to separate causes and effects in a linear manner¹⁰. The decline of industrial areas results instead from a continuous and reciprocal interweaving of economic, social, technological and territorial processes.

From the mid-1960s onwards, profound changes in production systems became increasingly evident across Europe. Traditional industrial structures entered into crisis, factories and manufacturing plants

¹⁰ Michelangelo RUSSO, *Aree dismesse. Forma e risorsa della «città esistente»*, Edizioni Scientifiche Italiane, 1998, p. 96

were progressively closed, and new economic and organisational models were imposed, processes of decentralisation and relocation intensified, accompanied by technological innovation and a redefinition of the relationship between production, space and labour. As Secchi observes, the Taylorist model, which is based on the close association between land, labour and the production cycle, was progressively abandoned, while advances in technology made it possible to carry out production in increasingly smaller spaces, often dispersed across urban and rural interstices, weakening the traditional spatial concentration of industrial activities¹¹.

In this context, phenomena such as decentralisation, counter-urbanisation and deindustrialisation began to play a crucial role in reshaping urban and territorial configurations¹². The relocation of production activities from central urban areas to peripheral or non-metropolitan contexts followed the logic of decentralisation and contributed to the phenomenon of counter-urbanisation, defined as the redistribution of population and economic activities away from major metropolitan centres.

The causes of counter-urbanisation vary significantly across geographical contexts. In the Italian context, this process has been interpreted as a shift from a concentrated industrial model to a more fragmented and territorially distributed one¹³. This transition was driven by three main factors: the restructuring of large corporations into smaller, more flexible units, the rise of a peripheral underground economy of small workshops situated outside major urban centres; and the expansion of transport networks, which made it possible to produce goods far from the city.

Initially, this exit of industry from the urban spaces was perceived as a positive urban improvement, viewing it as a way to separate polluted production zones from residential areas. However, as the production moved further away, it became clear that this movement had left behind a legacy of spatial

¹¹ Bernardo SECCHI, *Le condizioni sono cambiate*, in «Casabella», 498-499, 1984, p. 8

¹² M. RUSSO, *Aree dismesse...*, cit., p. 96

¹³ M. RUSSO, *Aree dismesse...*, cit., p. 97

fractures. These massive, abandoned sites created voids in the urban fabric, breaking the continuity of the city and leaving behind spaces that were no longer functional but not yet transformed.

These dynamics had already been synthesised by Secchi, who described the contemporary urban condition as characterised by “an experience of progressive growth arrest and progressive dispersion”¹⁴. Such transformations did not occur abruptly but unfolded as part of a longer and more complex trajectory which, according to Russo, can be articulated into two main phases¹⁵.

The first phase, situated in the 1970s, can be described as a period of restructuring of social conflict and productive decentralisation. During these years, the crisis of the Fordist model, the socio-economic system based on mass production, standardised labour and the spatial concentration of manufacturing within large urban complexes, undermined the role of the large factory as the primary engine of the city meaning that the factory was no longer the undiscussed central node of labour and social life. This decline led to a shift toward a dispersed production system: while large-scale industrial complexes were being shut down, smaller, more flexible enterprises began to flourish. This phenomenon, often referred to as productive decentralisation, moved the center of the economy away from the city centre and into the territory. Frequently supported by informal or unregulated economic activities, this shift effectively emptied the large urban factories, transforming what were once symbols of industrial power into obsolete giants such as large-scale facilities that were now too vast and rigid for the new, fragmented economic reality. The second phase, which became more evident during the 1980s, is marked by economic instability, a slowdown in development, and the increasing internationalisation of the economy. In this context, deindustrialisation cannot be interpreted merely as a sectoral crisis, but rather as a structural transformation of the industrial system. Production processes were progressively reorganised towards more flexible and efficient models, aimed at achieving higher qualitative standards through

¹⁴ B. SECCHI, *Le condizioni sono cambiate...* cit., p. 10

¹⁵ M. RUSSO, *Aree dismesse...*, cit., p. 102

technological innovation, automation and informatization. As a result, industrial production required fewer raw materials, a reduced workforce and significantly less physical space, further weakening the relationship between industrial activities and the traditional urban fabric.

In the contemporary urban contexts, processes such as globalisation, transnational relocation, computerisation and automation have generated flows of goods, capital and information that increasingly operate independently from specific urban locations. As Russo argues, the city risks losing its cohesion as a territorially defined community and is progressively interpreted as an infrastructural support for activities whose decision-making processes are external to the local context¹⁶. The increasing multi-localisability and relocatability of economic activities weakens the identification between economic actors and the city itself.

Within this framework, urban space can be read through a “reticular interpretation”¹⁷: a discontinuous and uneven geography structured by networks of economic and political relations, overcoming the traditional notion of continuous, homogeneous space based on geographical proximity. Urban decline is therefore no longer understood solely in economic or demographic terms but also coincides with a loss of physical and spatial centrality. The transition from a hierarchically organised urban system to an interconnected network implies that centrality can no longer be associated with specific places but is instead distributed across multiple nodes according to their respective specialisations and interactions. With this transformation there’s no traditional opposition between centre and periphery, giving rise to fragmented and polycentric urban structures.

¹⁶ M. RUSSO, *Aree dismesse...*, cit., p. 110

¹⁷ M. RUSSO, *Aree dismesse...*, cit. p. 115

1.3 Abandonment as a critical point: the crisis of the growth paradigm

From the 1980s onwards, the reuse of abandoned industrial areas began to be considered a strategic opportunity for activating new forms of urban centrality, while attempting to counteract processes of de-urbanisation. These areas of intensive transformation often assume a decisive role in the reconfiguration of the city, contributing to the construction of new urban centralities.

Scholars and architects increasingly recognised that such areas could not be interpreted merely as residual or empty spaces, but rather as complex urban fragments deeply embedded in the historical, social and morphological structure of the city. Following this perspective, architectural and urban design practice is called upon to confront a new task: no longer the production of the city *ex novo*, but the capacity to engage critically with what already exists, meaning to work within, around and through the accumulated layers of the built environment. As Gregotti suggested in 1984, the challenge becomes that of “building in between what is already built”¹⁸. This shift marks a transformation in the role of the architect, from a creator of new volumes to a critical interpreter of existing urban stratifications, acknowledging the built environment as both a constraint and a resource for future transformation.

Bernardo Secchi was a pivotal figure in explaining this shift. In his analysis titled “*The conditions are no longer the same*” he argues that industrial abandonment should not be interpreted as an anomaly to be corrected, but rather as a structural condition of the contemporary city. The presence of dismissed areas reveals the limits of growth-oriented planning models, which Secchi identifies as the driving force of modern architecture and urban planning, and exposes the need to move beyond expansion as the primary strategy for urban development.

“The fundamental experience starting from which modern architecture, but especially modern town planning, equipped themselves with a constitution is that of growth, maybe the only and

¹⁸ Vittorio GREGOTTI, *Architettura come modificazione*, in «Casabella», 498-499, 1984, p. 3

principal founding hypothesis of modernity: growth of the city, of the built land around it, of something new which is continuously added to what is existing, until this is suffocated, substituted, transformed and eventually negated¹⁹.”

Under these guidelines, attention is redirected towards the existing city, understood as a stratified organism shaped by successive phases of use, transformation and obsolescence. Abandoned industrial sites are therefore no longer conceived as interruptions within the urban fabric, but rather as critical points where new relationships between space, society and production can be redefined.

“But the new situation does not necessarily seem to me describable as an “excrecence”, a “proliferation”, a “gangrene”, a “metastasis”, an uncontrolled and uncontrollable disease. The common use of these words demonstrates our difficulty in seeing. We understand the theme is no longer that of the construction “ex novo” of the modern city: we understand that these terms can no longer signify the many, maybe too many, things to which the demonstrative examples of modern town planning referred to. The spaces within which we will live the coming decades are largely already built. Now the theme must be that of providing a sense and a future by continuously modifying the city, the territory and the existing materials²⁰.”

A similar position is articulated by Vittorio Gregotti, who interprets industrial abandonment as an opportunity to rethink the relationship between project and plan. In his writings, Gregotti emphasises that the relative stability of the European city, characterised by limited physical expansion, leads to a concentration of economic, administrative and design efforts on the transformation of the built

¹⁹ B. SECCHI, *Le condizioni sono cambiate...*, cit., p. 8 Original text: “L’esperienza fondamentale a partire dalla quale l’architettura e soprattutto l’urbanistica moderna si sono date una costituzione è un’esperienza di crescita, forse l’unica o la principale ipotesi fondatrice della modernità: di crescita della città, del suolo edificato attorno ad essa, di qualcosa di nuovo che di continuo si aggiunge a ciò che preesiste sino a sommergerlo, sostituirlo, trasformarlo, eventualmente negarlo.”

²⁰ B. SECCHI, *Le condizioni sono cambiate...*, cit., p.12 Original text: “Ma non per questo la nuova situazione mi sembra debba essere necessariamente descritta come “escrescenza”, “proliferazione”, “cancrena”, “metastasi”, malattia incontrollata ed incontrollabile. Il ricorso così frequente a questi termini mostra una nostra difficoltà della visione. Ci rendiamo conto che il tema non è più quello della costruzione “ex-novo” della “città moderna”; che questi termini non possono più significare le molte forse troppe cose cui alludevano gli esempi dimostrativi dell’urbanistica e dell’architettura moderne. Lo spazio entro il quale vivremo i prossimi decenni è in gran parte già costruito. Il tema è ora quello di dare senso e futuro attraverso continue modificazioni alla città, al territorio, ai materiali esistenti [...]”.

environment. This condition calls for renewed attention to the existing city, not only in ecological terms but, above all, in morphological and spatial ones. For Gregotti, reuse implies a conception of the project as a process of interaction with the context, conceived as modification rather than radical substitution. In this sense, abandoned industrial areas become privileged fields of experimentation, where the project engages in dialogue with both the material and immaterial values embedded in the site.

“This, as is well known, implies for civil society as a whole a renewed attention to the environment, not only in ecological terms but above all in morphological ones, and more generally to the values of the existing built fabric. For architectural design, this encourages an approach based on interactive exchanges with the development of planning instruments (rather than a merely deductive process from plan to project). More broadly, for the discipline as a whole, it fosters the development of an idea of design constructed through dialogue with the context, conceived as its modification rather than as a radical—and today often culpably naïve—alternative²¹.”

This theoretical reorientation is also reflected in the debate hosted by architectural journals such as *Casabella* and *Rassegna*, which, during the 1980s and early 1990s, addressed the phenomenon of industrial abandonment through different but complementary perspectives. The two journals confront the same issue while operating at different scales²². *Casabella* primarily focuses on the urban scale, reconstructing a period in which urban planning is conceived as the principal instrument for the conversion of dismissed areas. Following this perspective, the urban plan assumes a strategic and coordinating role, capable of managing complex

²¹ Vittorio GREGOTTI, *Editoriale*, in «Rassegna», 42, 1990, p. 5. Original text: “Questo, come è noto, significa per l’intera società civile una nuova attenzione all’ambiente in termini non solo ecologici ma soprattutto morfologici e, in generale, ai valori dell’esistente; per il progetto ciò favorisce una concezione fatta di scambi interattivi con gli sviluppi del piano (e non più solo deduttivi dal piano al progetto) e, più in generale per la nostra disciplina, lo sviluppo di un’idea di progetto costruito a partire dal discorso con il contesto, concepito come sua modificazione piuttosto che come radicale, e oggi spesso colpevolmente ingenua, alternativa.”

²² Giulia SETTI, *Oltre la dismissione. Strategie di recupero per tessuti e manufatti industriali*, Alleli, 2018, p. 27

transformation processes and redefining the relationship between disused areas and the wider urban context.

Rassegna, on the other hand, shifts attention towards the architectural scale, and more specifically towards the industrial building itself. Rather than addressing abandonment solely as a territorial issue, the journal highlights the need for a “change of scale”, directing attention to the internal complexity of industrial artefacts. Factories, warehouses and production plants are analysed not as neutral containers, but as specific spatial and constructive systems shaped by precise technological, functional and symbolic logics. This approach foregrounds the architectural value of industrial structures and opens the possibility of their reinterpretation through design.

Despite these different perspectives, the contributions published in *Casabella* and *Rassegna* converge on a fundamental assumption: dismissed industrial areas are not empty spaces devoid of meaning, but rather places dense with memory, history and spatial identity. From this perspective, abandonment does not erase meaning but rather suspends it, creating a condition of availability that calls for conscious and critical forms of reuse.

This shared awareness marks a decisive step in the evolution of the debate on industrial reuse. The recognition of industrial sites as carriers of memory and urban value undermines the idea of *tabula rasa* and challenges purely functionalist or speculative approaches to transformation. In this theoretical framework, the question of reuse emerges not simply as a technical response to obsolescence, but as a cultural and political choice. Reusing industrial spaces implies taking a position on how the city relates to its past, how it negotiates change, and how it constructs new meanings based on what already exists. This shift in perspective provides the conceptual foundation for understanding contemporary practices of adaptive reuse.

This shared awareness marks a decisive step in the evolution of the debate on industrial reuse. The recognition of industrial sites as carriers of memory and urban value weaken the idea of *tabula rasa*

and challenges purely functionalist or speculative approaches to transformation. Within this framework, the concept of industrial archaeology gained increasing relevance, starting to be understood not merely as the technical study and documentation of industrial artefacts, machinery and production sites, but as a broader cultural practice aimed at recognising the historical and material significance of industrial heritage.

Originally developed in Britain during the 1950s and 1960s, industrial archaeology gradually evolved from a discipline focused on the recording of threatened structures into a critical framework for assessing the cultural value embedded in industrial buildings and landscapes. In the Italian context, this perspective was articulated with particular clarity by Eugenio Battisti, who, writing in the late 1970s, emphasised the urgency of documenting and preserving the most significant industrial remains before their irreversible loss²³. For Battisti, industrial archaeology represents first and foremost a cognitive tool, an instrument of knowledge capable of revealing the historical, architectural and social stratifications embedded within industrial sites.

Importantly, Battisti expands the notion of preservation beyond the mere conservation of physical structures. To preserve an industrial site means also to recover its archives, catalogues and documentary traces, thereby reconstructing its broader cultural and productive history²⁴. In this sense, reuse is not conceived as a rupture, but rather as a moment of psychological and cultural transition, in which memory, identity and even nostalgia play a fundamental role in mediating the transformation process.

At the same time, Battisti acknowledges the limits and challenges inherent in this approach. Not all industrial buildings can be preserved or meaningfully reused, and many risk remaining empty containers unless supported by viable new functions. This consideration introduces a crucial shift in perspective: the success of adaptive reuse depends not only on the recognition of historical value, but

²³ Eugenio BATTISTI, *Archeologia industriale. Architettura, lavoro e memoria*, Jaca Book, Milano, 1977, p. 31

²⁴ E. BATTISTI, *Archeologia industriale...*, cit., p. 38

also on the careful definition of new uses capable of ensuring the building's continuity within the urban and social fabric.

1.4 From urban void to cultural resource: recognising the value of dismissed areas

The abandonment of industrial areas is the outcome of complex economic, social, and productive transformations, as previously discussed. Their reuse and re-appropriation, therefore, cannot be understood as merely technical or economic operations; rather, they represent a profound cultural shift that requires a rethinking of the city's identity.

Until the late twentieth century, such sites were largely perceived as voids, physical and symbolic gaps within the urban fabric. This condition of emptiness was never neutral: by denying the historical and symbolic value of these structures, it implicitly legitimised demolition and treated them as obsolete remnants of a concluded era. As the limitations of the *tabula rasa* approach became increasingly evident, however, a new theoretical framework gradually emerged, repositioning abandonment as a condition of potential rather than absence. As Secchi observes, “the void represents a design theme which cannot easily be brought back to conceptually simple solutions”²⁵, requiring instead an extension in the field of observation and an openness to new forms of meaning.

Within this line of thought, several theoretical positions sought to overcome the logic of erasure. A significant contribution in this regard is the concept of the “project of subtraction” proposed by Costantino Patestos²⁶. Patestos criticises purely museological approaches to conservation, arguing that they risk “mortifying”²⁷ dismissed areas by isolating them from the everyday life of the city. Instead, he proposes a transformative strategy in which selective removal becomes a design tool capable of revealing the spatial, structural, and historical values embedded in the existing fabric. From

²⁵ Bernardo SECCHI, *Un problema urbano: l'occasione dei vuoti*, in «Casabella», 503, 1984, p. 18

²⁶ Costantino PATESTOS, *L'energia dell'assenza, ovvero progettare per vuoti*, in *Il progetto della sottrazione*, Roma, Dipartimento di Architettura e Analisi della Città, Università degli Studi di Roma La Sapienza, 1997, p. 110

²⁷ C. PATESTOS, *L'energia dell'assenza...*, cit, p. 110

this perspective, subtraction is not a form of loss but an active interpretative operation that enables industrial heritage to be re-signified rather than cancelled.

These reflections contributed to the emergence of a more integrated vision of abandoned sites. Secchi notes that the dispersed contemporary city is increasingly forced to confront its own voids and interruptions²⁸. This evolving framework shows that dismissed areas have gradually been recognised as key components of urban transformation, capable of triggering broader regeneration processes²⁹. In an increasingly complex and unpredictable urban field, the need has emerged for design tools able to capture the multiple layers of value, historical, cultural, social, and economic, embedded in these places³⁰.

From this perspective, two fundamental considerations arise. First, dismissed areas are not devoid of meaning; on the contrary, they concentrate memories, experiences, and collective representations. Second, they are not merely remnants of the past, but resources oriented towards future urban development. Recognising their symbolic and social significance makes their reintegration into urban life a coherent and necessary process. Russo reinforced this interpretation when he emphasised that the forms of the industrial city and their subsequent abandonment acquire a strong testimonial and identity value capable of generating the very notion of heritage³¹. In this perspective, the industrial urban fabric can be read as a historical sign, while factories and productive settlements become documents deeply rooted in collective memory and imagination. Their reuse emerges as a fundamental practice of urban requalification.

Russo further highlights the dual perspective inherent in dismissed areas: on the one hand, they may support processes of urban retreat and environmental rebalancing through selective demolition; on the other, they can be functionally enhanced and reused as components of the built heritage.

²⁸ B. SECCHI, *Un problema urbano...* cit., p. 18

²⁹ Cesare SPOSITO, *Sul recupero delle aree industriali dismesse. Tecnologie, materiali, impianti ecosostenibili e innovativi*, Santarcangelo di Romagna, Maggioli Editore, 2012, p. 14

³⁰ C. SPOSITO, *Sul recupero delle aree industriali...*, cit., p. 14

³¹ M. RUSSO, *Aree dismesse...* cit., p. 16

Considering abandoned industrial sites as resources for redefining urban centrality and strengthening identity therefore represents a strategic horizon for contemporary intervention policies. In this sense, the potential quality of the dismissed area as a “void” is reinterpreted positively, overturning its traditional association with absence and lack of identity.

This evolution is closely linked to the broader transformation of the concept of heritage itself, which Russo also discusses. As Choay underlines, heritage can no longer be limited to artistic or monumental objects but must include typological, functional, and social dimensions. Industrial areas fully belong to this expanded notion of heritage because of their role in shaping social identities and everyday practices³². Preservation, consequently, is not a neutral act but a critical and selective process through which society decides what deserves transmission to future generations³³.

Within this framework, any transformative action concerning dismissed areas must engage with the identities constructed around them and with their structural role in the surrounding urban fabric. When reuse is intended as a tool for rebuilding community identity, projects must mobilise both material and immaterial resources. Heritage transmission is never automatic; it requires conscious strategies capable of ensuring usability, social relevance, and long-term sustainability.

The issue of abandonment has become increasingly central in both national and European debates. Initially addressed mainly within the field of industrial archaeology, understood, as previously discussed, as a critical framework for recognising the cultural value of industrial heritage, the discussion has progressively shifted toward reuse and social regeneration. It became clear that emphasises that beyond preservation it is now essential to confront physical degradation and economic decline by generating new functions, new forms, and new meanings capable of reintegrating these areas into contemporary urban life³⁴.

³² Françoise CHOAY, *L'allegoria del patrimonio*, Roma, Officina Edizioni, 1995, p. 136

³³ C. SPOSITO, *Sul recupero delle aree industriali dismesse...* cit., p. 19

³⁴ M. RUSSO, *Aree dismesse...* cit., p. 30

The condition of abandonment has also been approached from a philosophical perspective. In 2004 Augé interprets ruins and abandoned spaces as sites of temporal suspension: places caught between the persistence of the past and the openness to future transformation³⁵. In this intermediate state, which Augé defines as an experience of “pure time”³⁶, the ordinary markers of social and functional life have dissolved, leaving behind a space of latent possibility. This reading is particularly productive when applied to dismissed industrial areas: stripped of their original productive function, these sites do not become empty in the neutral sense, but rather accumulate time, layers of memory, interrupted practices, and unrealised futures that any project of reuse must confront and negotiate. Consequently, strategies of recovery and conscious redevelopment must address multiple and interconnected dimensions, including architectural quality, landscape relationships, accessibility systems, infrastructure, and broader urban and regional dynamics. Within this enlarged perspective, urban regeneration emerged, particularly from the 1970s onward, as a critical alternative to approaches based solely on recovery and conservation. Consolidated during the 1980s and 1990s, regeneration introduced a more integrated vision aimed at limiting land consumption while improving overall urban quality. The innovative reuse of abandoned areas for cultural, social, and productive activities has become a key instrument of contemporary urban transformation³⁷. Former industrial sites are increasingly reinterpreted as active urban resources: places where new social relations are constructed, creative economies develop, and local identities are renegotiated while maintaining continuity with their historical character.

The recognition of dismissed areas as complex cultural and urban resources, rather than mere residual spaces, as it was presented above, has progressively demanded more structured responses in different areas, such as the institutional and legislative level. Translating this theoretical awareness into

³⁵ Marc AUGÉ, *Rovine e macerie: Il senso del tempo*, Torino, Bollati Boringhieri, 2004, p. 94

³⁶ M. AUGÉ, *Rovine e macerie...* cit., p. 96

³⁷ C. SPOSITO, *Sul recupero delle aree industriali dismesse...* cit., p. 22

concrete transformation processes has required the development of specific governance frameworks and planning instruments capable of coordinating the multiple actors, scales and interests involved in regeneration.

1.5 Governance and Planning: Legislative Frameworks for Regeneration

The regeneration of abandoned industrial sites is not only a design challenge but also a matter of governance and planning policy and regulatory coordination. Over the past decades, European and national legislative frameworks policies have progressively shifted from emergency-based interventions towards a more structured and proactive framework aimed at promoting sustainable urban development and the reuse of existing urban land.

1.5.1 The European Framework

The European approach to dismissed industrial sites and urban brownfields has evolved gradually over the past decades, reflecting broader transformations in urban policy and territorial governance. This evolution must be understood against a significant institutional constraint: urban planning has never been explicitly assigned as a competence to the European Union, meaning that the EU has always acted in this field indirectly, through instruments of regional and cohesion policy rather than through binding urban legislation. A decisive turning point in this trajectory was the reform of the Structural Funds in 1988, introduced on the back of the Single European Act of 1986, which for the first time systematically directed Community resources towards regional development objectives, including the conversion of areas affected by industrial decline. It is precisely from this reform that the growing attention of the European Commission towards cities and urban territories originates, marking the beginning of a progressive, even if indirect, engagement with urban policy at Community level³⁸.

³⁸ Carla TEDESCO, *Una politica europea per la città? L'implementazione di Urban a Bari, Bristol, Londra e Roma*, Milano, FrancoAngeli, 2005, p. 40

In its earliest phase, European engagement with brownfield sites was primarily framed within environmental policy³⁹. The rehabilitation of former industrial land was largely understood as a technical and regulatory issue related to contamination of soil, the responsibility of the environment, and the need to limit land consumption. Under these guidelines, brownfield redevelopment was considered to reduce the uncontrollable urban spreading by promoting the reuse of already urbanised land. For an extended period, the European Union lacked a dedicated legislative framework for brownfield regeneration. Instead, the issue was addressed indirectly through various environmental directives focusing on liability and urban renewal⁴⁰. However, the limitations of this fragmented approach became evident during the 1980s and 1990s. As deindustrialization accelerated across Europe, it became clear that brownfields were not merely environmental hazards; they represented a complex crisis defined by simultaneous economic decline, social marginalization, and spatial fragmentation⁴¹.

A more comprehensive perspective began to emerge during the 1990s, when the European Commission increasingly engaged with urban regeneration despite not having direct competence in spatial planning. The URBAN Community Initiative, launched in June 1994 as part of the European Structural Funds framework, represented the first explicit attempt by the European Commission to develop an integrated approach to urban regeneration at Community level. As defined in the Commission's guidelines, the strategy consisted of providing Community aid in support of integrated development programmes for geographically defined and limited parts of cities, addressing in a comprehensive way the economic, social and environmental problems of deprived urban areas, with priority given to innovative programmes of a demonstrative character⁴². During the 1994-1999

³⁹ Guido Alberto INZAGHI, Federico VANETTI, *Il recupero e la riqualificazione delle aree urbane dismesse: Procedure urbanistiche ed ambientali*, Milano, Giuffrè, 2011, p. 8

⁴⁰ M. RUSSO, *Aree dismesse...* cit., p. 35

⁴¹ C. TEDESCO, *Una politica europea per la città?* ... cit., p. 59

⁴² Court of Auditors of the European Union, *Special Report No 1/2001 concerning the URBAN Community Initiative, together with the Commission's replies*, Official Journal of the European Communities, No C 124, 25 April 2001. Available at: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2001:124:0001:0026:EN:PDF> (last accessed 13 March 2026)

programming period, the initiative provided funding for 118 urban areas, amounting to approximately 900 million euro from the Structural Funds and directly benefiting around 3.2 million people. A subsequent evaluation by the European Court of Auditors, however, noted significant limitations in the implementation of the initiative, highlighting the absence of precise and quantifiable objectives, a lack of transparency in the selection of eligible areas, and difficulties in realising the integrated approach in practice. A second phase, URBAN II (2000–2006), addressed the limitations identified in the first programme. Financed exclusively through the European Regional Development Fund, unlike URBAN I which had combined ERDF and ESF resources, URBAN II introduced a set of nine standard indicators for the selection of eligible areas and earmarked EUR 15 million specifically for transnational information-exchange schemes between cities. The Community's contribution for the period amounted to EUR 730 million, for a total investment of EUR 1.6 billion covering approximately 2.2 million people⁴³. The consolidation of this evolving European urban agenda occurred with the adoption of the Leipzig Charter on Sustainable European Cities, signed on 24-25 May 2007 during the informal Ministerial Meeting on Urban Development and Territorial Cohesion held under the German EU Council Presidency. As a document of the Member States, drawn up with the broad and transparent participation of European stakeholders, the Charter committed the ministers responsible for urban development to use the tool of integrated urban development and the related governance structures for its implementation⁴⁴.

The document articulates two interconnected recommendations. The first concerns the promotion of integrated urban development policy approaches at European scale, defined as a process in which

⁴³ European Commission, *Communication from the Commission to the Member States laying down guidelines for a Community Initiative concerning economic and social regeneration of cities and neighbourhoods in crisis in order to promote sustainable urban development (URBAN II)*, Official Journal C 141, 19 May 2000. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=LEGISSUM:g24209> (last accessed 13 March 2026)

⁴⁴ European Union, *Leipzig Charter on Sustainable European Cities*, adopted at the Informal Ministerial Meeting on Urban Development and Territorial Cohesion, Leipzig, 24-25 May 2007, available at <https://www.iut.nu/wp-content/uploads/2017/07/Final-Documents-of-the-Leipzig-Charter.pdf> (last accessed 18 March 2026)

«the spatial, sectoral and temporal aspects of key areas of urban policy are co-ordinated»⁴⁵. The second directs special attention to deprived neighbourhoods within the context of the city as a whole, recognising that within European cities «considerable differences may exist in terms of economic and social opportunities in the individual city areas» and that targeted intervention in these areas is both more cost-effective and socially necessary⁴⁶.

Of particular relevance for the themes addressed in this thesis is the Charter's emphasis on the physical environment of deprived areas, which explicitly calls for improving existing building stock with regard to design, physical conditions and energy efficiency, embedding such improvements within long-term development strategies that coordinate public and private investments. In this framework, the regeneration of abandoned urban areas, also including former industrial sites, is not merely a technical operation but an instrument of spatial justice and social cohesion. The Charter provided Member States with a shared normative reference for developing integrated regeneration policies, encouraging the incorporation of these principles into national and local planning frameworks.

More recently, these principles have been further reinforced by the New Leipzig Charter, adopted in November 2020 at the Informal Ministerial Meeting in Leipzig under the German EU Council Presidency⁴⁷. Updating the original framework in response to contemporary global challenges, the document structures its vision around three dimensions: the just city, the green city, and the productive city, emphasising place-based policies, participatory governance, and integrated planning strategies. Within this perspective, the regeneration of abandoned industrial areas is no longer interpreted solely as a matter of environmental recovery or physical redevelopment, but as part of a broader strategy aimed at promoting sustainable, inclusive, and resilient urban development.

⁴⁵ European Union, *Leipzig Charter*... cit.

⁴⁶ European Union, *Leipzig Charter*... cit.

⁴⁷ European Union, *New Leipzig Charter: The Transformative Power of Cities for the Common Good*, adopted at the Informal Ministerial Meeting on Urban Development, Leipzig, 30 November 2020. Available at: https://ec.europa.eu/regional_policy/sources/brochure/new_leipzig_charter/new_leipzig_charter_en.pdf (last accessed 18 March 2026)

Taken together, this trajectory highlights a distinctive characteristic of European urban policy: its fundamentally “soft” governance. Since spatial planning remains largely within the competence of Member States, the European Union has primarily influenced urban development through strategic frameworks, financial instruments, and policy guidelines rather than through binding legislation⁴⁸. Despite the absence of direct legislative authority, these mechanisms have exercised significant normative influence on national policies, encouraging Member States to progressively incorporate integrated urban regeneration principles into their own planning frameworks. It is within this broader European context that the Italian legislative and planning trajectory, discussed in the following section, must be understood.

1.5.2 The Italian Legislative Framework: From Recovery to Integrated Regeneration

The Italian approach to the regulation of dismissed and degraded urban spaces must be understood within the broader context of the country's planning tradition, which for decades remained anchored to a supply-oriented and expansion-driven model.

The foundational Legge Urbanistica n. 1150 of 1942, published in the Gazzetta Ufficiale n. 244 of 16 October 1942, established the Piano Regolatore Generale as the principal instrument of urban planning in Italy. As stated in Article 1 of the law, its declared scope was the regulation of «*l'assetto e l'incremento edilizio dei centri abitati e lo sviluppo urbanistico in genere*», that is, the organisation and building expansion of inhabited centres and urban development in general⁴⁹.

Enacted during the final years of the Fascist regime, the law inevitably reflects its historical context, particularly in its centralised administrative structure and the strong role attributed to public authorities in controlling urban development. However, as noted by Inzaghi and Vannetti, the law should not be interpreted solely through an ideological lens⁵⁰.

⁴⁸ C. TEDESCO, *Una politica europea per la città?* ... cit., p. 44

⁴⁹ Italia, *Legge 17 agosto 1942, n. 1150, Legge urbanistica*, Gazzetta Ufficiale n. 244, 16 ottobre 1942, art. 1. Available at: <https://www.gazzettaufficiale.it/eli/gu/1942/10/16/244/sg/pdf> (last accessed 18 March 2026)

⁵⁰ G. A. INZAGHI, F. VANETTI, *Il recupero e la riqualificazione*... cit., p. 26

Rather, it represented a fundamental turning point in the Italian planning system, as it introduced for the first time a general and mandatory framework requiring all municipalities to adopt their own urban planning instruments. From this perspective, the law can also be understood as a progressive legislative tool, aimed at promoting an organic and coordinated development of the territory while attempting to regulate and contain uncontrolled urban expansion. This dual nature, at once rooted in a specific political context yet oriented towards long-term structural organisation, highlights the complexity of the Italian urban planning tradition, in which regulatory continuity often transcends the circumstances of its origin.

This continuity is particularly evident in the post-war period, when the 1942 law remained substantially in force, regulating the reconstruction and rapid urban expansion of democratic and republican Italy without undergoing comprehensive reform. As a result, a planning framework conceived under an authoritarian regime became the primary instrument through which Italian cities were rebuilt and expanded during the economic boom of the 1950s and 1960s. While effective in guiding urban growth, this model remained fundamentally oriented towards new construction and territorial expansion, offering limited tools for addressing the existing built environment.

This limitation became increasingly evident in the following decades, as processes of industrial decline, urban obsolescence and the emergence of dismissed areas began to challenge the expansion-driven paradigm. A crucial turning point occurred with Legge n. 457 of 5 August 1978, *Norme per l'edilizia residenziale*, published in the Gazzetta Ufficiale n. 231 of 19 August 1978. Title IV of the law introduced for the first time an explicit framework for the recovery of the existing building stock. Article 27 established the concept of *zone di recupero*, defining them as areas where «*si rende opportuno il recupero del patrimonio edilizio ed urbanistico esistente mediante interventi rivolti alla conservazione, al risanamento, alla ricostruzione e alla migliore utilizzazione del patrimonio stesso*», that is, areas where the recovery of the existing building and urban heritage is deemed necessary through interventions aimed at conservation, rehabilitation, reconstruction and better utilisation of

that heritage⁵¹. Article 28 then introduced the *Piano di Recupero* as the specific planning instrument for these areas, allowing municipalities to identify degraded zones and promote conservation, rehabilitation, and adaptive reuse of existing structures. For the first time, the recovery and improvement of the existing city were recognised as legitimate and structurally supported objectives within the Italian planning system.

During the 1990s, a new generation of planning instruments emerged to overcome the rigidity of traditional master planning. The so-called *programmi complessi* introduced more flexible and negotiated forms of intervention, enabling cooperation between public institutions, private actors, and local communities in areas undergoing transformation. The *Programma di Recupero Urbano* (PRU), introduced by Article 11 of Legge n. 493 of 4 December 1993 and subsequently regulated by the Ministerial Decree of 1 December 1994, was conceived as an integrated instrument for the physical, infrastructural and environmental recovery of defined urban areas, overcoming the fragmentation of traditional planning by coordinating multiple types of intervention within a single programmatic framework⁵². The *Programma di Riqualificazione Urbana e Sviluppo Sostenibile del Territorio* (PRUSST), introduced by the Ministerial Decree of 8 October 1998, further extended this logic by linking urban regeneration to broader goals of territorial sustainability and economic development, encouraging partnerships between public administrations, private actors and local communities⁵³.

These instruments reflected a growing awareness that the regeneration of abandoned urban areas, including former industrial sites, required not only physical redevelopment but also the coordination of social, economic and environmental objectives. In this sense, they can be considered the national

⁵¹ Italia, Legge 5 agosto 1978, n. 457, *Norme per l'edilizia residenziale*, Gazzetta Ufficiale n. 231, 19 agosto 1978, art. 27. Available at: <https://www.gazzettaufficiale.it/eli/gu/1978/08/19/231/sg/pdf> (last accessed 20 March 2026)

⁵² Italia, Legge 4 dicembre 1993, n. 493, Gazzetta Ufficiale n. 288, 9 dicembre 1993, art. 11; implemented by Decreto Ministeriale 1° dicembre 1994, Gazzetta Ufficiale n. 291, 14 dicembre 1994.

⁵³ Italia, Ministero dei Lavori Pubblici, *Decreto Ministeriale 8 ottobre 1998, Programma di Riqualificazione Urbana e di Sviluppo Sostenibile del Territorio (PRUSST)*, Gazzetta Ufficiale n. 255, 30 ottobre 1998. Available at: <https://www.gazzettaufficiale.it/eli/gu/1999/04/10/15/s3/pdf> (last accessed 20 March 2026)

counterpart to the integrated urban regeneration approaches promoted at European level through programmes such as URBAN.

A distinctive characteristic of the Italian legislative framework remains the long-standing absence of a comprehensive national law specifically dedicated to urban regeneration. In the absence of a unified framework, regulatory initiatives developed in a fragmented and often episodic manner across different institutional levels, with significant disparities between regions. Current legislative proposals seek to address this gap by defining urban regeneration as a set of coordinated physical, social and environmental transformations affecting degraded urban areas, with explicit priority given to interventions that avoid additional land consumption. This trajectory that went from the *zone di recupero* introduced in 1978 to the integrated programmes of the 1990s and the current efforts to consolidate regeneration policies provides the legislative background against which the transformation strategies discussed in this thesis must be interpreted.

The legislative framework outlined above has been accompanied by the emergence of specialised associative networks. The first is AUDIS (*Associazione Aree Urbane Dismesse*), established in 1995 as a national network bringing together public administrations, private developers, researchers and professionals involved in urban regeneration⁵⁴. In 2008, AUDIS consolidated more than a decade of research and debate in the Carta AUDIS della Rigenerazione Urbana⁵⁵, a document outlining guiding principles for the planning, evaluation and governance of urban regeneration projects, particularly those involving brownfield redevelopment. Operating in a related but distinct field is AIPAI (*Associazione Italiana per il Patrimonio Archeologico Industriale*), founded in 1997 to promote interdisciplinary research on industrial

⁵⁴ R. D'AGOSTINO, *Qualità urbanistico-architettonica e ricadute socio-economiche nella riflessione*, Audis, in *Aree dismesse e città. Esperienze di metodo, effetti di qualità*, edited by Marina DRAGOTTO, Carmela GARGIULO, Milano, FrancoAngeli, 2003, p. 16

⁵⁵ AUDIS, *Carta AUDIS della Rigenerazione Urbana*. Available at: <https://audis.it/home> (last accessed 20 March 2026)

heritage understood not as a set of isolated artefacts, but as part of a broader system of cultural, historical and environmental resources⁵⁶.

Taken together, these two organisations reflect the dual dimension that characterises the reuse of former industrial sites in Italy: on the one hand, processes of urban planning, governance and territorial development; on the other, questions of cultural memory and heritage preservation. This dual perspective forms an essential interpretative framework for the case studies examined in the following chapter.

1.6 Architectural Intervention and Post-Industrial Regeneration: International Examples

The adaptive reuse of abandoned industrial areas has generated, over the past decades, an extensive and geographically diverse body of built examples. Scholarly and professional literature has documented a wide variety of cases across Europe and beyond, demonstrating that the conversion of dismissed industrial heritage can take radically different forms depending on programme, institutional context, and design approach. Every process of adaptive reuse necessarily involves an architectural transformation of the existing built fabric because it is always, at its core, an act of architectural intervention.

What differs, however, is the relationship that each intervention establishes with its broader context: whether it operates on a single building, on a complex of structures, or within a wider territorial and landscape strategy. Rather than attempting an exhaustive survey of these international processes, this section presents three cases selected to illustrate three distinct relationships between architectural intervention and context. The first concerns an intervention that operates primarily through a territorial and landscape strategy, using the transformation of the industrial landscape as the primary instrument of regeneration. The second illustrates how the architectural conversion of a single industrial building can generate significant urban effects, reshaping the identity and structure of an

⁵⁶ Augusto VITALE, *La memoria come risorsa*, in *Aree dismesse e città. Esperienze di metodo, effetti di qualità*, edited by Marina DRAGOTTO, Carmela GARGIULO, Milano, FrancoAngeli, 2003, p. 45

entire district. The third examines the careful architectural reinterpretation of an industrial complex, in which a selective dialogue between preservation and contemporary insertion allows the site to accommodate new cultural functions while maintaining its historical legibility. These examples are not the subject of in-depth analysis, which is reserved for the Italian case studies examined in the following chapters, but serve as contextual reference points that situate the Italian experience within a broader international framework, demonstrating that adaptive reuse does not follow a universal model but is always the result of specific design choices, institutional commitments and contextual conditions.

A widely cited example in the literature as a pioneering laboratory for large-scale post-industrial restructuring has to be the Ruhr region in Germany, which had positive effects on a territorial level. Beginning in the 1970s, the structural crisis of the industrial system had severe consequences for the Ruhr territory. The decline of heavy industry generated high levels of unemployment and halted the demographic growth that had previously characterised the region, at the same time, environmental conditions had dramatically deteriorated: industrial activities had heavily polluted both the landscape and water systems, particularly in the valley of the Emscher River, which had become one of the most environmentally degraded areas in the region⁵⁷. During this period of transition, economic restructuring began to shift parts of the regional economy towards the tertiary sector, while some mining activities continued to operate in the Lippe region. In 1979 a comprehensive investigation of land conditions in the Ruhr basin was undertaken, followed in 1980 by the creation of the Ruhr Basin Real Estate Fund, through which local authorities were encouraged to transfer or sell former industrial sites for redevelopment.

A decisive turning point came in 1989 with the establishment of the Internationale Bauausstellung (IBA) Emscher Park, an ambitious ten-year programme aimed at revitalising the Emscher region

⁵⁷ Giovanni DE FRANCISCIS, *Bacino della Ruhr: nuove strategie per il recupero del paesaggio sotto il profilo ecologico, economico e sociale*, in *Rigenerazione urbana. Il recupero delle aree dismesse in Europa*, edited by Giovanni DE FRANCISCIS, Venezia, Eidos, 1997, p. 388

while addressing its severe environmental and urban challenges. One of the central objectives of the initiative was the creation of an extensive system of green infrastructure, transforming former industrial landscapes into ecological and recreational spaces. The Emscher Landscape Park alone covers approximately 320 km² within the broader 800 km² territory of the Emscher basin⁵⁸, reflecting a planning tradition in which landscape is considered a fundamental component of territorial infrastructure. The programme pursued a broad set of objectives, including “the reconstruction of the landscape, the ecological improvement of the Emscher river system; the Rhei-Herne Canal as a recreational area; the restoration of industrial archaeology; the creation of new jobs in the park; new living spaces and innovative forms of housing; the promotion of social, cultural and sporting activities⁵⁹”.

The distinctive feature of IBA Emscher Park was precisely its territorial and not an episodic approach: rather than focusing on isolated interventions, the programme integrated landscape, architecture and infrastructural systems within a coordinated regional strategy, demonstrating that post-industrial regeneration can be understood as a long-term cultural and environmental project rather than a purely technical or economic operation.

The case of Tate Modern represents one of the most emblematic examples of industrial conversion at an urban scale. Although the intervention originated from the adaptive reuse of a single industrial building, its impact extended to the wider urban context, contributing to the regeneration of the Southwark district.

The museum, often described as the “MoMA of London”⁶⁰, is housed within the former Bankside Power Station, located on the southern bank of the River Thames directly opposite St Paul's Cathedral. The transformation of the former industrial complex into one of the world's leading institutions for contemporary art profoundly reshaped not only the building itself, but also the surrounding urban

⁵⁸ C. SPOSITO, *Sul recupero delle aree industriali dismesse...* cit., p. 36

⁵⁹ C. SPOSITO, *Sul recupero delle aree industriali dismesse...* cit., p. 37

⁶⁰ K. POWELL, *Architecture reborn...* cit., p. 225

context

of

Southwark.

The origins of the project are closely connected to the long-standing spatial limitations of the original Tate Gallery, founded in 1897. By the end of the twentieth century, the institution was able to exhibit only a small portion of its permanent collection, making the need for a new and larger exhibition space increasingly urgent⁶¹. Within this context, the idea of adapting an industrial building emerged through discussions between the Tate Gallery, artists and curators, many of whom believed that former industrial spaces could offer “more sympathetic inspiring spaces for exhibiting art rather than purpose-built ones”⁶².

The international competition for the project was won by the Swiss architects Jacques Herzog and Pierre de Meuron of Herzog & de Meuron, whose proposal stood out for its restrained and respectful approach towards the existing structure. Rather than radically transforming the former power station, the architects aimed to preserve its industrial identity and historical presence, allowing visitors to continue recognising the building’s original function and material character. The intervention therefore maintained the monumental scale and spatial power of the industrial architecture while adapting it to new cultural purposes.

Nonetheless, the success of the museum soon led to the need for an extension, made possible by the reduced spatial requirements of the power station’s remaining energy infrastructure. Former oil tanks and previously inaccessible service areas were consequently converted into new exhibition spaces⁶³. The extension project further reinforced the relationship between the old and the new. Herzog & de Meuron designed a new volume establishing a direct dialogue with the existing industrial structure. The use of brick as the primary façade material created continuity with the original power station while simultaneously distinguishing the contemporary intervention through a newly developed perforated brickwork system. In this way, the extension neither imitates nor contrasts aggressively

⁶¹ Rowan MOORE, Raymund RYAN, *Building Tate Modern: Herzog & De Meuron transforming Giles Gilbert Scott*, London, Tate Gallery, 2000, p. 18

⁶² R. MOORE, R. RYAN, *Building Tate Modern...*, cit., p. 18

⁶³ Herzog & de Meuron, *The Tate Modern Project*, in «Herzog & de Meuron», <https://www.herzogdemeuron.com/projects/263-the-tate-modern-project/> (last accessed 17 May 2026)

with the historic structure but rather establishes a coherent architectural relationship between past and present⁶⁴.

The opening of the Tate Modern initiated a broader process of urban regeneration within the previously neglected district of Southwark, contributing to the transformation of the south bank of the Thames into one of London's principal cultural destinations. Prior to the intervention, the area was still largely characterised by post-industrial decline, fragmented urban spaces and limited cultural attractiveness. The museum rapidly became a catalyst for new investments, tourism flows, commercial activities and public-space improvements, stimulating the wider redevelopment of the surrounding urban fabric. Particular attention was given to the integration of the museum within the public realm, especially through the enhancement of riverside pedestrian spaces and the strengthening of urban connections across the area. The redevelopment strategy also emphasised the importance of coordinated planning between different intervention sites, recognising the potential of Bankside to become a distinctive cultural and civic district within London. In this sense, the significance of the Tate Modern project extends beyond the adaptive reuse of the former Bankside Power Station itself. The project demonstrates how the cultural conversion of a single industrial structure can operate at an urban scale, reshaping both the physical organisation and the symbolic identity of an entire district through culture-led regeneration processes.

The C-Mine redevelopment in Genk, Belgium, offers an exemplary case of the careful transformation of an individual industrial complex. In the early twentieth century, a coal mine was established in the city and became operational in 1917 as the first mining site in the region. The presence of the mine played a decisive role in the rapid industrialisation of Genk, transforming it into an important industrial centre. However, with the closure of the mines, the city faced a severe economic crisis

⁶⁴ Herzog & de Meuron, *The Tate Modern Project*... cit. <https://www.herzogdemeuron.com/projects/263-the-tate-modern-project/> (last accessed 17 May 2026)

characterised by widespread unemployment, and questions soon emerged regarding how to address the extensive industrial remains left by mining activity⁶⁵.

By 1993, eleven of the forty-five buildings on the site had been officially protected as monuments, together with several pieces of industrial machinery. Beginning in the 1990s, the site was gradually reconceived as a hub for creative industries, intended to contribute to the regeneration of the surrounding area. While the most significant industrial buildings were preserved, the complex was progressively transformed into a multifunctional cultural district organised around four main themes: education, the creative economy, recreation and artistic production⁶⁶. Today, the site hosts a variety of cultural and public functions, including a school of art and design, a cinema, exhibition galleries, a museum and a cultural centre.

The most significant intervention concerns the former energy building, converted into a cultural centre through a strategy that carefully balances preservation and transformation.

The redevelopment of the former power plant was carried out by the Belgian architecture practice 51N4E, which approached the project through a strategy of selective transformation and adaptive reuse. The design was developed around the original vertical organisation of the building: a five-metre-high brick base supporting the large top-lit machine halls above⁶⁷.

By extending this existing base with two new concrete additions, the architects created a complex and articulated ground level conceived almost as an internal urban landscape.

This new layer accommodates exhibition spaces, offices, a café, a restaurant, meeting rooms and access points to the two newly inserted theatres. The intervention establishes a continuous dialogue between old and new. At ground-floor level, the original industrial fabric naturally extends into the contemporary additions, while on the upper level a sort of piano nobile emerges, onto which the new theatre volumes are informally positioned. The existing red-and-white tiled flooring, which was

⁶⁵ Koenraad VAN CLEEMPOEL, Bie PLEVOETS, *Adaptive Reuse of the Built Heritage. Concepts and Cases of an Emerging Discipline*, London, Routledge, 2019, p. 21

⁶⁶ K. VAN CLEEMPOEL, B. PLEVOETS, *Adaptive Reuse of the Built Heritage...* cit., p. 27

⁶⁷ 51N4E, *C-Mine*, project description, available at: <https://51n4e.com/projects/c-mine/> (last accessed 17 May 2026)

originally installed by the mining company itself, was preserved and extended into the new spaces and even towards the exterior, reinforcing the continuity between historical and contemporary interventions. At once domestic in scale and industrial in its repetitive rhythm, the flooring becomes an important element in maintaining the identity of the site⁶⁸. Circulation throughout the complex was conceived in an open manner. From the entrance, routes develop in multiple directions encouraging exploration and informal movement through the building. An underground tunnel further connects the energy building to one of the former mining towers and hosts an interactive exhibition dedicated to the history of the site and the mining industry.

The C-Mine project demonstrates how industrial heritage can be reactivated through a selective and conscious process of transformation that neither freezes the existing fabric nor erases its historical identity. Instead, the project establishes a careful balance between preservation, adaptation and contemporary insertion, allowing the industrial structure to remain legible while simultaneously accommodating new cultural functions.

This chapter has outlined the theoretical, historical and legislative context within which the case studies discussed in the following chapters are situated. Starting from a historical perspective on the practice of reuse, from the adaptive transformations of ancient and medieval cities to the more pragmatic interventions of the early modern period, the chapter has traced the major changes introduced by the Industrial Revolution and, later, by the processes of deindustrialisation that, from the 1970s onwards, produced widespread conditions of abandonment across many European cities.

The chapter has also examined the gradual shift in the perception of dismissed industrial spaces, which increasingly came to be understood not simply as obsolete or degraded areas, but as places carrying historical, social and cultural value. In parallel, both European and Italian legislative

⁶⁸ 51N4E, *C-Mine*... cit.

frameworks progressively introduced new planning tools and strategies aimed at supporting processes of recovery, regeneration and adaptive reuse.

The international examples presented in the final section have shown that adaptive reuse can operate at very different scales and through a wide variety of approaches. Rather than following a single model, each intervention responds differently to its specific context. What these experiences share, however, is the recognition of former industrial sites as layered spaces whose historical and material identity should not be erased but reinterpreted through new uses and new forms of public life.

The three Italian case studies analysed in the following chapters, *HangarBicocca* in Milan, *Città della Scienza* in Naples, and the *Museo del Tessuto* in Prato, were selected precisely because they represent different ways of approaching this challenge within the Italian context. Each case combines specific architectural choices, institutional structures and cultural objectives, while raising broader questions about how industrial heritage can be preserved, transformed and transmitted through contemporary cultural practices. Through the comparative analysis of these experiences, the thesis aims to contribute to the wider debate on the cultural and urban role of industrial heritage, and on the potential of adaptive reuse to generate new social, architectural and territorial meanings.

CHAPTER 2 – Case Studies: Adaptive Reuse of Industrial Heritage as Exhibition Spaces

This chapter focuses on the analysis of three case studies of industrial conversion into cultural spaces: Pirelli HangarBicocca in Milan, Città della Scienza in Naples, and the Museo del Tessuto in Prato. These examples have been selected in order to explore different approaches to the transformation of former industrial sites, considering their architectural, cultural, and urban implications.

The analysis is structured according to four main criteria. The first concerns the historical and industrial context, with the aim of understanding the original function and significance of each site within its territorial and economic framework. The second focuses on the architectural characteristics of the original complex, analysing spatial organization, construction techniques, and typological features. A third strand examines the conversion project, investigating the strategies adopted in adapting industrial structures to new uses. Finally, the fourth criterion addresses the current cultural function of each case study, evaluating how the new program interacts with both the built environment and the surrounding community.

The selection of these three case studies is not incidental. They represent different scales, geographical contexts, and cultural approaches to industrial heritage. Pirelli HangarBicocca stands as a contemporary exhibition space strongly oriented towards large-scale installations and international artistic production. Città della Scienza is characterized by its focus on scientific dissemination and public engagement, positioning itself as an educational and interactive institution. The Museo del Tessuto, on the other hand, maintains a close relationship with the local identity, preserving and interpreting the textile tradition of the territory.

Moreover, the three cases are located in different regions of Italy, each characterized by specific socio-economic conditions and urban dynamics. This geographical distribution allows for a comparative analysis that highlights how different contexts influence the processes and outcomes of industrial conversion.

The analysis draws on archival research, original drawings, and direct sources, including technical documentation and, where possible, contributions from professionals involved in the projects, an approach already tested through site visits and direct contact with the architects and institutions involved in each case. This method aims to move beyond descriptive analysis towards a more critical interpretation of the relationship between industrial heritage and contemporary cultural use.

2.1 Pirelli HangarBicocca, Milan

The site analysed in this research, Pirelli HangarBicocca, is located within a larger and more complex urban context: the Bicocca district in Milan. Understanding the transformation of this area is essential in order to fully comprehend the significance of HangarBicocca within the broader process of urban regeneration. The history of the Bicocca area and of the former Breda complex provides an important background for understanding the architectural characteristics of the buildings and the transformations that followed their industrial use. These changes eventually led to the creation of a new cultural institution, giving the former industrial site a different role within the city. HangarBicocca can therefore be considered not only as an example of adaptive reuse at the architectural scale, but also as part of a wider process through which a former industrial landscape has acquired new cultural, social, and urban functions.

2.1.1 The Bicocca Area: Industrial History and Urban Transformation

The site of Pirelli HangarBicocca cannot be understood in isolation from the broader urban and historical context in which it is embedded: the Bicocca area in northern Milan, whose transformation from agricultural land to industrial district, and subsequently to a mixed-use urban quarter, constitutes one of the most significant episodes of metropolitan reorganisation in twentieth-century Italy.

The name “*Bicocca*” itself carries a long historical memory, dating back to 1540 when the noble Arcimboldi family commissioned a country residence on the northern outskirts of Milan. The term

bicocca, a small fortified structure typically positioned on elevated ground, reflects both the physical character and the strategic function of the original settlement. Over the following centuries the villa passed through several prominent Milanese families before being absorbed into the expanding rural hinterland⁶⁹. Its subsequent history under Pirelli's ownership, repurposed as a kindergarten and library for workers' families, then as a company museum⁷⁰, and finally restored by Piero Portaluppi in 1953 as the representative headquarters of the Pirelli Group, already anticipates the pattern of adaptive reuse that would come to define the entire area.

The decisive transformation of the district began in 1907, when Pirelli and Ernesto Breda, together with a number of financial institutions, established the *Società Anonima Quartiere Industriale Nord Milano* with the explicit aim of converting the agricultural land north of Milan into an organised industrial district. Founded in 1872 by Giovanni Battista Pirelli as a manufacturer of elastic rubber products⁷¹, the company had expanded rapidly from rubber strips for carriages to bicycle and automobile tyres, and by the early twentieth century had become one of the most significant industrial actors in Italy. The Bicocca plant, first discussed in 1909 and formally established after the Arcimboldi estate passed to Pirelli in 1918 and became the physical expression of these productive ambitions.⁷² (Fig. 1) (Figs. 2-3)

As Milan expanded northward, Bicocca was gradually absorbed into a broader industrial corridor stretching toward Sesto San Giovanni, Cinisello Balsamo and Monza (Figs. 3 - 4). The district came to concentrate several major operators, such as Pirelli, Breda, Wagon Lits, Marelli and many others, making it one of the most densely industrialised areas in northern Italy. At its peak it employed approximately 32,000 workers out of a total local population of 36,000, functioning as a near self-contained factory town within the metropolitan system⁷³.

⁶⁹ Carlo BERTELLI (ed.), *La Bicocca degli Arcimboldi*, Milano, Skira, 2002, p. 18

⁷⁰ C. BERTELLI, *La Bicocca...*, cit., p. 20

⁷¹ Alberto PIRELLI, *La Pirelli: vita di una azienda industriale*, Milano, 1946, p. 34

⁷² A. PIRELLI, *La Pirelli: ...*, cit., p. 35

⁷³ Gianluca WINKLER, *Come nasce un'istituzione: il caso HangarBicocca*, Torino, Allemandi, 2012, p. 21

The economic crisis of the 1970s struck the district with particular severity. As the structural transformation of the industrial system led to the progressive closure or relocation of production plants across European cities, Bicocca was no exception: factories shut down their lines or relocated to countries with lower labour costs, leaving behind a landscape of partially abandoned industrial structures. Administrative functions tended to remain in place, but the productive heart of the district had been irrevocably compromised⁷⁴.

2.1.2 The Bicocca Project: Gregotti's Masterplan

The site of the future Pirelli HangarBicocca was not included in the area directly covered by the Gregotti Associati masterplan. However, the approach developed for the wider Bicocca area is relevant to the later transformation of the Hangar. The project combined the preservation of selected industrial buildings with their reuse for new functions, while also maintaining a connection with the industrial history of the area. These principles can also be seen in the later transformation of the Hangar into a cultural and exhibition space. Understanding this masterplan is therefore not incidental but foundational to situating HangarBicocca within the broader logic of Bicocca's regeneration, even though the building itself would ultimately follow an independent path.

It was in this context of industrial decline that the Bicocca Project was conceived. Leopoldo Pirelli, then president of the Pirelli Group, recognised the structural gravity, both for the surrounding district, increasingly cut off from the rest of the city, and for the workers whose livelihoods had depended on the plant, and took the initiative of donating ten billion lire to launch a process of urban transformation that would become one of the largest redevelopment projects in Italian history, covering approximately 960,000 square metres. In 1985, the first institutional meeting between the Lombardy Region, the Province and Municipality of Milan, and Pirelli outlined the parameters of the requalification project and established the terms of a public competition. Three years later, in 1988,

⁷⁴ G. WINKLER, *Come nasce un'istituzione:.....*, cit. p. 25

the commission was awarded to the studio Gregotti Associati. (Fig. 5) The cultural and architectural stakes of this transformation had already been articulated with clarity by Reyner Banham in 1986, just as the competition process was getting underway. Writing on the Bicocca district, Banham observed that every industrial site carries its own archaeology and bears witness to a specific and unrepeatable human experience, and that the buildings left standing, emptied of their machinery, risked becoming almost like a cemetery. He was however equally aware of mere sentimentality: the “amnesiac tendency”⁷⁵ of technological society, he argued, could be just as dangerous as nostalgic preservation. The future of Bicocca, in his view, was no longer a purely industrial question but one deeply connected with the life of the broader community, a challenge that demanded a level of complexity and creativity rarely required of architects. It was precisely this challenge that Gregotti Associati was called to address.

The masterplan developed by Gregotti Associati for the Bicocca area was structured around two interconnected interpretative principles, articulated across two distinct competition phases. The masterplan developed by Gregotti Associati was structured around two interconnected interpretative principles, articulated across two distinct competition phases⁷⁶. The first phase was guided by the ambition to redefine the role of the area within the broader urban system of Milan, envisioning its transformation into a new urban centrality, the historic centre of a growing periphery, supported by improved accessibility and by the potential redevelopment of the surrounding industrial areas⁷⁷. (Fig. 6) A second principle focused on the definition of a new type of urban technological pole, conceived as a second-generation model more integrated with the city compared to earlier international examples. Rather than proposing a fixed and rigid masterplan, the project introduced a flexible framework capable of adapting over time to changing conditions, programmes and constraints; an approach that reflects the awareness, elaborated in the theoretical debate discussed in

⁷⁵ Reyner BANHAM, “Bicocca ‘86”, in *I quaderni della Bicocca. Progetto Bicocca. Headquarter Pirelli Real Estate*, Milano, Skira 2005, p. 53

⁷⁶ Gregotti VITTORIO, *Riconversione dell'area degli stabilimenti Pirelli alla Bicocca*, «Domus», 815, 1999, p. 36

⁷⁷ V. GREGOTTI, *Riconversione dell'area...*, cit., p. 38

the first chapter, that large-scale urban transformations are inherently long-term and non-linear processes.

The spatial structure of the project is organised around a central axis, along which a sequence of permeable building blocks defines a hierarchy of public spaces, squares, pedestrian paths and collective areas, while the existing road network is preserved and enhanced through new connections. The programme is distributed across different blocks, incorporating tertiary functions, research and university spaces, residential areas and public services, contributing to the creation of a diverse and dynamic urban environment⁷⁸. (Fig. 7)

The second phase of the competition moved beyond the conceptual framework of the first stage, confronting the previously established principles with a more complex and defined set of constraints. This phase was tasked with translating planning regulations, introduced through the urban variant defined by the Municipality of Milan, into concrete architectural form, while incorporating procedural constraints, infrastructural developments and broader transformations affecting both the surrounding territory and the former industrial complex, and confirming the strongly multifunctional character of the intervention, particularly through the presence of research and university activities. (Fig. 8-9)

The project was understood not only as a process of functional conversion but also as a deliberate response to the spatial and social fragmentation left by deindustrialisation, an attempt to establish a renewed relationship between the former industrial area and the wider metropolitan context of Milan, and to create a new symbolic and spatial landmark capable of generating collective identity and orienting future development. Central to this ambition was the decision to preserve and reuse several of the existing industrial structures rather than demolish them entirely, motivated not only by functional considerations but by the recognition that every industrial site carries its own particular history, a layered identity that, rather than being erased, could be reactivated as a resource for the new

⁷⁸ Guido Martinotti, *Vivere alla Bicocca*, in *I quaderni della Bicocca. La Bicocca abitata. Headquarter Pirelli Real Estate*, Milano, Skira 2001, p. 141

urban project⁷⁹. It is within this logic of selective preservation and memory that Pirelli HangarBicocca must be situated: one of the few surviving industrial buildings of the original complex, it was not absorbed into the new urban fabric but instead became the object of a distinct and deliberate cultural project, a transformation that will be examined in the following section.

2.1.3 The Breda Industrial Complex: History and Architectural Character

The site that today houses Pirelli HangarBicocca occupies a portion of the former Breda industrial complex located on the southern edge of the Pirelli Bicocca area, adjacent to the boundary with Sesto San Giovanni. Its precise boundaries are important to understand: the original Pirelli redevelopment project, analysed in the preceding section, extended only as far as Via Chiese. (Fig. 10) It was only following the subsequent acquisition of the adjacent area that the project was expanded and renamed “*Grande Bicocca*”, incorporating the former Falck territory where the Ansaldo and Breda industries had settled, an area that was later occupied by Marcegaglia, an Italian steel-processing group unrelated to the site’s original industrial activity, that in 2014 also left the area.

The “*Grande Bicocca*” project started with the idea of opening the northern area to the city, posing several problems in organizing the accessibility of the area toward the wider urban fabric. This concern reflects Gregotti’s own vision for the area, one that anticipated not only its future residents but also the daily flow of people who would move through it, such as students, teachers, workers, and so on, imagining the site as an active part of a broader vision for the city of Milan, following its morphological path and transformations⁸⁰.

This ambition aligns with a set of criteria Gregotti articulated for successful urban interventions: a sufficiently varied mix of functions and higher-order services capable of drawing exchange with other parts of the city; a socially differentiated population, mixed in spending capacity, origin, and age;

⁷⁹ Emilio Tadini, *Introduzione*, in *I quaderni della Bicocca. La Bicocca abitata. Headquarter Pirelli Real Estate*, Milano, Skira 2001, p. 8

⁸⁰ V. GREGOTTI, *Riconversione dell’area...* cit., p. 36

careful design and management of open, collective spaces such as streets, squares, greenery, treated as no less important than the built fabric itself; an efficient and differentiated mobility system, avoiding an accumulation of improper internal movement; an urban design governed by a clear settlement principle, dense enough to form a rich, interconnected system of urban interiors; and a structure able to make its parts legible and distinguishable, supporting orientation at multiple levels⁸¹.

Within this enlarged area, two distinct industrial sites were developed: one in Sesto San Giovanni, dedicated to the production of locomotives and threshers, and another one, in what was then the municipality of Niguarda, for the manufacture of railway carriages and barges, covering approximately 22,000 square metres⁸². It is this latter settlement that constitutes the origin of what we know today as HangarBicocca. (Fig. 11-12)

The decision to expand beyond the original Milan works, in via Bordonì, was formalised by Breda's board of administration on 14 January 1903. The choice of Sesto San Giovanni and the adjacent Niguarda territory responded to a precise strategic calculation: the Milan site, close to the recently opened *Stazione Centrale*, had become too valuable as urban land to justify further industrial expansion, while the terrain around Sesto could be purchased at convenient prices, benefited from a healthier, more elevated position, enjoyed rapid connections to Milan, and offered access to a workforce already skilled in carpentry, a trade essential to the timber-framed construction of railway wagons at the time⁸³.

2.1.3.1 Origins and industrial development

Between 1904 and 1907, Breda extended its holdings into the so-called *tenimenti* Bicocca and Torretta, land it acquired jointly with figures such as Giovanni Battista Pirelli and Carlo Feltrinelli

⁸¹ V. GREGOTTI, *Riconversione dell'area...* cit., p. 37

⁸² Francesca GUERISOLI, "I fabbricati Breda, avi di Hangar Bicocca" in G. Winkler (ed.), *Come nasce un'istituzione. Il caso di HangarBicocca*, Milano, Skira, 2012, p. 24

⁸³ Gianfranco PETRILIO, *La Breda e Sesto San Giovanni fra la fine dell'Ottocento e i primi decenni del Novecento*, in *La Breda: dalla Società italiana Ernesto Breda alla Finanziaria Ernesto Breda. 1886-1986*, edited by Valerio Castronovo, Cinisello Balsamo, Amilcare Pizzi, 1986, p. 141.

through the *Società Anonima Quartiere Industriale Nord Milano*, an operation aimed at urbanising the whole northern periphery of Milan around the industrial estates that these same actors were simultaneously developing. It was within this framework that Breda's third plant rose in Niguarda, directly adjoining Pirelli's Bicocca site along its southern edge⁸⁴, establishing, at the level of urban topography, the very contiguity between the two industrial histories that the present-day Bicocca district still reflects.

Established at the beginning of the twentieth century, the Breda plant at Sesto San Giovanni was conceived, from the outset, in explicit contrast to the older Milan works. Where the via Bordoni site had grown organically over decades, its low, cramped early buildings crowded against later, more generous ones, courtyards nearly suppressed to gain working space, the new Sesto complex followed a single, unified plan: regular, uniform buildings, separated by broad open yards, and covered by the shed-roof typology that would come to define the site's architectural identity, iron-truss structures fitted with extensive skylights, designed to flood the production floor with even, diffused natural light⁸⁵. This constructional logic, still legible in the roof structure of today's Shed, is one of the clearest architectural threads connecting the historic industrial fabric to its current adaptive reuse. By the 1910s, the complex had already expanded into multiple interconnected production units. Administrative reorganisation in 1907 divided the enterprise into autonomous divisions for Milan, Sesto, and the agricultural-machinery works, coordinated by a central management. By 1908, the Sesto and Niguarda plants together covered roughly 456,000 square metres, of which 95,000 were built up, employing some 4,500 workers⁸⁶. The outbreak of the First World War brought a rapid and thorough conversion of the site to military production: workshops that had produced railway carriages and agricultural machinery were turned over to the manufacture of shells, artillery pieces, and torpedoes, while a dedicated aviation-engine department was established at Milan and, at Sesto and

⁸⁴ G. PETRILIO, *La Breda e Sesto San Giovanni...* cit., p. 145

⁸⁵ Francesco PASTONCHI, *La Società italiana Ernesto Breda per costruzioni meccaniche: dalle sue origini ad oggi, 1886-1936*, Verona, Mondadori, 1936, p. 36

⁸⁶ F. PASTONCHI, *La Società italiana Ernesto Breda...* cit., p. 38

Niguarda, new hangars and an adjoining airfield were built for aircraft assembly, early installations already operational by 1918. By the end of the war, the Breda group's combined holdings, including its Milan, Sesto, Niguarda, aeronautical, and Venice shipyard sites, extended across nearly three million square metres, with 315,000 square metres under roof and some 10,000 workers on its payroll⁸⁷.

2.1.3.2 Architectural evolution

In the postwar period, the Sesto complex was reorganised into five specialised sections, each largely autonomous in its administration; the layout and construction of each section followed directly from what it produced.

Sezione Prima, given over to locomotives, electromechanical equipment and general mechanical production, needed long production runs and generous floor space to move heavy parts along an assembly sequence, and covered some 230,000 square metres⁸⁸; *Sezione Seconda*, dedicated to railway and tramway carriages, required similarly large, open-plan sheds for building and finishing vehicle bodies, across roughly 120,000 square metres⁸⁹; *Sezione Terza*, housed the forges and steel foundry: here the buildings existed to contain heavy, fixed machinery, hammers, presses, furnaces, rather than to allow movement along a line, and occupied a comparatively smaller area of about 80,000 square metres⁹⁰; *Sezione Quarta*, the steelworks established during the war in 1916–17, was built at an even larger scale (300,000 square metres) to house the furnaces, rolling mills and open storage yards that steel production demanded⁹¹; and *Sezione Quinta*, finally, the aeronautical division established in late 1917, was designed around the sheer size of its product: its roughly 50,000 square metres of covered space comprised twelve large assembly halls (60 × 25 × 9 metres) and thirty-six smaller workshops, linked by a 320-metre gallery, and adjoined a 1,500 × 700-metre airfield: a scale

⁸⁷ F. PASTONCHI, *La Società italiana Ernesto Breda...* cit., p. 39

⁸⁸ F. PASTONCHI, *La Società italiana Ernesto Breda...* cit., p. 62

⁸⁹ F. PASTONCHI, *La Società italiana Ernesto Breda...* cit., p. 70

⁹⁰ F. PASTONCHI, *La Società italiana Ernesto Breda...* cit., p. 77

⁹¹ F. PASTONCHI, *La Società italiana Ernesto Breda...* cit., p. 81

and a hall typology suited specifically to assembling and testing aircraft ⁹². It is this last section that most plausibly connects to the site's present identity. The building still known today as "Hangar" retains both the name and something of the scale of these aeronautical assembly halls, which makes *Sezione Quinta* the most likely point of continuity between Breda's aeronautical past and HangarBicocca's current footprint. (Fig. 13-14-15-16)

This scale of expansion was not without social cost. The intensification of wartime production, and the accompanying growth of a semi-skilled, largely young workforce drawn from the surrounding agricultural hinterland, generated recurring labour conflict throughout the following decade. Tensions over wages and working conditions had already surfaced in 1913, in a strike that mobilised metalworkers across Milan's industrial belt, including the Breda plants⁹³. Between 1919 and 1922, in the broader context of Italy's postwar crisis of industrial relations, Breda's workforce was involved in successive disputes: administrative and technical staff sought independent union representation in 1919; internal discipline was tightened following renewed strikes later that year; and in 1920 the Breda plants, like much of Milan's engineering industry, were occupied by their workers, in a climate closely followed by Turin's *Ordine Nuovo* and by Milanese anarcho-syndicalist circles. By 1922 the company had regained the upper hand: average daily wages fell by roughly fifteen percent over the second half of that year, and the board formally declared the confrontational phase of industrial relations closed, inaugurating a period of largely unilateral management control that would persist through the following decade⁹⁴.

The interwar and wartime years saw the complex reach its greatest extent. By 1940, Breda had grown into eight operating sections, adding a sixth and seventh division at Brescia and Rome dedicated to automatic weapons, and an eighth at Porto Marghera housing the company's shipyard, itself

⁹² F. PASTONCHI, *La Società italiana Ernesto Breda...* cit., p. 92

⁹³ Sergio ZANINELLI, *I problemi del lavoro dalle origini al primo dopoguerra*, in *La Breda: dalla Società italiana Ernesto Breda alla Finanziaria Ernesto Breda. 1886-1986*, edited by Valerio Castronovo, Cinisello Balsamo, Amilcare Pizzi, 1986, p. 135

⁹⁴ S. ZANINELLI, *I problemi del lavoro...* cit., pp. 107-140, p. 136

extending across some 450,000 square metres. The group as a whole employed more than 30,000 people and covered 435,000 square metres of built area⁹⁵. This horizontal concentration across such disparate fields, from railway equipment to aircraft, weaponry, and shipbuilding, brought considerable opportunity in terms of turnover, but also exposed the company to competition from firms specialised in any one of these sectors, and tied its fortunes ever more closely to state military commissions⁹⁶. This dependency became clear as the war came to an end. At the board meeting of 3 April 1945, held in Milan during the tense weeks before the city's liberation, Breda's leadership reported that annual profits had nearly halved and liquidity was under growing pressure, the result of years of production geared almost entirely toward the war economy⁹⁷. Months earlier, in December 1944, more than twelve thousand workers at the Sesto San Giovanni plants had taken part in one of the largest labour demonstrations staged in Milan under German occupation, a strike that ended only through direct military mediation. Company-run canteens, described by Breda's own management as a significant financial burden, were maintained throughout this period as one of the few forms of material support the firm could offer its workforce⁹⁸. Following the Second World War, the complex entered a phase of technological and organisational transformation. Production progressively shifted from traditional railway manufacturing toward more advanced electromechanical processes, culminating in the early 1950s in the reorganisation of the establishment as *Breda Elettromeccanica*, focused on turbines, transformers, and large-scale energy-related components. The introduction of new production techniques required significant adaptations to the existing built environment, including the partial conversion of spaces and the integration of new facilities within the original industrial fabric⁹⁹. (Figs. 20–21)

⁹⁵ Angelo VARNI, *La ripresa economica e i problemi del lavoro nel secondo dopoguerra*, in *La Breda: dalla Società italiana Ernesto Breda alla Finanziaria Ernesto Breda. 1886-1986*, edited by Valerio Castronovo, Cinisello Balsamo, Amilcare Pizzi, 1986, p. 198

⁹⁶ A. VARNI, *La ripresa economica... cit.*, p. 199

⁹⁷ A. VARNI, *La ripresa economica... cit.*, p. 197

⁹⁸ A. VARNI, *La ripresa economica... cit.*, p. 198

⁹⁹ F. GUERISOLI, *"I fabbricati Breda..."*, cit., p. 25

2.1.3.3 Decline and deindustrialisation

Throughout its history, the Breda group had shown a remarkable capacity to anticipate and absorb moments of structural change. Under Ernesto Breda's direction, and then under his successors, the company had repeatedly reinvented its production, from steam to electric traction, from railway manufacturing to wartime armaments, from mechanical engineering to heavy electromechanical equipment, not merely surviving these transitions but using them to expand, extending its plants from Sesto San Giovanni and Niguarda to Brescia, Rome, and Porto Marghera. This adaptability, however, had largely developed in response to state demand, whether military commissions or nationalised railway contracts, rather than through open-market competition; it was precisely this dependency that would prove decisive once the postwar economic order the firm had relied upon began to dissolve.

Within this broader crisis of Italian heavy industry, as discussed in Chapter 1, the Breda complex followed its own specific trajectory of decline, one that mirrored, and was ultimately absorbed into, a much wider process of deindustrialisation affecting Milan and its northern periphery as a whole from the mid-1970s onward. Manufacturing employment across the city and province, which stood at 821,082 in 1971, fell to 756,359 by 1981 and to just 405,482 by 2011¹⁰⁰. Large firms across the Sesto San Giovanni–Bicocca industrial belt, including Breda's neighbours Pirelli, Falck, and Innocenti, responded to the contraction of the 1970s and '80s by introducing labour-saving machinery, relocating stages of production abroad, and consolidating job roles, measures that reduced the workforce even where production nominally continued¹⁰¹. Unlike the disruptions of earlier decades, this was not a temporary contraction to be weathered through reorganisation, but a structural transformation of the industrial economy itself, and Breda, like its neighbours, was ultimately unable to absorb the shock.

¹⁰⁰ Ornella CASTIGLIONE, *Il caso Pirelli-Bicocca. La fabbrica (dismessa) tra realtà e immagine*, in *L'avventura*, 2020, n. 1, p. 32

¹⁰¹ O. CASTIGLIONE, *Il Caso Pirelli-Bicocca...* cit., p. 32

By the 1970s, major restructuring processes had led to the fragmentation of the Breda group, with different divisions transferred to other companies or absorbed into larger industrial entities, a process that marked a significant loss of the original functional unity of the complex. The final stage of transformation occurred in the late twentieth century, when the progressive dismissal of industrial activities led to the obsolescence of large portions of the site, shifting its role within the urban context from a closed industrial enclave to a potential site for urban regeneration.

2.1.4 From Industrial Abandonment to Cultural Reuse: The Alfa Romeo Project and the Origins of HangarBicocca

The path toward the cultural reuse of the former Breda complex was neither linear nor immediately defined. It passed through an unrealised but architecturally significant project that left a lasting physical imprint on the building as it exists today.

At the end of the 1990s, within the broader framework of the deindustrialisation of Milan and the progressive dismissal of Alfa Romeo's historic production sites, the question of relocating and redesigning the Alfa Romeo Museum emerged as a strategic opportunity¹⁰². The existing museum in Arese was considered inadequate both in spatial capacity and in its traditional exhibition approach, despite hosting an exceptionally significant collection. In parallel, the renewed commercial success of the brand highlighted the importance of enhancing its cultural and symbolic value through a more innovative form of representation.

In the 2000, an agreement between Fiat and Pirelli Real Estate identified the Bicocca district as the location for a new exhibition space, centred on a large disused industrial building of Ansaldo origin within the former production area. The selected structure was characterised by monumental dimensions, approximately 200 metres in length and 30 metres in both height and width¹⁰³, offering

¹⁰² Benedetto CAMERANA, *Museo Alfa Romeo. Il progetto per una 'Alfa Romeo Gallery' alla Bicocca*, in G. Winkler (ed.), *Come nasce un'istituzione. Il caso di HangarBicocca*, Milano, Skira, 2012, p. 28

¹⁰³ B. CAMERANA, *Museo Alfa Romeo...*, cit., p. 27

a vast and highly evocative industrial interior. The project proposal, developed by architect Benedetto Camerana, moved beyond the conventional notion of a museum, adopting instead the concept of a gallery conceived as an immersive and communicative environment. In response to the spatial challenge posed by the scale of the existing nave, the design introduced three large exhibition volumes positioned along the central axis, inspired by distinctive stylistic features of Alfa Romeo vehicles. The exhibition layout was organised along multiple overlapping paths combining thematic, chronological and cultural itineraries, reinforcing the relationship with Milan's broader design culture. (Figs. 22 - 23)

Despite the completion of the design in 2001, the project was never realised due to the financial crisis affecting the Fiat Group. Nevertheless, the preparatory works carried out on the building, including the refurbishment of the envelope and the transformation of the interior, left a partially adapted industrial structure whose traces are still legible in the space today, most notably in the distinctive corrugated aluminium roof and in the large, cavernous interiors painted in deep blue to allow full control over artificial lighting¹⁰⁴. This unrealised project constitutes a crucial transitional moment in the history of the site, marking the shift from industrial abandonment to cultural reuse and anticipating the subsequent development of HangarBicocca.

2.1.5 Pirelli HangarBicocca: The Final Project and Spatial Configuration

The crisis of the Fiat Group led to the cancellation of the Alfa Romeo project, leaving the building without a clearly defined alternative use. It was only in 2004 that a new perspective emerged: the building was acquired by Prelios, formerly Pirelli Real Estate, which decided to transform it into a contemporary art exhibition space. This decision was closely linked to a broader shift in Pirelli's communication strategy, which around this time began to invest in a more articulated system of cultural initiatives, moving beyond traditional advertising-based approaches. The transformation of the building also raises a broader question concerning the relationship between its new cultural

¹⁰⁴ G. WINKLER, *Come nasce un'istituzione:.....*, cit., p. 33

identity and the industrial history of the area. Although HangarBicocca is now strongly associated with Pirelli, the building itself was originally part of the Breda industrial complex, while the wider Bicocca area was shaped by the presence of several major Italian industries. The creation of a new cultural institution therefore involved not only the reuse of an industrial building, but also the construction of a new identity for a place with a more complex industrial past. Within this framework, the transformation of HangarBicocca emerged as one of the most ambitious cultural projects in Milan of recent decades¹⁰⁵.

The complex is composed of three main volumes, the Shed, the Navate and the Cubo (Fig. 24), each characterised by large open spaces without internal partitions and by the visible presence of structural and industrial elements, reflecting the layered history of the site throughout the twentieth century. Rather than resulting from a unitary design, the complex is the outcome of successive additions responding to the evolving needs of production: each volume corresponds to a distinct phase in the technological history of the Breda works, from mechanical assembly to the testing of large-scale electrical machinery. This stratification is legible in the typological differences between the three buildings, each reflecting a different moment, and a different logic, of industrial construction. The Shed, dating from the 1920s, is the smallest of the three exhibition spaces despite its considerable dimensions of approximately 80 metres in length and 30 metres in width. Originally housed the production of locomotives, trains and agricultural machinery and is recognisable by its exposed brick façades and by its characteristic double-pitched roof with wide skylights¹⁰⁶, which together convey the unmistakable typology of early twentieth-century industrial architecture. (Fig. 25-26) The interior is organised into three longitudinal naves defined by pilasters that support a complex white steel structure, generating a rhythmic sequence of bays. The name itself, Shed, evokes the building's industrial origin, preserving in language what the architecture preserves in matter.

¹⁰⁵ G. WINKLER, *Come nasce un'istituzione:.....*, cit., p. 56

¹⁰⁶ Pirelli HangarBicocca, *La storia dell'edificio e il quartiere Bicocca*, in pirellihangarbicocca.org, <https://pirellihangarbicocca.org/storia-edificio/> (last accessed 11 June 2026)

Typologically, the Shed belongs to the tradition of serial industrial architecture, defined by the repetition of structural bays, reliance on overhead zenithal lighting, and a clear priority given to productive floor area over representative space, all features designed to support work that was continuous, flexible, and easily expandable. Within the museum's current configuration, this lower and more contained structure functions as an exhibition space of intermediate scale, allowing for a closer, more intimate relationship between visitor and artwork than is possible in the Navate.

The Navate form the spatial core of the complex: built between 1963 and 1965 for the assembly and testing of large electrical machines, they extend over approximately 9,500 square metres, surpassing in scale the celebrated Turbine Hall of Tate Modern in London, with a ceiling height reaching 30 metres¹⁰⁷. (Fig. 27) The original overhead crane structures have been deliberately retained as visible elements of industrial memory, testifying to the scale of the productive processes that once animated these spaces. The main nave permanently houses Anselm Kiefer's site-specific installation, *Seven Heavenly Palaces*, from 2004 (Fig. 28), while the remaining two naves are kept free for temporary exhibitions. The overwhelming verticality of the space, combined with the deliberate minimalism of the intervention, in which almost no element has been added beyond Kiefer's towers and a carefully calibrated lighting design, produces an atmosphere of monumental silence that has earned the space the informal designation of "cathedral". Light is used as the primary spatial tool: directed to dramatise the dark surfaces of Kiefer's structures, it leaves the surrounding space in penumbra, generating cavernous depths that invite reflection on the industrial history embedded in the architecture itself. The articulated steel structure that supports the shed, left fully exposed and unmodified, communicates immediately the scale and nature of the productive activities that once filled this space, making the architecture itself a form of industrial memory¹⁰⁸. At the far end of the Navate lies the Cubo, constructed in 1955 as a barrel-vaulted volume for testing

¹⁰⁷ Pirelli HangarBicocca, *La storia dell'edificio...* cit.

¹⁰⁸ Pirelli HangarBicocca, *La storia dell'edificio...* cit.

electrical turbines and distinguished from the other spaces by its natural lighting, left empty for temporary exhibitions, it is also the most different space.

Distinct in both plan and section from the other two volumes, the Cubo represents a further stage in the typological evolution of the complex: no longer a sequence of modular workshops, but a compact and strongly recognisable specialised volume. Its barrel-vaulted roof generates a unified interior space, well suited to installations, projections, and displays that draw on the continuity of the vault as a perceptual device. (Fig. 29)

The current layout also includes a series of complementary functions organised around the entrance area within the Shed: educational spaces, a bookshop, a bistrot and visitor services. The entrance hall, characterised by large glass surfaces and bright interiors, functions as a flexible and dynamic space designed not only for access but also for events, conferences and public activities, reinforcing the role of HangarBicocca as an open and publicly accessible cultural institution.

Following the initial conversion of the former industrial complex, a series of architectural interventions were carried out between 2009 and 2012 with the aim of upgrading and consolidating the spatial, technical, and functional qualities of the site. These works played a crucial role in defining the current identity of Pirelli HangarBicocca as a major contemporary art institution in Milan.

More specifically, between 2009 and 2010, a comprehensive structural and plant upgrade was developed by SCE Project, with construction managed by Guffanti S.p.A., under the client supervision of Pirelli & C. This phase focused on adapting the existing industrial buildings to meet contemporary regulatory standards while preserving their original architectural character. The complex, composed of different construction typologies, from exposed brick masonry (Building A) to steel structures with metal cladding (Buildings B and C), and reinforced concrete elements (Building D), required differentiated interventions. Building A, which corresponds to the foyer, was reorganized to accommodate the main public and service functions, including the entrance foyer,

bookshop, café, and administrative offices, while the remaining buildings were dedicated primarily to exhibition spaces, both permanent and temporary¹⁰⁹.

Particular attention was given to the integration of new technical systems, such as radiant floor heating, and to the insertion of service spaces without compromising the spatial continuity of the large industrial halls. At the same time, the intervention carefully preserved the monumental scale and material identity of the interiors, which are fundamental to the exhibition experience. This approach was especially significant in relation to the permanent installation of Anselm Kiefer's *Seven Heavenly Palaces*, whose presence required specific conservation measures during the construction works. The external areas were also redesigned to accommodate artworks, including *La Sequenza* by Fausto Melotti, reinforcing the relationship between architecture and art.

Subsequent interventions between 2010 and 2012, led by April Architects, further refined the spatial and programmatic organization of the complex, marking a shift from purely technical adaptation to a more articulated architectural and experiential strategy. The project focused on the requalification of services and infrastructural systems: including offices, utilities, cabling, and underfloor heating, while simultaneously redefining the relationship between public functions and exhibition spaces¹¹⁰.

A key aspect of this phase was the introduction of a clearly defined entrance and reception area, conceived as a transitional space distinct from the monumental scale of the industrial halls. This new threshold includes a bookshop and a bistrot, organized within a symmetrical layout that establishes a more accessible and human-scaled environment for visitors. Within this setting, particular attention was given to the design of interior elements, where the project adopts a strategy of reuse and reinterpretation of existing industrial materials. As noted by Francesco Tiribelli, budget constraints

¹⁰⁹ SCE Project, *Hangar Bicocca, Milano (2009)*, project description, available at: [SCE Project – Hangar Bicocca Milano](#) (last accessed 4 June 2026)

¹¹⁰ Ordine degli Architetti PPC della Provincia di Milano, *Milano. Musei e spazi espositivi 2000–2018: Pirelli HangarBicocca*, available at: <https://ordinearchitetti.mi.it/en/cultura/itinerari-di-architettura/58-milano-musei-e-spazi-espositivi-2000-2018/opere/2248-pirelli-hangarbicocca>. (last accessed 4 June 2026)

played a significant role in shaping the design approach, encouraging the creative reuse of components found within the former Ansaldo complex. (Fig. 30-31-32)

Industrial elements such as wooden cable reels and metal spools were repurposed into tables, seating, and display structures, contributing to a flexible and constantly evolving spatial configuration. The bistro represents a significant moment of interaction between architecture and industrial memory: a central table, constructed from reused concrete formwork and supported by an existing metal machine, becomes both a functional and symbolic element, reinterpreting traditional Northern European social spaces while integrating contemporary needs such as digital connectivity. This approach fosters a concept of permanence and inhabitation, transforming the Hangar into a place not only for viewing art but also for staying, meeting, and engaging.

Rather than altering the original industrial structure, the intervention emphasizes its adaptability, reinforcing the identity of Pirelli HangarBicocca as a space where architectural heritage and contemporary cultural practices coexist. The possibility for visitors to interact with and even purchase elements of the furniture further contributes to the dynamic nature of the space, blurring the boundaries between exhibition, design, and everyday use.

2.1.6 Pirelli HangarBicocca: Programme, Mission and Institutional Framework

Since its establishment in 2004, Pirelli HangarBicocca has operated as a non-profit foundation dedicated to the production and promotion of contemporary art, supported by Pirelli and entirely free and open to the public. Under the artistic direction of Vicente Todolí, appointed in 2012, the institution has developed into a major reference point for the international contemporary art community, while remaining firmly anchored to its local and metropolitan context.

The exhibition programme is organised across three distinct spaces that reflect the architectural complexity of the building. The Navate and the Cubo accommodate large-scale site-specific projects and retrospectives of established artists, conceived in direct dialogue with the industrial character of

the architecture. The Shed, by contrast, is dedicated to more intimate exhibitions and to emerging or mid-career artists, offering them the opportunity to engage for the first time with ambitious, spatially demanding projects. This differentiation of spaces allows the institution to operate simultaneously at different scales of artistic ambition, from monumental installation to more experimental and exploratory practices. Over the years, Pirelli HangarBicocca has developed significant collaborative relationships with leading international institutions, including Tate Modern in London, the Museo Reina Sofía in Madrid, MoCA in Los Angeles, and the Stedelijk Museum in Amsterdam, among others.

The institutional model of Pirelli HangarBicocca cannot be separated from its relationship with its founding patron. The foundation represents one of the most ambitious cultural projects in Pirelli's history of over 150 years and stands within a broader corporate commitment to art and culture that includes the Pirelli Calendar, established in 1964, and the Rivista Pirelli, which between 1948 and 1972 featured contributions by figures such as Italo Calvino, Umberto Eco and Eugenio Montale. Alongside Pirelli HangarBicocca, the company also supports Fondazione Pirelli, dedicated to the preservation of the group's historical heritage, the two foundations together forming a dual cultural project in which the safeguarding of industrial memory and the promotion of contemporary artistic research are understood as complementary rather than competing objectives.

Taken together, these activities define an institutional model that combines the ambition of a major contemporary art venue with a commitment to accessibility and public engagement rooted in the specific character of the site, a former industrial space now functioning as a place of experimentation, research and cultural mediation within the urban fabric of northern Milan.

Beyond its exhibition activity, the institution articulates a broader cultural mission through a Public Program of talks, symposia, film screenings, concerts and live performances, developed in relation to the works on display and characterised by an explicitly interdisciplinary approach. This is complemented by a structured educational offer, workshops, guided visits, family programmes and

school activities, grounded in the principle of education through art, and by a publishing programme that has produced over forty volumes since 2013.

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2.1.7 On-Site Observation and Analysis

A visit to Pirelli HangarBicocca allows for a direct experience of the spatial sequence described above and reveals aspects of the building's use, and of the contrast between its component volumes, that are not always evident from documentary sources alone.

The exterior already announces this contrast before the visitor enters the building. The exposed brick façade of the Shed, articulated by a sequence of gabled roofs typical of early twentieth-century industrial construction, stands in stark contrast to the monumental, corrugated metal wall of the Navate rising immediately behind it, a juxtaposition that makes the stratified, additive nature of the complex immediately legible from the outside, well before any spatial or documentary analysis. (Fig. 27) The brick masonry of Building A is visible also at the entrance, framed by the more contemporary steel-and-glass doors of the main access, with the Prysmian Group tower, the historical successor to Pirelli's cable-making activities, visible in the background, a reminder that HangarBicocca remains embedded within a district that has only partly severed its ties with its industrial and corporate origins.

The visitor enters through the reception hall, a later addition that accommodates the welcome desk, the bookshop, the bistrot, an educational area dedicated to children's workshops, and a seating area for visitors. Even in this newly built space, the choice was made not to conceal the building's technical apparatus: the ceiling exposes a dense network of steel trusses, ductwork and lighting rigs, left visible rather than hidden behind a suspended ceiling, a detail that extends the industrial aesthetic governing

the historic volumes into the building's more recent additions, reinforcing the coherence of the site's overall visual identity. This threshold space, distinct in character from the industrial volumes that follow, establishes a more domestic and accessible scale before the visitor encounters the Shed.

Directly connected to the hall, the Shed typically hosts emerging contemporary artists, still at an early stage in their careers, a curatorial choice consistent with the more intimate scale of the space. At the time of the visit, the Shed hosted Benni Bosetto's exhibition "Rebecca"; although the exhibition itself could not be visited, being in the process of de-installation, the space's industrial character, its capacity to be reconfigured according to the needs of each hosted artist while retaining its original physical fabric, remains legible both on site and through the documentation available on the institution's website.

Moving from the hall toward the Navate and the Cubo, the visitor crosses again into the exterior before re-entering the complex. According to a cultural mediator present during the visit, the Navate and the Cubo originally formed a single continuous space, undivided during the building's industrial use, when no functional distinction between the two areas was required. Following the building's conversion into Pirelli HangarBicocca, a full-height curtain was introduced to separate the space into two distinct areas: one dedicated to temporary exhibitions, the other permanently housing Anselm Kiefer's *Seven Heavenly Palaces* (*I Sette Palazzi Celesti*, 2004–2015). Made of a heavy, tarpaulin-like material and suspended from an overhead track that runs the full width and height of the Navate, the curtain is punctuated only by a corner gap allowing passage between the two spaces. (Fig. 33-34) The same source noted that, in 2004, access to the exhibition spaces was originally organised entirely through Kiefer's installation, a configuration later modified as the building's circulation was reorganised.

Upon entering the Navate, the visitor is immediately struck by the scale of the space and by the legibility of its industrial past, conveyed nonetheless with a sense of restraint rather than overt monumentality. (Fig. 35) The building's considerable height and the serial repetition visible in the

ceiling structure, the flooring, and the walls express the original industrial logic of the space without being altered or concealed. The roof structure, painted in a dark, almost charcoal tone that recedes into the shadows of the upper volume, is organised into repeated truss bays punctuated by small skylights; along the side walls, several original overhead crane gantries, preserved on multiple superimposed levels, now function as catwalks, their scale becoming fully perceptible only when compared with the temporary structures installed for exhibitions below. (Fig. 36-37) When not occupied by temporary installations, the Navate remains largely bare, a condition that leaves the space open to a wide range of curatorial possibilities while preserving an almost limitless sense of volume; even secondary elements, such as the metal cage ladders and exposed firefighting equipment along the perimeter walls, are left fully visible rather than concealed, extending the same industrial logic to the building's servicing infrastructure. Given this scale, the space tends to host artists already established within the contemporary art scene, capable of engaging with its dimensions; at the time of the visit, this section hosted Rirkrit Tiravanija's exhibition "The House That Jack Built", who, like several artists before him, chose to directly engage with the industrial character of the space, introducing a labyrinth-like structure and an elevated wooden platform allowing visitors to view the Navate from a different viewing point. Considerable as these additions were, they appeared modest in scale when set against the height of the surrounding structure and the multiple levels of supporting scaffolding above. (Fig. 38-39)

Beyond the dividing curtain, the adjoining section of the Navate houses Kiefer's permanent installation. Here, natural light is deliberately filtered, and the space is kept dim, illuminated only by soft, targeted lighting directed onto the seven concrete towers and a series of large-scale paintings by the same artist, displayed against the surrounding black walls. (Fig. 40-41) The towers themselves bear the visible marks of a deliberately weathered materiality, rust, flaking traces of blue and red paint, empty window-like openings at varying heights, and protruding metal elements at their summits, while at the base of one tower lies a scattered pile of fragments, left on the ground as part

of the installation. Within this more enclosed and darker environment, the towers appear to amplify the height and solemnity of the space itself, an effect heightened by the isolated pools of light that pick them out against the surrounding darkness.

The visit concludes in the Cubo, the most distinct of the three volumes, originally used for testing completed engines, a function that accounts for its markedly different spatial character compared to the Navate and the Shed. The space is dominated by its bare, unfinished concrete surfaces: the barrel vault and walls retain visible traces of the original formwork, staining and patching, offering a rougher and more overtly weathered materiality than that of the Navate. (Fig. 42-43) A continuous band of windows beneath the vault, together with a perimeter walkway reached by a full-height concrete spiral staircase, provides the natural lighting that distinguishes the Cubo from the artificially lit Navate. At the time of the visit, this raw industrial shell contained the concluding section of Tiravanija's exhibition: timber-framed pavilion structures furnished with seating, potted plants and a video screen, producing a deliberate contrast between the domestic intimacy of the inserted structures and the monumental, unadorned scale of the space that contains them. (Fig. 42-43) Externally, the Cubo displays a different kind of intervention altogether: its metal-clad façade bears a large-scale mural by the street artist eL Seed, "Waves Only Exist Because the Wind Blows", combining abstract calligraphic forms in pink, blue, black and ochre. Unlike the interventions inside the building, which work within and through the existing industrial fabric, this mural operates directly on the external skin of the complex, adding a contemporary artistic layer to the corrugated metal surface itself, a further instance of how HangarBicocca extends its exhibition programme beyond the boundaries of its interior spaces. From the Cubo, visitors can exit and retrace the building's volumes from the exterior, where the difference in scale and height between the entrance hall, the Shed and the Navate becomes immediately apparent. (Fig. 44)

2.1.8 Conclusions

Beyond its architectural significance, Pirelli HangarBicocca also represents the social transformation of a place that for decades shaped the economic and everyday life of northern Milan. The former Breda complex was once a major centre of industrial production, employing thousands of workers and contributing to the development of one of Italy's most important manufacturing districts. Although industrial activity eventually ceased, the site did not lose its public relevance. Instead, through adaptive reuse, it acquired a new social function, reopening its spaces to the community in a radically different way. What was once a place of production has become a place of cultural participation, education, and public encounter, demonstrating how industrial heritage can continue to generate collective value without denying its past.

This transformation also reflects the evolution of Pirelli itself. As one of Italy's longest-standing industrial companies, Pirelli has repeatedly adapted its identity to changing economic and cultural contexts. Through the establishment of Pirelli HangarBicocca and the Fondazione Pirelli, the company extends its role beyond manufacturing, investing in the preservation of industrial memory while supporting contemporary artistic production. In this sense, the former industrial site remains connected to the company that shaped the wider district, although through a different form of production, one centred on culture rather than industry. Ultimately, the history of Pirelli HangarBicocca is not simply the history of a preserved industrial building, but of a place that has continuously adapted to changing economic, social, and cultural conditions. While industrial production has disappeared, the site continues to generate value, employment, and public life in new forms. Its adaptive reuse demonstrates that the most enduring legacy of industrial heritage may not lie in preserving the memory of production alone, but in ensuring that these places remain active contributors to the life of the city.

2.2 Città della Scienza, Bagnoli area in Naples

The case of *Città della Scienza* occupies a singular position within the landscape of Italian post-industrial regeneration. Unlike projects in which a single decommissioned structure is converted to a new cultural use, *Città della Scienza* represents a layered and ongoing transformation of an entire coastal industrial district, one whose trajectory has been shaped by decades of institutional effort, architectural intervention, and, not least, physical trauma. The analysis that follows is structured around four complementary perspectives: the historical and industrial context from which the site emerged; the architectural character of the original complex; the conversion project carried out from the mid-1990s onward; and the site's current cultural identity, understood in its full complexity as a space simultaneously marked by loss, resilience, and renewal.

2.2.1 Historical and Industrial Context

The history of *Città della Scienza* is inseparable from that of Bagnoli itself, the stretch of coastline west of Naples whose identity shifted radically over the course of a century: from a marginal yet landscape-rich territory, to one of the principal industrial districts of southern Italy, to, finally, one of the most contested arenas of post-industrial regeneration in the country. Few episodes of twentieth-century Italian urban history condense so many competing visions of development within a single, relatively small territory.

Until the early nineteenth century, the Bagnoli area remained largely peripheral within the metropolitan structure of Naples, despite its remarkable natural and landscape qualities. The first attempts to integrate it into the city's expansion date back to the Napoleonic period, when Joachim Murat promoted new infrastructural connections across Posillipo, envisioning Bagnoli as a potential

outlet for urban growth¹¹¹. These early initiatives, however, remained largely unrealised, and for several decades the area continued to occupy a secondary role.

The decisive shift towards industrialisation came around 1850, when several foreign entrepreneurs identified the coastal stretch between Pozzuoli and Castellammare as particularly suited to industrial settlement¹¹². In 1854, the French entrepreneurs Carlo and Ernesto Lefebvre established a large chemical plant along the coastline, focused on the production of sulphuric acid and alum for industrial use, soon joined by the Bournique glassworks nearby¹¹³. Although often overlooked in the historiography of Italian industrialisation, this initiative can be considered one of the earliest examples of chemical industry in the country, and it marked a crucial turning point in the Bagnoli's transformation.

Decades before the Ilva steelworks transformed the area into a fully integrated industrial district, an alternative vision had briefly emerged: in 1883, the engineer Lamont Young proposed the "*Rione Venezia*" project, conceiving Bagnoli as a residential and touristic district centred on its thermal resources and coastal landscape, with bourgeois residences, hotels, seaside resorts and thermal spas¹¹⁴ (Fig. 44).

This earlier proposal shows that the area's industrial destiny was not predetermined, but the outcome of a choice between competing models of urban development. The logic of industrial expansion ultimately prevailed, and Bagnoli developed as a working-class neighbourhood, its urban and social fabric shaped by the rhythms and demands of factory production.

¹¹¹ Silvio DE MAJO, Augusto VITALE, *Alle radici di Città della Scienza. La fabbrica chimica di Bagnoli 1854-1990*, Venezia, Marsili Editori, 2014, p. 21

¹¹² Renato LULY, *Le aree industriali dismesse dell'ex Ilva di Bagnoli. L'archeologia industriale*, Napoli, Liguori Editore, 2004, p. 24

¹¹³ S. DE MAJO, A. VITALE, *Alle radici di Città della Scienza...* cit., p. 26. Cited also JALONGO G., *Immagine della città e realtà urbana a Napoli: il passato e il presente*, in *La città dismessa. Spazi consumati e desideri. Le aree ex Italsider ed Eternit di Bagnoli*, edited by G. PERSICO, Napoli, Tullio Pironti Editore, 2002, p. 198, which dates the same plant's founding to 1853 under Ernesto Lefèvre, Count of Balsorano, a minor discrepancy likely due to differing archival sources.

¹¹⁴ PIETRO GRECO, *La città della scienza. Storia di un sogno a Bagnoli*, Torino, Bollati Boringhieri, 2006, p. 34

This decisive acceleration occurred at the turn of the twentieth century. In 1901, the Italian government established a commission to foster industrial development in Naples, following proposals advanced by Francesco Saverio Nitti. These initiatives were formalised through the so-called *Legge Gianturco*, a special law promoted by Emanuele Gianturco, then Minister of Public Works. which guaranteed tax incentives, targeted expropriations, and state funding designed to attract private capital to the western district of the city. By allocating substantial public funding, the legislation enabled the industrialisation of Bagnoli and its transformation from an agricultural landscape into one of Italy's principal steelmaking centres¹¹⁵.

By 1904, Bagnoli already hosted two major industries built under the Lefebvre initiative, the chemical plant and the two glassware manufacturers. In the same year, *Terni Siderurgica* (from Savona) and *Ligure Metallurgica* merged to create Ilva, focused on the production of cast iron, steel and rolled products¹¹⁶.

Thanks to the benefits granted under the law, the large industrial complex at Bagnoli was established in 1905, initially under the name of the Ilva company, a plant that would profoundly shape the city's economic identity throughout the twentieth century¹¹⁷. (Fig. 46)

By 1920, the industrial plant already occupied a substantial portion of the land. The choice of Bagnoli was driven by practical considerations, such as availability of land, proximity to the sea, and relative absence of existing urban fabric, but it also reflected a broader cultural attitude that regarded the western coastal area as expendable in economic and productive terms. Industrial development rapidly reshaped the landscape, altering the coastline and replacing a previously intact natural environment with a heavily mechanised productive territory.

¹¹⁵ S. DE MAJO, A. VITALE, *Alle radici di Città della Scienza...* cit., p. 55

¹¹⁶ P. GRECO, *La città della scienza*, cit., p. 40

¹¹⁷ R. LULY, *Le aree industriali dismesse...* cit., p. 25

The following decades were marked by a sequence of expansions and crises closely tied to broader national and international events. The years that followed the conflict, however, proved considerably more difficult, as the plant faced the broader economic instability affecting Italian industry in the post-war period. It was only in the following decades that the complex entered a new phase of modernisation and expansion, progressively consolidating its role within the national steel industry¹¹⁸.

The chemical plant, by then acquired by the Montecatini group in 1920, underwent significant expansion during the 1920s and 1930s, consolidating Bagnoli as a fully integrated industrial district in which the coexistence of the chemical plant and the steelworks generated a dense and functionally specialised productive landscape. The Second World War interrupted production and triggered a long crisis, compounded by the need to rebuild the war-damaged areas, which further slowed overall output¹¹⁹; the plant recovered only with the economic boom of the following decades, a recovery that, in turn, sustained the related industries and the broader local economy¹²⁰.

As analysed in the first chapter, the structural transformation of the industrial system during the 1970s and 1980s struck this type of mono-functional industrial district with particular severity, affecting both of Bagnoli's core industries. On the chemical side, Montecatini began closing several plants as early as the beginning of the 1960s, and this process was compounded, in the following decade, by the severe crisis of the 1970s, which continued to affect the chemical industry until the 1980s. The steel sector followed a parallel but distinct trajectory: although the 1970 general urban plan had already begun to signal a shift against polluting heavy industry, Italsider initially responded by seeking to modernise rather than scale down, obtaining in 1973 a variance to build a new rolling train and continuous casting plant¹²¹. This attempt at revitalisation was overtaken by the global steel crisis,

¹¹⁸ R. LULY, *Le aree industriali dismesse...* cit., p. 25

¹¹⁹ S. DE MAJO, A. VITALE, *Alle radici di Città della Scienza...* cit., p. 64

¹²⁰ R. LULY, *Le aree industriali dismesse...* cit., p. 15

¹²¹ P. GRECO, *La città della scienza*, cit., p. 58

and in 1975 Italian steel production registered its first net loss in over thirty years of uninterrupted growth. By 1977, with annual losses reaching 127 billion lire, talk of closing the plant altogether had entered public debate.¹²²

In 1990, the Naples plant was placed into liquidation, owing to a combination of environmental, chemical-industry, and market-related factors. The progressive decline of both the chemical and steel industries led, over the following years, to the closure of the hot-working section and, finally, to the definitive stop of the rolling mill, bringing all production activity to an end. The closure of the Ilva steelworks marked the end of over a century of industrial production, leaving behind a vast decommissioned landscape of approximately 250 hectares along one of the most scenically significant coastlines in the Mediterranean.¹²³

The Italian critical vocabulary surrounding post-industrial spaces has also produced the notion of “*vuoto urbano*”¹²⁴, urban void, which as Ugo Leone observes, does not correspond to a measurable emptiness, but rather to the loss of certain roles, functions, relationships, and entrepreneurial initiatives, and, more fundamentally, to a deep crisis of identity.

A first concrete attempt at redevelopment emerged in 1995-96, when the so-called “*variante Bagnoli*” was debated within the broader revision of the *Piano Regolatore* of Naples, with urban planner Vezio De Lucia advocating for the reclamation of the coastline and the restoration of public access to the sea as a response to a long-unmet social need.

The link between the site’s post-industrial crisis and its eventual cultural conversion did not emerge in the abstract: it had a concrete institutional origin in the nearby *Mostra d’Oltremare*, the historic exhibition complex bordering the Bagnoli-Fuorigrotta district. In 1987, physicist Vittorio Silvestrini conceived the first edition of *Futuro Remoto*, a science-outreach festival hosted within the *Mostra*

¹²² S. DE MAJO, A. VITALE, *Alle radici di Città della Scienza...* cit., p. 64

¹²³ S. DE MAJO, A. VITALE, *Alle radici di Città della Scienza...* cit., p. 65

¹²⁴ LEONE Ugo, *Bagnoli un quartiere nella città. Per la città?*, in *La città dismessa. Spazi consumati e desiderati. Le aree ex Italsider ed Eternit di Bagnoli*, edited by G. PERSICO, Napoli, Tullio Pironti Editore, 2002, p. 41

d'Oltremare grounds¹²⁵. The initiative's growing success between 1989 and 1992 convinced Silvestrini and his collaborator Vincenzo Lipardi, brought together partly through shared political engagement, to formalise their work through the establishment of the *Fondazione IDIS*. Both were firmly convinced that the idea and the project required a solid space capable of hosting them, and the disused area of the former Ilva industrial site fit perfectly within a broader discourse on the sharing and democratization of science communication¹²⁶.

A first, permanent expression of this project took shape in May 1992, when Nobel laureate Rita Levi-Montalcini, a founding member of the Fondazione, inaugurated the Idis Space: an area comprising exhibitions, educational laboratories, training rooms, and a small business incubator. The following year, the Ministry of University and Research recognised the initiative as being of “national relevance”, explicitly framing it as a response to the productive and employment crisis triggered by the closure of the Italsider steelworks.

It is within this context of post-industrial crisis and territorial uncertainty that the project of Città della Scienza was conceived, not merely as an architectural intervention, but as a cultural and urban act capable of reactivating a site that had lost both its productive function and its civic identity. The initiative materialised in 1996 with the opening of the first Science Centre within the seafront section of the former industrial complex. Inaugurated by the President of the Republic Oscar Luigi Scalfaro, it represented a very innovative way to emerge from the closure of Italsider, made possible through the sustained commitment of Vittorio Silvestrini and the Fondazione IDIS¹²⁷.

Over the following years, the institution consolidated its position within the European science museum landscape by joining Ecsite, the European Network of Science Centres and Museums. Its growing reputation was confirmed by two major recognitions: the Premio Micheletti in 2005,

¹²⁵ JALONGO Giacinta, *Immagine della città e realtà urbana a Napoli: il passato e il presente* in *La città dismessa. Spazi consumati e desideri. Le aree ex Italsider ed Eternit di Bagnoli*, edited by G. PERSICO, Napoli, Tullio Pironti Editore, 2002, p. 197, pp. 197-213

¹²⁶ P. GRECO, *La città della scienza*, cit., p. 110

¹²⁷ LEONE Ugo, *Bagnoli un quartiere nella città...* cit., p. 46

awarded for the quality of both its scientific exhibitions and the architectural restoration of the former industrial complex, and the European Commission's Prix Descartes for Science Communication in 2007, the first ever awarded to an Italian institution.

The relocation of *Futuro Remoto* from the *Mostra d'Oltremare* to the newly opened Science Centre in 1996 further reinforced this transition, physically and symbolically transferring the festival from a conventional exhibition venue into the heart of the former industrial landscape.

The wider regeneration of Bagnoli, however, proved far more complex than the success of Città della Scienza itself. In 2002, *BagnoliFutura S.p.A.* was established to oversee the environmental remediation and urban transformation of the area, but the company entered liquidation in 2014, leaving much of the former industrial district in a prolonged condition of institutional and physical uncertainty. Against this broader backdrop, Città della Scienza remained one of the few tangible outcomes of Bagnoli's long and still unfinished regeneration process.

2.2.2 The industrial complex: architectural analysis and transformations

The architectural form of the former industrial complex of Bagnoli cannot be fully understood without considering the broader spatial and functional organisation of the area, which developed progressively through different phases of industrialisation. From the late nineteenth century onwards, the site was occupied by different industrial activities and companies, whose presence and production functions changed over time in response to the economic and technological transformations of the area. A significant phase in this development was the establishment of the Montecatini chemical plant, which contributed to the industrial character of Bagnoli during the first decades of the twentieth century. The chemical production, however, represents only one phase in the history of the site. Following the decline and subsequent cessation of the Montecatini activities, the industrial area

underwent further functional transformations and was progressively occupied by other companies operating in different sectors, including steel production, cement manufacturing and related industrial activities. By the mid-twentieth century, the wider industrial area had therefore become a fragmented productive landscape, hosting several distinct operators, including *Italsider*, *Eternit*, *Federconsorzi* and *Cementir*, each occupying specific portions of the site (Fig. 47). The present architectural configuration of the complex is consequently the result of successive phases of construction, modification and adaptation rather than of a single, unified design. The buildings and infrastructures developed according to changing productive requirements, technological developments and the specific logistical conditions of an industrial site located directly on the coastline. Understanding these successive functional transformations is therefore essential to interpreting the architectural character of the complex and, subsequently, its conversion from a productive industrial site into a cultural and scientific centre.

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The result is a markedly stratified architectural complex, in which different historical layers of construction remain visible side by side. This very stratification, rather than being an obstacle, would later constitute the essential material substratum upon which the project of *Città della Scienza* was built.

The earliest phase of construction, located on the seaward side of *Via Coroglio*, constituted the oldest section of the industrial complex. Originally associated with the Lefebvre plant, this area was used for the production of copper sulphate, a compound obtained through the reaction between sulphuric

acid and copper¹²⁸. The sulphuric acid was produced on site by roasting pyrite, which was transported to the plant by sea, while the subsequent crystallisation and processing of the copper sulphate took place in large vats arranged within the main production sheds¹²⁹. The area was characterised by a linear and modular layout organised around a series of large parallel sheds. It included a long nineteenth-century building running parallel to the coastal road, which housed worker and staff accommodation, the gatehouse, offices, and warehouses (Figs. 48-49-50-51), alongside a compact system of five parallel production sheds facing the sea, extending over 70 metres in overall width and up to 180 metres in length¹³⁰. The original industrial sheds were covered by a system of large-span timber trusses derived from the traditional Palladian model. Inclined structural members, set 5.50 metres above floor level, transferred the roof loads to square brick piers enclosed by masonry walls of yellow and grey tuff and brick. The envelope was rhythmically punctuated by large openings facing the sea, reinforcing the building's relationship with the waterfront.

These longitudinal structures constituted a flexible and expandable system capable of accommodating different stages of production. The use of local materials, yellow and grey tuff combined with brickwork, contributed to a robust yet adaptable envelope, while large openings facing the sea ensured ventilation, natural lighting, and a direct operational link with maritime activities¹³¹. This spatial arrangement reflects a pre-mechanised industrial model in which production processes were largely manual and required extensive horizontal surfaces. Over the following decades, the original nucleus was progressively expanded rather than replaced, for example the transformations introduced under the Montecatini group in the 1920s and 1930s did not entirely replace the original structure, but rather overlaid it with new architectural and technological systems, particularly in the inland areas. The construction of reinforced concrete buildings marked a shift towards verticality, mechanisation, and increased production intensity, integrating silos, furnaces, and transport systems into a more complex

¹²⁸ S. DE MAJO, A. VITALE, *Alle radici di Città della Scienza...* cit., p. 72

¹²⁹ S. DE MAJO, A. VITALE, *Alle radici di Città della Scienza...* cit., p. 72

¹³⁰ S. DE MAJO, A. VITALE, *Alle radici di Città della Scienza...* cit., p. 72

¹³¹ S. DE MAJO, A. VITALE, *Alle radici di Città della Scienza...* cit., p. 73

and hierarchical layout. The entire complex functioned as an integrated infrastructural organism, in which a pier, cableways, and railway connections played a central role in linking maritime supply chains with internal production cycles.

The compact arrangement of these parallel volumes, together with the sheer scale of the sheds and their modular repetition, marked by the constant rhythm of the structural bays, constitutes the immediate visual testimony to the archaic character of the plant's initial productive philosophy and to the ambitious strategic vision of its builders. The juxtaposition of nineteenth-century masonry sheds and twentieth-century concrete structures illustrates not only the technological evolution of the plant, but also the broader transition from an early artisanal industrial paradigm to a modern large-scale production system. As such, the Bagnoli complex represents a significant case of industrial stratification, in which architecture functions as a material record of changing economic, technological, and social conditions accumulated over more than a century, a condition that would prove both a resource and a challenge for its subsequent transformation into a cultural institution.

2.2.3 The Adaptive Reuse Project

The origins of Città della Scienza should be situated in the late 1980s, when the progressive deindustrialisation of Bagnoli prompted Vittorio Silvestrini and his collaborators to envisage a permanent science centre within the area formerly occupied by the industrial district. The idea developed in parallel with the closure of the steelworks and was conceived not simply as the establishment of a new cultural institution, but as a possible contribution to the redevelopment of a territory undergoing profound economic and social transformation. Silvestrini subsequently presented the proposal to representatives of IRI and to Giovanni Gambardella, then managing director of Ilva, the company that owned the Bagnoli steelworks¹³²; the latter expressed support for locating the future Città della Scienza on at least part of the area left vacant by industrial activity¹³³. The involvement of

¹³² P. GRECO, *La città della scienza...*, cit., p. 109

¹³³ P. GRECO, *La città della scienza...*, cit., p. 109

Massimo Pica Ciamarra also dates back to this preliminary phase: in 1988, he participated in the organisation of *Futuro Remoto* as one of its section coordinators, contributing his expertise to the broader reflection on technology, territory and sustainable development¹³⁴.

A first, more circumscribed step in this process came in 1991, when Silvestrini identified a disused building at 156 Via Coroglio¹³⁵ as a potential site for the activities of the newly founded Fondazione IDIS. The approximately 2,000-square-metre building had originally functioned as a seaside bathing establishment but had subsequently undergone a change of use: its upper floor had been converted into a small chemical plant, while the ground floor was used for boat storage; by this time, both activities had been discontinued¹³⁶. Following negotiations with the owner, Fondazione IDIS leased the property and, supported by funding from the Ministry for Universities and Scientific and Technological Research (MURST) under Law 113/1991¹³⁷, adapted and renovated the premises. The building became the first nucleus of the future Città della Scienza, *Museo Vivo della Scienza*, initially hosted temporary exhibitions, educational laboratories, a media library and an incubator for cultural enterprises. The project subsequently moved from this initial territorial and cultural vision towards a concrete architectural programme on a much larger scale. In 1993, Fondazione IDIS acquired the former Federconsorzi industrial complex, an approximately seven-hectare area within the wider Bagnoli industrial district¹³⁸. On 25 February of the same year, the Foundation presented its project for Città della Scienza to MURST and to the Campania Region: the proposal was organised into three autonomous functional phases and located the new science centre within the former “*Fabbrica interconsorziale di concimi e prodotti chimici della Campania*” (ex Federconsorzi)¹³⁹. The development of the larger Città della Scienza complex followed from this acquisition. In 1996, the

¹³⁴ P. GRECO, *La città della scienza...*, cit., p. 109

¹³⁵ P. GRECO, *La città della scienza...*, cit., p. 106

¹³⁶ P. GRECO, *La città della scienza...*, cit., p. 105

¹³⁷ Italia, *Legge 4 agosto 1991, n. 113, Disposizioni per il riconoscimento della funzione sociale svolta dagli oratori e dagli enti ecclesiastici che hanno sede nei medesimi edifici*, Gazzetta Ufficiale n. 190, 14 agosto 1991. Available at: <https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:1991;113> (last accessed 8 September 2026).

¹³⁸ P. GRECO, *La città della scienza...*, cit., p. 111

¹³⁹ P. GRECO, *La città della scienza...*, cit., p. 111

project entered a new institutional and planning phase through an agreement involving Fondazione IDIS and the relevant public authorities, leading to the development of the wider site and the reuse of the former industrial buildings along the seafront¹⁴⁰ (Figs. 52-53). The inland component of the project was subsequently developed through the integration of existing structures with newly designed buildings and open spaces. A major phase was completed in 2003, adding approximately 20,000 square metres to the complex. Unlike the seafront intervention, which focused primarily on the adaptive reuse of the nineteenth-century industrial sheds, this phase introduced a stronger combination of existing and newly designed elements. It included the “Events Space”, designed to accommodate up to 1,000 people and characterised by suspended volumes incorporating significant fragments of the site’s industrial heritage, placed in dialogue with a large open-air amphitheatre. The intervention also incorporated offices, the Business Innovation Centre (B.I.C.) and dedicated training spaces. A vehicular access route crossed this part of the complex but was integrated into the overall spatial organisation, contributing to the continuity between the different functional areas rather than acting as a physical barrier.

The architectural approach adopted by *Massimo Pica Ciamarra Associati* for the conversion of the seafront sheds has been described as markedly sensitive but equally dynamic: an intervention that integrates itself within the existing industrial landscape without concealing it, articulated through “steel columns and tubular beams”¹⁴¹ that unify the various spaces while opening the complex towards the sea, a relationship with the water that visitors can perceive directly through extensive glazing (Figs. 54-55-56).

After more than a century during which the Bagnoli plant had represented, in the words of contemporary observers, a suffocating presence within the urban life of Naples, *Città della Scienza* was received by the local community as a statement of renewal, the first sign of a different relationship

¹⁴⁰ P. GRECO, *La città della scienza...*, cit., p. 111

¹⁴¹ PICA CIAMARRA ASSOCIATI, *Città della scienza and other works*, edited by Mario Pisani, Napoli, Liguori, 2002, p. 9. Original text: “[...] passerelle e travi reticolari, a colonne d’acciaio e travi tubolari [...]”.

between the city and this stretch of coastline (Fig. 57). The guiding principle of the intervention was “to introduce and express values of contemporaneity”¹⁴² while preserving the memory of the industrial past, connecting, in the words of the project’s authors, what existed with what was to come, through transformations that remained deliberately minimal in relation to the pre-existing fabric. It is important to highlight that Pica Ciamarra had to contend with a number of complexities: the area at the centre of their work was disused and left empty, yet rich and laden with memories of its industrial past and of what it had meant to the community. The preservation of this legacy was always a fundamental part of Pica Ciamarra’s approach, one they encapsulated in three words: future, memory, and sustainability¹⁴³. The following analysis focuses on the configuration of the complex before the 2013 fire; the subsequent changes caused by the fire will be addressed separately in the section dedicated to the site’s present-day cultural identity.

Until 2002, the area appeared as a fragmented industrial enclave, divided by Via Coroglio, a coastal road historically connecting Naples to Pozzuoli and the Phlegraean Fields. Running parallel to the shoreline, this infrastructural axis acted as a strong physical boundary, effectively splitting the site into two distinct parts. One of the key objectives of the regeneration project was precisely to overcome this division, transforming an element of separation into a device of spatial and functional connection, more specifically to give a sense of “courtyard”¹⁴⁴. (Fig. 58-59).

The interventions carried out as part of the project focused primarily on the section of Via Coroglio crossing *Città della Scienza*, which was widened and reconfigured to acquire a more open character. The road thus became not only a circulation route but also a space of interaction, functioning as an

¹⁴² PICA CIAMARRA ASSOCIATI, *Città della scienza...* cit., p. 21. Original text: “[...] come introdurre ed esprimere valori della contemporaneità.”

¹⁴³ P. GRECO, *La città della scienza...*, cit., p. 187

¹⁴⁴ Antonietta Iolanda LIMA, *Dai frammenti urbani ai sistemi ecologici. Architettura dei Pica Ciamarra Associati*, Milano, Jaca Book, 2017, p. 224

urban hinge capable of reconnecting the different parts of the complex and re-establishing a relationship with the coastal landscape.

Along this stretch, visual openings towards the sea were introduced, while the main entrance was redefined as a broad and recognisable space designed to welcome visitors and orient their movement.

Access to the museum occurs through a large internal *piazza*, created through the demolition of pre-existing structures¹⁴⁵. Here, the former industrial chimney stands out as a key landmark, preserved and reinterpreted as a material trace of the site's productive past (Fig. 60). Enhanced through contemporary additions in steel and glass, it becomes a vertical element that symbolically connects past and present. The construction details of this intervention, including the new steel structural elements, the illuminated glazed sphere at its summit, and the laser-beam path integrated into its base, illustrate the precision with which the original industrial structure was technically reinterpreted as a contemporary architectural and symbolic device. (Fig. 61)

On the inland site, the spatial organisation is based on a principle of continuity, articulated through a sequence of flexible environments that support collective use and diverse activities. Elements such as the Planetarium, educational areas and temporary exhibition spaces contribute to shaping a dynamic environment in which scientific communication is closely intertwined with experiential engagement (Figs. 62-63). At the same time, the project introduces moments of controlled discontinuity, particularly along the seafront, where openings and outdoor spaces establish a constant visual and perceptive dialogue with the surrounding landscape.

The relationship between interior and exterior emerges as a central design theme. Through architectural solutions that enhance visual and physical permeability, the complex maintains a continuous interaction with its context (Fig. 64). Open spaces, protected courtyards and framed views towards the sea contribute to integrating the project within the broader landscape of the Phlegraean

¹⁴⁵ PICA CIAMARRA ASSOCIATI, *Città della scienza...* cit., p. 33

Fields, reinforcing the idea of an architecture capable of engaging with its historical layers while redefining its contemporary identity. Thanks to photographs of the *Museo Vivo della Scienza* it's clear on how this relationship was enhanced. (Fig. 65-66)

Sustainability represented a further central concern of the project, one which acquired particular significance given the need to reconcile contemporary environmental standards with the regeneration of a nineteenth-century industrial fabric. A further reason for this significance lay in the intention to sever ties with a highly polluting industry that had severely damaged and endangered the Bagnoli area. Alongside the communication of science and the addressing of social and economic issues, particular attention was consistently given to the area's relationship with the sea and to the distinctive features of the Phlegraean Fields, with the aim of giving the site new life¹⁴⁶.

Within this approach, the notion of "environment" was understood in markedly broader terms than the purely visual dimension of landscape: it encompassed natural resources, physical conditions, human presence, and the relationships developing between them: a network bringing together morphological features, water systems, available materials, construction traditions, technological possibilities, pollution levels, and user comfort. Architecture, in this sense, was conceived not as an isolated object but as an active participant in an ongoing exchange with its surroundings, drawing on resources such as air, water, and materials, while managing the corresponding outputs and waste¹⁴⁷.

This understanding translated into a coherent set of design strategies. Locally compatible materials were favoured wherever possible; rainwater was collected and reused for non-potable purposes, such as irrigation and fire-prevention systems; green areas were reintroduced and permeable surfaces increased to support natural drainage; landscape design contributed to noise reduction, while natural ventilation systems and waste-separation infrastructure were integrated throughout the complex. Energy efficiency informed the design of the building envelope, balancing thermal mass, insulation,

¹⁴⁶ P. GRECO, *La città della scienza*, cit., p. 186

¹⁴⁷ PICA CIAMARRA ASSOCIATI, *Città della scienza...* cit., p. 35

natural lighting, and solar control¹⁴⁸, while photovoltaic systems and low-consumption lighting solutions were introduced where possible.

Water management combined rainwater reuse with, in some areas, seawater and desalination processes. A comfortable internal microclimate was pursued primarily through passive systems, extensive natural ventilation, underfloor heating concentrated in occupied areas, and a continuous air exchange achieved by drawing fresh air through lower openings and expelling warm air through roof skylights, reducing reliance on mechanical climate control. Taken together, this integrated approach was estimated to reduce energy consumption for heating, cooling, and lighting by approximately 25% compared to conventional systems, while maintaining equivalent spatial and functional standards¹⁴⁹.

2.2.3.1 The fire: losing the industrial site

On 4 March 2013, a major fire severely damaged Città della Scienza, destroying four of the six pavilions of the original Science Centre and causing the almost complete loss of its historic seafront exhibition facilities (Figs. 66-67). The investigations conducted after the event established the deliberate nature of the fire, that developed from several separate points of ignition in the area. However, identifying those responsible proved considerably more difficult. The only person ultimately brought to trial was Paolo Cammarota, a security guard on duty at the complex that night. According to the prosecution, Cammarota had facilitated the access of other individuals who subsequently set fire to the buildings, although these alleged perpetrators were never identified. Cammarota was initially convicted in 2016 and sentenced to six years' imprisonment but was acquitted on appeal in 2018. Following subsequent proceedings and interventions by the Court of Cassation, the case was returned to the Court of Appeal of Naples for a further trial. In November

¹⁴⁸ PICA CIAMARRA ASSOCIATI, *Città della scienza...* cit., p. 35

¹⁴⁹ PICA CIAMARRA ASSOCIATI, *Città della scienza...* cit., p. 40

2024, Cammarota was again acquitted, leaving the 2013 fire without a judicially established perpetrator. The circumstances and motivations behind the attack therefore remain unresolved, despite the extensive investigation and lengthy judicial proceedings.

Despite the fire, it is important to describe and preserve the legacy of the first nucleus of Città della Scienza, embedded in the *Museo Vivo della Scienza*, which had become a new beacon for the community of Naples. Just as the former Ilva factory had held great significance for the community of workers, and for Naples more broadly, its transformation carried an equally powerful meaning: restoring to the community, under a different guise, a place of aggregation such as the museum, while at the same time valorising the site's historical industrial past.

It is equally important to preserve the history of the museum itself; thanks to the work of Pietro Greco, we have a detailed description of how the spaces of the *Museo Vivo della Scienza* were organised.

The *Museo Vivo della Scienza* was distinctive for its narrative style, presenting different spaces between which the visitor was invited to find a connection. Among the venues lost in the fire was “*La Palestra della Scienza*”, the section most closely inspired by the traditional science centre model, where visitors were encouraged to engage with and analyse a variety of experiments¹⁵⁰. The Palestra was then divided into three sub-sections: the first, “*Dai fenomeni alla certezza*”, offered a narrative of classical physics; the second, “*La natura tra ordine e caos*”, allowed visitors to engage with contemporary physics; and the third, “*L'avventura dell'evoluzione*”, traced the history of the Earth¹⁵¹. “*L'Officina dei Piccoli*” was a large space conceived and realised by Pica Ciamarra alongside the Palestra, and like the Palestra, it occupied several indoor and outdoor areas. This space was designed primarily for school groups, from elementary, middle, and high school, an audience that remained a

¹⁵⁰ P. GRECO, *La città della scienza...*, p. 219

¹⁵¹ P. GRECO, *La città della scienza...*, p. 219

constant throughout Città della Scienza's history, who could take part in laboratories, problem-solving games, and activities addressing environmental issues¹⁵².

“La Mediateca” was another important component of the Museo Vivo, comprising a library, video library, and audio library open to the public, as well as a space hosting multimedia and musical workshops.

Only a limited portion of the complex was spared: the Galilei 104 Theatre, managed by the cooperative *“Le Nuvole”*, together with the restaurant pavilion and an office building. In the immediate aftermath, the local community mobilised in a strong display of solidarity, while leading figures from the scientific and cultural sectors promoted initiatives aimed at supporting the reconstruction of the complex. Despite this shared commitment, the recovery process proved to be long and complex, marked by institutional tensions and differing visions regarding the future of the site. The reconstruction became a contested process, reflecting broader challenges in managing large-scale cultural regeneration projects within fragile and politically layered contexts. Despite the scale of the destruction, a partial reopening of the site was achieved within weeks, on 10 April 2013, reflecting the rapid operational response that accompanied the wave of public and institutional solidarity.

A significant step forward in the reconstruction process was achieved in 2025 through the reorganisation and confirmation of the funding framework for the new Science Centre. The reconstruction project, originally included in the 2014 Framework Programme Agreement (Accordo di Programma Quadro, APQ) *“Ricostruzione Città della Scienza”*, was initially estimated at €42.7 million, of which €21.4 million were allocated through FSC 2007–2013 resources and €21.3 million were to be provided by Fondazione IDIS – Città della Scienza, which acts as the implementing

¹⁵² P. GRECO, *La città della scienza...*, p. 220

body¹⁵³. In 2025, following several changes affecting the planning and authorisation framework of the Bagnoli-Coroglio area, the project was restructured into two functional phases. The first phase, corresponding to a first functional lot, is entirely covered by the €21.4 million in FSC resources, while the completion of the project is to be financed through additional resources to be identified¹⁵⁴.

The project also underwent a significant change in location. Following the modification agreed upon in 2022 within the framework of the regeneration programme for Bagnoli-Coroglio, the new Science Centre is planned to be constructed in an area currently used as a parking facility, rather than in the location originally envisaged by the urban planning framework¹⁵⁵. The 2025 update therefore marks a renewed phase in the reconstruction process, while the project remains subject to a broader institutional and financial framework involving Fondazione IDIS and the Campania Region.

Within this broader trajectory, the opening of *Corporea – Museum of the Human Body* in 2017 represents a key moment in the site's partial reactivation. Unlike other parts of the complex, Corporea is a newly constructed building, and therefore does not directly engage with the reuse of pre-existing industrial structures. Nevertheless, its architectural configuration plays a crucial role in redefining the spatial and symbolic organisation of the area. The building develops over three levels and is characterised by a complex trapezoidal plan that recedes upwards, generating a system of terraces and panoramic spaces that frame the surrounding landscape¹⁵⁶. Its sinuous western façade, articulated through a continuous sequence emphasized by the use of the material terracotta, opens visual connections towards *Monte Coroglio* and the *Parco della Rimembranza*, while large porticoed spaces and an inclined façade define the relationship with adjacent public areas, including an open-air amphitheatre. A circular volume topped by a dome houses the Planetarium, reinforcing the

¹⁵³ Regione Campania, *Decreto n. 108 del 5 giugno 2025, DGR 197/2025. Piano Sviluppo e Coesione. Intervento "Ricostruzione Science Centre di Città della Scienza – Realizzazione dell'infrastruttura" – CUP G68E14000000005. Approvazione schema di Addendum alla Convenzione CZ.2016.0000003 del 19/01/2016, 2025, sezione "Premesso", lett. a–b.*

¹⁵⁴ Regione Campania, *Decreto n. 108/2025, cit., sezione "Premesso", lett. a.*

¹⁵⁵ Regione Campania, *Decreto n. 108/2025, cit., sezione "Premesso", lett. a.*

¹⁵⁶ Pica Ciamarra Associati, *Città della Scienza*, Digital Archive, <https://www.pcainit.com/en/napoli-bagnoli-corporea-il-museo-del-corpo-umano/>. (last accessed June 18, 2026)

experiential and educational dimension of the complex. The museum is accessed from an intermediate level connected by a pedestrian bridge that crosses Via Coroglio, re-establishing physical continuity between the different parts of the site.

From a broader perspective, the case of *Città della Scienza* highlights the multifaceted nature of contemporary urban regeneration processes. Rather than a linear transition from abandonment to reuse, the project reveals a layered and non-linear trajectory, in which preservation, reconstruction and new construction coexist and interact. The coexistence of reused industrial structures with newly built elements such as Corporea suggests that regeneration cannot be understood solely in terms of conservation, but must be framed as a dynamic process of reinterpretation, negotiation and transformation.

In this sense, *Città della Scienza* can be read not only as a project of adaptive reuse, but as a broader experiment in post-industrial regeneration, where memory, innovation and institutional complexity intersect. The reconstruction following the 2013 fire further reinforces this interpretation, positioning the site within a discourse of resilience, in which cultural infrastructure becomes both a symbolic and operational driver for urban renewal.

2.2.3.2 Institutional identity and mission

Città della Scienza is a project that was conceived as a complex with a dual purpose: one that promotes the sharing of scientific knowledge, and one that encourages people to engage, to create¹⁵⁷. This approach was reflected in the range of structures and activities developed by the institution, which combined exhibitions with educational laboratories, training activities and spaces for cultural and entrepreneurial innovation. The strong public response to this model was already evident in the early years of its operation: in 1997, the first year of the Città della Scienza being open to the public,

¹⁵⁷ P. GRECO, *La città della scienza...*, cit., p. 212

recorded approximately 300,000 visitors¹⁵⁸, a figure that demonstrates the significant capacity of the newly established institution to attract and engage the public.

Paying even closer attention, a characteristic that Vittorio Silvestrini wanted from the very beginning was for the museum to offer a hands-on experience, capable of capturing the visitor's curiosity and embodying the aim of the "educational" museum. In doing so, the museum also offers something that goes beyond the traditional science centre model, aiming to move beyond the mere visit of the site by engaging visitors' emotional sphere as well, focusing on so-called infotainment: the ability to convey information through fun and entertainment, and not only through a purely analytical approach.

Unlike many science museums directly managed by public authorities, Città della Scienza is operated by Fondazione IDIS, a private non-profit foundation pursuing public-interest objectives in the fields of science communication, education, innovation and technological development. Although legally independent from public administration, the foundation maintains a close institutional relationship with national and regional authorities, operating within a hybrid governance framework that combines managerial autonomy with strong public support. Its activities are carried out in partnership with the Ministry of University and Research under Italian Laws 113/1991 and 6/2000¹⁵⁹, which recognise and support institutions engaged in the promotion of scientific culture. By scale, range of activities, and visitor numbers, its Science Centre remains the leading institution of its kind in Italy, the country's first interactive museum model, and prior to the pandemic the complex attracted over 200,000 visitors annually, figure the Foundation's own communications still cite as a benchmark today¹⁶⁰.

The foundation's governance reflects this hybrid institutional model: *Fondazione IDIS* operates through a hybrid governance model that combines managerial autonomy with a strong institutional

¹⁵⁸ P. GRECO, *La città della scienza...*, cit., p. 212

¹⁵⁹ FONDAZIONE IDIS – CITTÀ DELLA SCIENZA, *Città della Scienza*, <https://www.cittadellascienza.it/chi-siamo/> (last accessed 23 June, 2026)

¹⁶⁰ FONDAZIONE IDIS – CITTÀ DELLA SCIENZA, *Città della Scienza*, cit.

presence. Alongside the original founders, the Regione Campania, the former Province of Naples and the Municipality of Naples participate as institutional founding members, while the Foundation is administered through a Board of Directors, a General Director and an Assembly of Members. Rather than distributing profits, all financial surpluses are reinvested in pursuing the foundation's statutory objectives.

Beyond the management of the Science Centre itself, the Foundation carries out a remarkably broad range of activities. Its statutory objectives include scientific dissemination, education and training, research, publishing, technology transfer, business support and innovation services, while complementary activities such as conferences, cultural events, educational publishing, museum shops, cafés and visitor services¹⁶¹ contribute to supporting its institutional mission. Rather than functioning solely as a museum operator, *Fondazione IDIS* acts as a multidisciplinary cultural organisation that integrates education, research, entrepreneurship and public engagement within a single institutional framework.

This institutional complexity is also reflected in the financial structure of Città della Scienza, which relies on a diversified combination of public funding, competitive project-based resources, educational activities, conference and event services, business incubation, museum admissions and other commercial activities¹⁶². Rather than representing an exceptional model, this diversified approach reflects the broader evolution of museum management over recent decades, in which public and private institutions increasingly combine different sources of income and funding to support their activities. In the case of Città della Scienza, however, the variety of its functions, that goes from scientific dissemination and education to training, events and support for cultural and entrepreneurial

¹⁶¹ FONDAZIONE IDIS – CITTÀ DELLA SCIENZA, *Statuto della Fondazione IDIS – Città della Scienza*, <https://www.cittametropolitana.na.it/documents/10181/1237875/IDIS+2016/6b386387-9d44-400a-866b-5cfcc32df316>

¹⁶² FONDAZIONE IDIS – CITTÀ DELLA SCIENZA, *Bilancio consuntivo 2022*, Napoli, 2023, pp. 8–10, <https://static-www.cittadellascienza.it/wp-content/uploads/2023/07/Bilancio-2022.pdf> (last accessed 5 September, 2026)

initiatives, is particularly relevant to understanding the economic and organisational structure of the institution.

Such diversification has proved particularly significant following the destruction caused by the 2013 fire, enabling the institution to maintain its educational and research activities while progressively rebuilding its infrastructure. The Foundation's participation in national and European research programmes also represents a strategic source of both funding and international collaboration.

The Foundation has consolidated its educational role through long-standing agreements with the Ministry of Education, renewed in 2015 and 2018, promoting STEM education, teacher training and scientific literacy throughout the country. During the site visit undertaken for this research, the predominance of school groups and families was immediately evident, confirming that these audiences continue to represent the institution's primary users. The interactive nature of the exhibitions, educational laboratories and participatory installations clearly reflects this pedagogical orientation, distinguishing Città della Scienza from more conventional museum models centred primarily on the passive display of collections.

The Foundation institutional profile extends beyond museum activities, among others it organises *Futuro Remoto*, Italy's oldest science festival, together with the Ministry of University and Research and the Regione Campania, the Foundation organises the *Settimana Sino-Italiana*, a biennial Italy–China exchange now in its fifteenth year, alongside long-running initiatives such as *3 Giorni per la Scuola* while simultaneously managing a Business Innovation Centre, conference facilities, educational laboratories and international research partnerships.

This activity is framed within an explicit institutional vision. The Foundation describes its mission as building a “knowledge-based economy”¹⁶³ capable of generating quality employment and social cohesion, pursued through the valorisation of local resources and engagement with the European and

¹⁶³ FONDAZIONE IDIS – CITTÀ DELLA SCIENZA, *Città della Scienza*, cit.

Euro-Mediterranean context, leveraging, in particular, Naples' strategic position at the crossing point between the global North and South. This positioning is significant for the present analysis: it situates Città della Scienza not merely as a recovered industrial site, but as an institution that actively mobilises its geographic and historical position, on the Bagnoli waterfront, at the edge of Naples and of Europe, as part of its cultural and economic mandate.

From the perspective of adaptive reuse, this institutional model is particularly significant. Città della Scienza demonstrates that the long-term sustainability of post-industrial regeneration depends not only on the architectural quality of the conversion, but also on the creation of a resilient organisational structure capable of diversifying activities, funding sources and audiences. Rather than functioning exclusively as a museum housed within former industrial buildings, the Foundation has evolved into a multifunctional cultural infrastructure in which scientific communication, education, research, entrepreneurship and public participation coexist. This institutional diversification has become one of the principal factors underpinning both the resilience of the organisation following the 2013 fire and the continuing regeneration of the Bagnoli site.

2.2.4 The seafront buildings as exhibition spaces: a direct observation

The site visit to Città della Scienza offers a further, more granular level of analysis, complementary to the historical and institutional perspectives discussed above. Beyond their administrative and symbolic dimension, the surviving industrial structures can be read as exhibition devices in their own right, whose original spatial logic continues to shape, more or less visibly, the experience of the visitor.

The two parts of the complex are physically separated by Via Coroglio, on the seaward side, the burnt-out shell of the *Museo Vivo della Scienza* remains visible from a distance, fenced off and inaccessible to the public, a silent reminder of the 2013 fire (Figs. 68-69) discussed above. A pedestrian bridge crossing Via Coroglio, the same structure later mirrored by Corporea's own

elevated walkway, re-establishes physical continuity between this dormant area and the buildings that today host temporary exhibitions, among them “*sensAzioni: esplora i 5 sensi!*” and “*Insetti & Co.*”, both housed within the long industrial sheds along the seafront.

Although adjacent and broadly similar in their external appearance, long, single-storey volumes with plastered façades, round-arched window and door openings, and pitched roofs, the two buildings differ in their original internal partitioning, a difference that has directly conditioned the exhibition design adopted in each. “*sensAzioni*” occupies a building conceived, in its industrial phase, as a single undivided volume, developed in length and height without internal load-bearing walls.

Seen from outside, the façade still bears the marks of its history: large areas of render have detached from the wall surface, exposing patches of underlying material and producing an irregular, mottled texture that contrasts with the bright mural decoration added at the entrance (Fig. 70). Inside, the curatorial team has worked with, rather than against, this open volume: free-standing partitions, painted plywood or plasterboard panels in a uniform blue, are arranged to generate a winding circulation path through a sequence of themed rooms, none of which corresponds to a pre-existing structural division. (Fig. 71) Critically, these partitions stop well short of the ceiling: above the panel line, the original space remains legible as a single continuous volume, with blind arched niches and the timber roof structure still visible overhead. (Fig. 72-73) In places, the roof structure itself is left partly exposed and partly concealed behind a flat suspended ceiling, with the transition between the two treatments, and an accompanying crack along the adjoining wall, clearly visible to the visitor looking upward. The overall effect is one of a temporary, reversible architecture inserted into a pre-existing shell, in which the industrial superstructure is neither fully restored or fully hidden, but allowed to remain present as a visual backdrop to the exhibition narrative. (Figs. 74-75-76)

“*Insetti & Co.*” is housed in a parallel building that (Fig. 77), unlike its neighbour, was already subdivided into distinct internal spaces, whether by original structural walls or by later interventions

is not always easy to determine from observation alone, but the resulting sequence of smaller, separated rooms is functionally very different from the single sweeping volume of *sensAzioni*. This configuration has allowed for a more controlled and integrated exhibition design: dimmed, warm-toned lighting calibrated to the needs of the live insects housed in vivaria; interpretive panels, thematic displays and video screens integrated into the painted partitions; and clearly identifiable signage marking the transition between rooms (Fig. 78). At the same time, the exposed steel roof structure, lighting tracks and technical installations remain fully visible above the exhibition layout, reinforcing the dialogue between the contemporary museographic intervention and the building's industrial fabric (Fig. 79). Even here, however, the industrial fabric remains legible: exposed steel roof trusses run the length of the space, modern wall-mounted air-conditioning units and museum spotlights are fixed directly onto them, and the painted walls show visible vertical cracking, consistent with long-term structural settlement and general wear. (Figs. 80-81-82)

A connecting passage between rooms, covered by dark curtains and animated by an interactive screen inviting visitors to leave a comment before exiting, further reinforces the sense of a continuous, if internally varied, itinerary through the building. (Fig. 83)

Read together, the two exhibitions suggest that adaptive reuse, at this micro-scale, is not a single strategy but a negotiation specific to each building's original spatial logic: where the structure offered an open, undivided shell, the curatorial response has been to construct circulation and division anew; where the structure already offered partition, the response has been to refine and animate the existing sequence of rooms. In both cases, the industrial fabric, its roof structures, its openings, its surface decay, is neither erased nor restored to an idealised state, but retained as a visible, working backdrop to a wholly new cultural function. This coexistence of legible decay and contemporary museographic technology offers a concrete, experiential counterpart to the more abstract discourse on regeneration and institutional resilience developed in the preceding sections.

A third industrial shed completes this sequence of buildings along the seafront, one of the buildings that were spared from the fire. Unlike the two exhibition spaces described above, this building primarily houses visitor services, including a café and refreshment area, while also hosting temporary, rotating exhibitions. At the time of the site visit, it presented *Terremoti d'Italia*, a free travelling exhibition produced by the Department of Civil Protection of the Presidency of the Council of Ministers in collaboration with Regione Campania, aimed at raising public and student awareness of seismic risk and appropriate protective behaviour¹⁶⁴. The building's interior was not accessible during the visit; based on its external appearance, consistent with the long single-volume sheds of *sensAzioni* and *Insetti & Co.*, it is plausible that it follows a broadly similar logic of adaptive reuse, though this cannot be confirmed through direct observation.

Read together, the three buildings suggest that adaptive reuse, at this micro-scale, is not a single strategy but a negotiation specific to each building's original spatial logic: where the structure offered an open, undivided shell, the curatorial response has been to construct circulation and division anew; where the structure already offered partition, the response has been to refine and animate the existing sequence of rooms. In both cases, the industrial fabric, its roof structures, its openings, its surface decay, is neither erased nor restored to an idealised state, but retained as a visible, working backdrop to a wholly new cultural function. This coexistence of legible decay and contemporary museographic technology offers a concrete, experiential counterpart to the more abstract discourse on regeneration and institutional resilience developed in the preceding sections.

Beyond Via Coroglio, on the inland side of the site, the spatial and architectural character of Città della Scienza changes substantially. Here, rather than a sequence of converted industrial sheds, the visitor encounters a mixed environment in which purpose-built new constructions coexist with preserved industrial artefacts and, at least in part, with restored historical fabric. This coexistence defines the distinctive quality of the area and raises a question complementary to that posed by the

¹⁶⁴ FONDAZIONE IDIS – CITTÀ DELLA SCIENZA, *Città della Scienza*, cit.

seafront buildings: not how industrial structures are converted into new cultural uses, but how industrial memory is maintained, and made legible, within a context of new construction.

The most striking instance of this approach is found in the open square at the centre of the inland area, where two large cylindrical cisterns from the original Bagnoli industrial plant have been retained in situ and left in an openly weathered state: their corroded metal surfaces, streaked with rust and partially colonised by spontaneous vegetation growing at the rim, make no pretence of restoration or reintegration into an active function (Fig. 84). Rather, they stand as sculptural presences, industrial artefacts preserved as landscape objects and markers of historical identity, operating in the register of memory rather than use. In the background, a surviving chimney stack reinforces this dimension, punctuating the skyline of the complex in a way that anchors it, visually and symbolically, to its industrial past. The contrast produced when these oxidised structures are seen in proximity to the Planetarium's smooth metallic dome, new architecture and industrial relic placed in direct, strikes a peculiar visual effect. (Fig. 85).

The Planetarium itself, together with Corporea, the Interactive Museum of the Human Body opened in 2017 and already described above, constitutes the experiential and symbolic core of the inland area. As noted previously, Corporea is a new construction, its trapezoidal volume and terracotta brise-soleil defining a contemporary architectural language that makes no literal reference to the industrial heritage of the site, yet engages with it through its massing, its use of warm materials, and its orientation toward the surrounding landscape. An open-air amphitheatre, the *Arena all'aperto*, positioned between Corporea and the Planetarium, provides an outdoor gathering space that during the site visit was in active use by school groups, confirming the strongly educational and public character of the inland area (Fig. 86). The Planetarium, with its large dome, introduces a further

typological layer: a form that is both scientifically functional and architecturally iconic, capable of serving both as a public facility and as an event venue¹⁶⁵.

The Congress Centre, also located in this part of the complex, represents yet another layer of the site's spatial logic. A purpose-built structure rather than an adaptive reuse project, it houses a fully equipped conference facility centred on the Sala Newton, a multipurpose auditorium of approximately 820 seats arranged in an amphitheatre configuration, complemented by a second auditorium, the Sala Archimede, and a series of modular meeting rooms named after figures from the history of science¹⁶⁶. The building's architectural language consciously engages with the surrounding context: the interior, accessible via a covered colonnade, is characterised by exposed brick walls, a metal roof structure left visible overhead, and generous ceiling heights that recall, without directly replicating, the spatial qualities of the converted industrial sheds on the seafront (Figs. 87-88). The institutional brochure itself frames the Congress Centre's setting in terms of a "carefully restored nineteenth-century architecture"¹⁶⁷, acknowledging the historical depth of the site as part of the venue's identity and appeal.

Taken together, the buildings and spaces of the inland area articulate a model of post-industrial regeneration that differs in important ways from the adaptive reuse logic at work in the seafront sheds. Rather than converting existing industrial structures into new uses, this part of the complex has been largely built anew, yet it maintains a continuous dialogue with industrial memory through the deliberate preservation of selected artefacts (the cisterns, the chimney), through architectural choices that echo the material and spatial character of the original site, and through the institutional narrative that frames the whole complex, old and new alike, as a unified cultural landscape.

¹⁶⁵ FONDAZIONE IDIS – CITTÀ DELLA SCIENZA, *Il Planetario di Città della Scienza*, <https://www.cittadellascienza.it/planetario/>. (last accessed on 23 June, 2026)

¹⁶⁶ FONDAZIONE IDIS – CITTÀ DELLA SCIENZA, *Centro Congressi* (institutional brochure), <https://static-www.cittadellascienza.it/wp-content/uploads/2025/04/Brochure-Centro-Congressi.pdf>. (last accessed on 23 June, 2026)

¹⁶⁷ FONDAZIONE IDIS – CITTÀ DELLA SCIENZA, *Centro Congressi* (institutional brochure), <https://static-www.cittadellascienza.it/wp-content/uploads/2025/04/Brochure-Centro-Congressi.pdf>. (last accessed on 23 June, 2026)

2.2.5 Conclusions

Taken as a whole, the case of *Città della Scienza* illustrates the complexity and non-linearity of post-industrial regeneration in the Italian context. Unlike the other case studies examined in this thesis, it is a site in which the adaptive reuse of industrial structures is only one component of a broader and still-evolving transformation, one marked by physical trauma, institutional resilience, and architectural plurality. The coexistence of converted nineteenth-century sheds, newly constructed cultural facilities, and deliberately preserved industrial artefacts within a single spatial and institutional framework makes *Città della Scienza* a particularly revealing case for the analysis of how industrial heritage is negotiated, interpreted, and activated as a resource for contemporary cultural life.

Yet the significance of the site extends beyond its architectural and institutional transformation. Its history is deeply intertwined with that of the communities that lived and worked around it, in a territory whose industrial value and strategic position repeatedly made it the object of competing interests and conflicting visions. The fire of 2013 added a further layer of trauma to this already complex history, destroying a substantial part of a cultural institution that had become an important point of reference for citizens, schools, and the wider community. Yet the destruction did not result in the disappearance of the site from the collective imagination. On the contrary, the response to the fire demonstrated the capacity of the community and the institution to mobilise around the loss and to insist on the reconstruction of a cultural space intended once again to serve the public. In this sense, regeneration emerges not only as a process of architectural transformation, but also as an act of collective persistence: a way of preventing a historically significant area from falling once again into abandonment and oblivion.

The ongoing reconstruction process initiated in 2025 therefore serves as a reminder that post-industrial regeneration is rarely a concluded event. In the case of *Città della Scienza*, regeneration remains an open process in which architectural heritage, institutional action, collective memory, and

public use continue to interact. At the same time, however, the case also highlights the limitations of regeneration when considered at the scale of a wider industrial territory. *Città della Scienza* occupies and has regenerated only a relatively small portion of the former industrial area of Bagnoli, while large parts of the surrounding site remain unused or abandoned. Its experience therefore demonstrates that even a large and complex cultural institution, combining scientific, educational, cultural, and public functions, can only intervene within a limited portion of a much larger urban transformation process. The regeneration of a former industrial area cannot consequently be understood as the result of a single architectural or cultural intervention but requires broader and long-term strategies capable of addressing the territory as a whole. The significance of *Città della Scienza* thus lies not only in the preservation and transformation of industrial structures, but also in its ability to demonstrate how cultural institutions can act as catalysts for regeneration, while simultaneously revealing the limits of what a single institution can achieve within a wider post-industrial landscape.

2.3 The Campolmi Complex: From Industrial Production to Cultural Heritage

2.3.1 The Industrial History of Prato and the Origins of the Campolmi Complex

The history of the building that today houses the *Museo del Tessuto* is closely connected to the broader development of Prato as a textile manufacturing centre. The origins of textile production in the city date back to the early twelfth century and were strongly influenced by the geographical characteristics of the area, particularly by the presence of the Bisenzio River. Its water resources provided an essential source of energy for early production activities: in the upper Bisenzio Valley, water-powered mills were already used both for grinding cereals and for fulling woollen cloth in *gualchiere*, specialised facilities involved in textile production. The increasing exploitation of the river led to the development of a complex hydraulic system designed to distribute its water throughout the territory. The river was diverted towards the *Cavalciotto*, from which the water entered the artificial canal known as the *Gorone* before being distributed through three smaller channels, the *gore*. These channels crossed both the countryside and the urban centre, supplying water to the numerous mills

and manufacturing activities that developed along their course. The hydraulic network became an essential component of Prato's industrial development, linking the exploitation of the Bisenzio River to the growth of its textile production¹⁶⁸. The relationship between the Bisenzio River, the hydraulic infrastructure and textile production thus became one of the fundamental conditions underlying the economic and urban development of Prato. From the sixteenth century onwards, textile production continued to develop despite the economic difficulties affecting the region. A further expansion took place during the eighteenth century, when changes introduced under the Medici administration facilitated both production and trade. By this period, Prato had established itself as one of the leading textile-producing centres in Tuscany, laying the foundations for the transition towards a more modern industrial system¹⁶⁹. A decisive transformation occurred during the nineteenth century, particularly with the progressive introduction of mechanisation. From around 1820, Giovan Battista Mazzoni, prominent Italian entrepreneur, inventor, and politician, considered the pioneer of modern textile industrialization in Prato, supplied the textile sector with water-powered machinery, encouraging the spread of workshops along the Bisenzio Valley. The river continued to play a central role in this process, providing not only the energy required to operate machinery but also the water necessary for washing raw materials and dyeing. At the same time, Prato developed a distinctive specialisation in the production of regenerated wool, obtained from textile waste and discarded rags. The technique, first developed in England in 1813 by Bernard Law¹⁷⁰, was progressively adopted in Prato and eventually became one of the defining features of the city's textile industry. The increasing importance of this activity made Prato one of the main centres of the international rag trade¹⁷¹ and contributed significantly to the city's industrial expansion. By 1842, the development of the textile sector was sufficiently advanced for the geographer Emanuele Repetti to describe Prato as the

¹⁶⁸ Marco MATTEI, *Campolmi, la fabbrica della cultura: il recupero dell'antica Cimatoria Campolmi di Prato per il Museo del Tessuto e la Biblioteca della città*, Firenze, Polistampa, 2010, p. 56

¹⁶⁹ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit. p. 56

¹⁷⁰ Anna BRICOLI, *Architettura dell'industria*, in *L'Ottocento a Prato*, ed. Renzo Fantappiè, Prato, CariPrato, 2000, p. 281

¹⁷¹ A. BRICOLI, *Architettura dell'industria...*, p. 281

“Manchester of the Grand Duchy”¹⁷², a direct comparison to the English city that had become the emblem of industrial-era textile manufacturing, reflecting how thoroughly Prato’s economy and urban fabric had come to be defined by textile production.

The introduction of new technologies, such as the shredding machinery developed by Ridolfo Mazzoni in 1860 and the carbonising process for mechanical wool introduced approximately two decades later¹⁷³, further strengthened the city’s specialisation in regenerated wool. At the same time, the factory model gradually became more established, although Prato’s industrial structure remained relatively fragmented. At the 1861 Florence National Exposition, some local firms already employed between eighty and three hundred workers, while in 1864 only a limited number of the approximately seventy textile producers operating in Prato could yet be considered large-scale enterprises in terms of workforce, capital and machinery¹⁷⁴. The expansion of manufacturing accelerated during the second half of the nineteenth century. By the early 1870s, this manufacturing growth was mirrored in the city’s demographic and civic profile: census data from 1871 recorded an active population exceeding seventy per cent, alongside a marked decline in illiteracy and rising consumption levels, developments that ran parallel to an increasingly dense associative and cultural life¹⁷⁵.

By 1878, ministerial statistics recorded eighty-four wool establishments in Prato, most of them still powered by the waters of the *Bisenzio*, while steam power remained relatively marginal¹⁷⁶.

¹⁷² A. BRICOLI, *Architettura dell’industria...*, cit., p. 281

¹⁷³ Renzo FANTAPPIE’, *Una delle città più interessanti della Toscana*, in *L’Ottocento a Prato*, ed. Renzo Fantappiè, Prato, CariPrato, 2000, p. 37

¹⁷⁴ R. FANTAPPIE’, *Una delle città più interessanti della Toscana*, cit. p. 39

¹⁷⁵ R. FANTAPPIE’, *Una delle città più interessanti della Toscana*, cit. p. 39

¹⁷⁶ R. FANTAPPIE’, *Una delle città più interessanti della Toscana*, cit. p. 40

2.3.1.1 The Expansion of the Textile Industry and the Transformation of Prato

A particularly important turning point came with the protectionist tariff reform of 1887. The introduction of high duties on foreign imports protected the Italian textile industry and contributed to an increase in the domestic price of wool, particularly combed wool¹⁷⁷. This situation strengthened the competitiveness of regenerated wool and favoured the further expansion of Prato's textile sector. The favourable economic climate also attracted new entrepreneurs and investors, including foreign industrialists, and encouraged the development of increasingly large industrial complexes.

Among the most significant examples was the Kössler, Mayer & C. wool mill, commonly known as the *Fabbricone*¹⁷⁸. Established with German investment and employing approximately one thousand workers, it represented a substantial change in scale compared with the largest existing local factories, such as the *Lanificio Forti alla Briglia*, located not in Prato itself but further up the Bisenzio valley, which employed around 170 workers. The *Fabbricone* introduced a new entrepreneurial and technical model and subsequently became a reference for the development of other large-scale textile plants, including the *Lanificio Calamai*, founded in 1878 and rebuilt at San Paolo in 1891, and the *Lanificio Cangioli* on Via Pomeria, whose development can be traced back to 1860¹⁷⁹. Industrial growth was accompanied by a profound transformation of Prato's urban and social structure. During the nineteenth century, production and residential functions increasingly developed in close proximity, creating a form of "factory-city" in which industrial activities were not confined to isolated areas but became deeply embedded within the urban fabric¹⁸⁰. The progressive expansion of manufacturing contributed directly to the transformation of Prato's physical structure, as industrial and residential functions increasingly developed within the same urban fabric¹⁸¹. Workshops, factories and workers' housing often coexisted in close proximity, creating a particularly strong relationship between

¹⁷⁷ Laura FIESOLI, *Sviluppo e diversificazione delle produzioni tessili pratesi tra Ottocento e Novecento*, in *Museo del tessuto di Prato: trenta anni di donazioni*, Prato, Museo del Tessuto Edizioni, 2007, p. 157

¹⁷⁸ A. BRICOLI, *Architettura dell'industria*, cit., p. 282

¹⁷⁹ A. BRICOLI, *Architettura dell'industria*, cit., p. 282

¹⁸⁰ Antonio CAPESTRO (ed.), *Prato: I territori del progetto*, Firenze: Alinea, 2001, p. 7

¹⁸¹ A. CAPESTRO, *Prato:...*, cit., p. 8

production and everyday urban life. This relationship would gradually change as industrial activities became increasingly decentralised and moved towards the *macrolotti*, large-scale industrial areas developed outside the more consolidated urban fabric¹⁸². This spatial shift progressively weakened the historical proximity between production and residence, although industrial activity continued to play a central role in Prato's economic and social identity. The consolidation of the industrial sector was also accompanied by the emergence of new institutions and organisations supporting industrial development, regulating economic activities and representing the interests of the growing industrial workforce.

The consolidation of the industrial sector was also accompanied by the creation of new institutions supporting both industrial development and the organisation of the workforce. The *Istituto Tecnico Industriale*, later named after its director Tullio Buzzi, was founded in 1886¹⁸³, followed in 1897 by the *Associazione industriale e commerciale dell'Arte della lana* and the *Camera del Lavoro*. Industrial expansion, however, was also accompanied by significant social tensions. Limited access to financial resources restricted industrial investment, while disputes over wages and working conditions contributed to recurrent unrest, including the weavers' strike of 1885 and the repression that followed the bread-price protests of 1898¹⁸⁴.

2.3.1.2 The Origins and Development of the Campolmi Complex

It was within this broader context of nineteenth-century industrial expansion that the enterprise later known as the *Cimatoria Campolmi Leopoldo & C.* developed. Its earliest documented trace dates back to the property known as "*Campolmi e Vannucchi*", recorded in account books and in the 1834 *Repertorio*.

The company was formally established under the name *Cimatoria Campolmi Leopoldo & C.* in 1855

¹⁸² A. CAPESTRO, *Prato:...*, cit., p. 8

¹⁸³ Marco CIATTI, *Collezionismo e conservazione: le due facce della stessa medaglia*, in *Museo del tessuto di Prato: trenta anni di donazioni*, Prato, Museo del Tessuto Edizioni, 2007, p. 39

¹⁸⁴ R. FANTAPPIE', *Una delle città più interessanti della Toscana*, cit., p. 43

and was listed among the city's *cimatorie*, or textile finishing workshops, in the municipal records of 1864¹⁸⁵.

Its development coincided with a period of profound technological and organisational transformation in Prato's textile industry. Like many other industrial complexes in the city, the Campolmi complex did not result from a single construction project but developed progressively through the acquisition and adaptation of pre-existing buildings. This incremental growth reflects the fragmented and constantly evolving nature of nineteenth-century industrialisation in Prato. Over time, however, changes in the city's productive system also transformed the role of these industrial spaces. As manufacturing activities became increasingly decentralised, factories located within the historical urban fabric gradually lost their original productive functions¹⁸⁶. Their transformation into industrial heritage sites therefore raised a new question: how could these buildings be preserved while also being integrated into the changing urban structure? The reuse of former industrial spaces emerged as a possible response, allowing them to retain their connection to Prato's manufacturing history while accommodating new social and cultural functions.

This process also affected the Campolmi complex. The main activities of the *Cimateria Campolmi* ceased in 1970¹⁸⁷, while minor and partial operations continued within the complex until 1994. Following the definitive abandonment of the site, the buildings underwent a significant process of deterioration. In 1999, the former industrial complex was acquired by the Municipality of Prato, marking the beginning of a new phase in its history and establishing the institutional basis for its subsequent recovery. The Municipality of Prato's decision to pursue the recovery of the Campolmi complex was motivated by several considerations. On the one hand, the intervention was conceived as an exemplary case for the conservation and valorisation of industrial archaeological heritage. On the other, it addressed the regeneration of a particularly degraded area in the heart of the city,

¹⁸⁵ M. MATTEI, *Campolmi, la fabbrica della cultura*..., cit., p. 57

¹⁸⁶ A. CAPESTRO, *Prato*..., cit., p. 8

¹⁸⁷ Massimo DE SANTIS, *Da Fabbrica a centro culturale. La Cimateria Campolmi a Prato*, in *Campolmi, la fabbrica della cultura: il recupero dell'antica Cimateria Campolmi di Prato per il Museo del Tessuto e la Biblioteca della città*, Firenze, Polistampa, 2010, p. 22

characterised by abandoned industrial structures and social housing¹⁸⁸. The redevelopment of the complex therefore represented not only an opportunity to preserve an important part of Prato's industrial history, but also a means of giving new life to a neglected urban area and reintegrating it into the city's cultural and social fabric.

2.3.2 The Historical Complex: the original layout and spatial organisation

The Campolmi complex covers approximately 10,000 square metres, of which around 5,000 are occupied by buildings. The total useful floor area extends over two levels and amounts to approximately 8,500 square metres¹⁸⁹. Following the decision to expand the factory according to a unified quadrangular plan in 1870, Campolmi acquired the layout that largely characterises the complex today. The factory is organised around a large rectangular courtyard closed by two-storey buildings. (Figs. 89-90)

The courtyard originally played an important role in the production process, serving as a space for loading and unloading raw materials and finished textile products¹⁹⁰.

The main building has a rectangular plan, with its longer sides facing the internal courtyard. At the centre of the courtyard are two of the most recognisable elements of the complex: the large water tank and the approximately 50-metre-high brick chimney, which is the tallest in Prato¹⁹¹. (Fig. 91)

The original complex was characterised by four main façades, of which only two remain visible today. The main façade on *Via Santa Chiara* is marked by a large entrance portal (Fig. 92), while the longer façade on *Via Puccetti* was restored during the first phase of the redevelopment works (Figs. 93-94). The remaining two façades are largely hidden behind later sheds and service buildings, which were added over time and have limited architectural value¹⁹². These later additions reflect the gradual

¹⁸⁸ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 50

¹⁸⁹ Marco MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, in *Il Museo del tessuto di Prato nell'ex fabbrica Campolmi: il recupero di un importante complesso d'archeologia industriale per il più grande museo tessile d'Italia*, Firenze, Pagliai Polistampa, 2003, p. 17

¹⁹⁰ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 20

¹⁹¹ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 20

¹⁹² M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 20

transformation of the industrial complex and contribute to the layered character of the site as it appears today.

The building on *Via Puccetti* is mainly constructed from brick and *pietra alberese*, a local sandstone known as *Bisenzio* “cobblestone”. The brick appears throughout the structure in different roles: perimeter walls, load-bearing pillars, small, vaulted floor sections, and cross-vaults. Overall, the structures were found to be in good condition: there were no signs of active structural failure, and the foundations appeared regular and well preserved¹⁹³.

The main visible deterioration concerned the external plaster, which showed signs of weathering and deterioration but did not affect the stability of the building. The floors are also generally well preserved, despite having supported heavy machinery and being covered with additional concrete layers over time¹⁹⁴, and several diagnostic surveys were carried out on the cast-iron columns and steel beams confirming their good structural condition¹⁹⁵.

2.3.2.1 The Different Buildings and Industrial Functions

The building complex developed progressively from the second half of the nineteenth century onwards, as the Campolmi factory expanded its production and incorporated new spaces. Its modern industrial history began in 1863, when Vincenzo Campolmi acquired the former Santa Chiara mill. The expansion of the factory continued in the following years, and a new building was authorised on the adjacent land in 1869. This intervention marked an early stage in the transformation of the original mill into a larger industrial complex. Between 1869 and 1896, the factory gradually expanded through the addition and reorganisation of new spaces. By 1896, the quadrangular layout around the central courtyard had been completed, together with the chimney. Further buildings were added during the early twentieth century, indicating that the development of the complex continued beyond the

¹⁹³ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 20

¹⁹⁴ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 20

¹⁹⁵ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 22

nineteenth-century expansion. The present configuration is therefore the result of a gradual process of construction and transformation that unfolded over several decades, from the 1860s to the early twentieth century, rather than a single construction phase.

The southern section corresponds to the former mechanical workshop and belongs to the earlier stages of the factory's development, between the late nineteenth century and the completion of the quadrangular complex in 1896. Its structure combines stone and brick walls with shallow cross-vaults on the ground floor. The courtyard side is characterised by large arched windows, while smaller rectangular windows with metal bars face the street¹⁹⁶. At a later, currently undated stage of the building's history, a mezzanine was added to divide the originally open space and create additional storage areas. This intervention also led to changes to the original roof structure and its structural components.

The central section of the complex, originally devoted to textile production, still has the clearest evidence of its industrial past. Its large and open spaces, supported by a combination of stone and brick masonry, cast-iron columns and steel beams, reflect the functional requirements of textile manufacturing¹⁹⁷. The upper floor preserves its original structure, while the large arched windows running along both sides of the building provided the natural light required for the activities carried out inside. These elements remain clearly visible today, contributing to the preservation of the building's industrial character. The northern section, originally used for offices and service functions, presents a somewhat different spatial character, reflecting its secondary role within the production complex. Although it is more recent than the central section, it maintains several architectural elements shared with the rest of the building, particularly the large arched windows on the upper floor¹⁹⁸. The coexistence of these different spaces within the same complex reflects the variety of functions that supported the original industrial activity, while their preservation allows the

¹⁹⁶ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 22

¹⁹⁷ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 25

¹⁹⁸ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 26

relationship between the building's architecture and its former use to remain legible after its conversion. (Fig. 95-96-97)

The roof structures, largely preserved throughout the complex, provide further evidence of the building's industrial history. The structure of the roof is the original and is particularly visible in the main sections of the former factory, while some areas, especially the eastern wing and the former hydraulic mill, have undergone a greater degree of deterioration¹⁹⁹. More broadly, the differences in materials, construction techniques and architectural features across the complex reflect its gradual development over time. Rather than being conceived as a single, uniform building, Campolmi grew and adapted according to the changing needs of its industrial activities, resulting in a complex where different phases of construction remain visible in the architecture.

The building on *Via Santa Chiara* follows a construction system similar to that of the central section of the complex, combining mixed masonry, steel-beam floors and timber roof trusses²⁰⁰. Its most recognisable feature is the large entrance portal, which still bears the historic "*Campolmi & Co*" sign. The eastern part of the building has a simpler layout, with a row of cast-iron columns running through the centre of the ground floor and a large open space on the upper floor. Here, the original timber trusses are still visible, although they are in a more deteriorated condition²⁰¹. Large windows are also found throughout the building, allowing natural light to reach the interior while providing views of the surrounding area. The building is connected by a covered gallery to other structures belonging to the former industrial complex. Among these is the former hydraulic mill, which is one of the most damaged parts of the site and shows evidence of partial structural collapse. Next to it stands the former dye-works pavilion, a distinctive example of 1950s reinforced-concrete industrial architecture²⁰².

¹⁹⁹ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 26

²⁰⁰ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 26

²⁰¹ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 26

²⁰² M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 26

The pavilion is particularly significant because its architectural form was closely connected to its original industrial function and to the need to ventilate the fumes produced during the dyeing process. Although prolonged exposure to these chemicals caused considerable deterioration of the concrete, the main structure remained largely intact.

On the southern side of the complex, some later additions were demolished during the first phase of the restoration works, revealing further elements of the site's industrial history. These include the former boiler room, which still houses a nineteenth-century coal-fired boiler of Cornoveglia, an English design²⁰³. Above it, a metal roof framework spanning approximately 12.5 metres represents another important surviving element of the original industrial complex. Together with the chimney, the water tank and the historic machinery, these elements contribute to preserving the memory of Campolmi's former productive activity²⁰⁴. (Figs. 98-99)

2.3.3 The Museo del Tessuto: Institutional Mission and Spatial Adaptation

The *Museo del Tessuto* is a specialised cultural institution dedicated to the preservation, study and promotion of textile heritage, with a particular focus on the historical and contemporary development of the textile industry in Prato²⁰⁵. The origins of the museum date back to 1975, when the collector Lorian Bertini donated a collection of 612 textile fragments²⁰⁶, dating from the Late Middle Ages to the end of the eighteenth century, to the Tullio Buzzi Technical Industrial Institute²⁰⁷. The collection remained at the institute for several years and constituted the initial nucleus of what would later become the Museo del Tessuto. During the following years, the continuous expansion of the collections and the need for a dedicated exhibition and conservation facility progressively

²⁰³ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 26

²⁰⁴ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 26

²⁰⁵ Filippo GUARINI, *Introduzione*, in *Museo del tessuto di Prato: trenta anni di donazioni*, Prato, Museo del Tessuto Edizioni, 2007, pp. 23-25, p. 24

²⁰⁶ Filippo GUARINI, *I trenta anni del Museo del Tessuto di Prato: dall'idea al Museo oggi*, in *Museo del tessuto di Prato: trenta anni di donazioni*, Prato, Museo del Tessuto Edizioni, 2007, p. 47

²⁰⁷ Lorian BERTINI, *Introduzione*, in *Museo del tessuto a Prato: la donazione Bertini*, catalogo a cura di Rosalia Bonito Fanelli, Firenze, Centro Di, 1975, p. 14

strengthened the need to establish an independent museum institution. The definitive separation from the Istituto Buzzi marked an important step in this process and led to the search for a suitable permanent location for the growing textile collection. After several proposals and discussions, the former Cimatoria Campolmi was identified as a suitable site for the new museum²⁰⁸, owing to its historical connection with Prato's textile production and its potential for conversion into a cultural facility. The choice of Campolmi was therefore closely connected to the museum's institutional identity: the former factory was not simply an available industrial building that was subsequently assigned a cultural function, but a site whose historical relationship with textile production made it particularly appropriate for the institution.

This relationship also influenced the decision of the Municipality of Prato to acquire the former industrial complex in 1999 with the specific aim of establishing the *Museo del Tessuto* on the site. The redevelopment was therefore conceived from the outset as a purpose-driven recovery project, in which the future museum function was already central to the decision to acquire and transform the former factory. Following the restoration and conversion works, the *Museo del Tessuto* was definitively relocated to the former Campolmi factory in 2003, establishing a new cultural institution within one of the city's most significant examples of industrial heritage.

The museum's institutional role is closely connected to the economic and social history of Prato. The textile industry has played a fundamental role in shaping the city's physical development, economy and social structure, making the preservation of its material and technological heritage particularly significant within the context of the former factory. The museum therefore does not merely preserve a collection of historical objects, but aims to interpret the relationship between textile production, labour and the development of the city. Its collections include historical and contemporary textiles,

²⁰⁸ F. GUARINI, *I trenta anni del Museo del Tessuto di Prato...*, cit., p. 49

costumes, examples of different textile techniques, as well as machinery and tools documenting the technological development of textile production²⁰⁹.

This role is also reflected in the museum's broader cultural mission. In addition to conservation and exhibition, the institution was conceived as a place for study, research, education and experimentation, maintaining relationships with the local and international textile sector. The museum therefore functions not only as a repository of industrial memory, but also as a centre for the production and transmission of knowledge related to textiles, technology and design. Its institutional mission consequently extends beyond the preservation of historical objects to include the interpretation of the continuing relationship between textile production and the city of Prato.

From an institutional perspective, the Museo del Tessuto is managed by the *Fondazione Museo del Tessuto di Prato*. The Foundation constitutes a hybrid governance model: although it is formally a private-law entity under public control, the museum itself is recognised as a cultural institution belonging to the public sector. Its organisational model brings together public institutions and actors connected to the local productive and social context, reflecting the museum's close relationship with the textile district. This governance structure is particularly relevant to the adaptive reuse project, as the cultural function of the former factory remains closely connected to the economic and productive identity of the territory.

The decision to establish a museum within the former Campolmi factory consequently involved a series of specific functional requirements that had to be accommodated within the existing industrial structure. In addition to exhibition spaces, the museum required areas for the conservation of textiles, research, education and temporary cultural activities, as well as appropriate circulation and accessibility for visitors. The preservation of textile collections also required suitable environmental conditions, while the transformation of the former factory into a public cultural institution required

²⁰⁹ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 138

compliance with contemporary safety standards. These requirements had to be addressed without losing the architectural and material characteristics that made the former factory significant as an example of industrial heritage.

The exhibition layout was therefore developed in direct relation to the spatial characteristics of the former industrial complex (fig. 100). The narrow and elongated configuration of the western wing of the historic quadrangle influenced the organisation of the exhibition route²¹⁰, which develops across two floors from the entrance located beside the historic portal on *Via Santa Chiara*. The existing industrial spaces were adapted to accommodate different functions, including an introductory section, the historical collection, the section dedicated to *Prato: città tessile* on the first floor, the contemporary textile collection, and spaces for temporary exhibitions and cultural activities. (fig. 101-102)

The relationship between the museum's collections and the architectural character of the former factory is particularly significant. The historical collection occupies a vaulted room on the ground floor (fig. 103), restored according to a conservative approach, while the section dedicated to the history of Prato retains restored timber roof trusses and large industrial windows on the first floor. These spaces do not function merely as neutral containers for the collections; their architectural characteristics contribute to the interpretation of the historical and productive context represented by the museum. At the same time, the contemporary textile section maintains a direct relationship with the productive fabric of the city, documenting recent textile production, technological research and innovations developed both locally and internationally. The museum therefore establishes a continuity between the historical industrial identity of the building and the contemporary textile sector that continues to shape Prato. The establishment of the *Museo del Tessuto* within the former Campolmi complex thus required the existing industrial spaces to accommodate a new cultural function while retaining their historical and architectural significance. The building had to provide

²¹⁰ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 138

the physical and environmental conditions required by a contemporary museum, but its existing structures, materials and spatial configuration also constituted an essential part of the cultural value of the site. The subsequent conversion project therefore had to negotiate between these two requirements: adapting the former factory to its new public function while preserving the architectural character and historical stratification of the industrial complex.

2.3.4 The Conversion Project: Conservation, Adaptation and Environmental Strategies

Following the decision to establish the *Museo del Tessuto* within the former Campolmi complex, the redevelopment project had to reconcile the requirements of a contemporary public museum with the conservation of the existing industrial fabric, as mentioned above. After the acquisition of the complex by the Municipality of Prato in 1999, a preliminary assessment was carried out before the restoration works began. The survey examined the structural condition of the buildings, as well as the specific types and extent of material decay affecting their structural and typological elements. The investigations showed that the complex's structural system was, overall, sound, with only a few localised problem areas. The restoration of the portion intended to house the *Museo del Tessuto* began in December 1999 and was completed in 2002, while the wider recovery project continued until 2003.

Given the building's intended public use, the consolidation works focused in particular on improving its resistance to seismic activity and substantially increasing its level of seismic safety²¹¹. The structural consolidation works were overseen by two engineers: Giuseppe Moschi, responsible for the first phase of construction, and Arturo Bartoletti, responsible for the second. Throughout the building process, the condition of the factory's structures was closely monitored on site, and the state of decay of individual structural and typological elements was assessed. The foundations required substantial reinforcement, while the above-ground load-bearing structure showed no major structural problems apart from a few specific areas²¹². One of the most significant issues concerned the

²¹¹ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 30

²¹² M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 93

collapsed roof over the former hydraulic mill, which required specific intervention. The floor structures, despite having historically supported heavy machinery, were also found to be in generally good condition, with no significant signs of structural failure.

The structural interventions were accompanied by an overall conservation approach aimed at preserving the architectural character and historical stratification of the former factory. The project was preceded by a detailed analysis of the building's original architectural features and subsequent historical transformations²¹³. Rather than replacing or substantially transforming elements such as the hydraulic workshop or the dyeing pavilion, the intervention aimed to restore them and incorporate their existing characteristics into the new cultural function of the complex. In this sense, the project interpreted the former factory as an example of industrial archaeology, preserving the variety of architectural and construction techniques associated with its successive phases of development. The conservation strategy also extended to the building's external surfaces and finishes. Particular attention was given to the restoration of the two main façades, one facing the central courtyard and the other facing *Via Puccetti*. In accordance with the original architectural character and historical stratification of the complex, traditional finishing techniques were recovered, including lime-based painting²¹⁴. The external plasterwork was also repaired where necessary, particularly in areas where the old plaster had become almost completely detached. The colour scheme of the façades was defined through a study of their historical finishes and based on the traditional Prato colour palette, allowing the intervention to recover the chromatic character of the complex without introducing an entirely new visual language. (figs. 98-99)

²¹³ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 32

²¹⁴ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 32

2.3.4.1 Integrating Contemporary Requirements into the Historic Fabric

The conservation of the historical structure had to be combined with the functional and regulatory requirements of a contemporary museum. The intervention therefore included the necessary adaptation of the building to current safety and functional standards. In particular, a new fire-safety system was introduced, together with new escape staircases positioned at the two ends of the main building and a further staircase was inserted in a central position, creating a limited but significant new element within the existing structure²¹⁵. This intervention also helped to organise the relationship between the main museum spaces and the service areas located along the central spine of the building. The approach therefore sought to introduce the infrastructure required by the new public function while limiting its impact on the original architectural configuration.

Particular attention was also devoted to the design of the mechanical and environmental systems. Rather than treating the technical adaptation of the building as an independent addition, the project adopted a bioclimatic approach²¹⁶ intended to ensure adequate environmental conditions for the conservation of the museum collections while reducing energy consumption and environmental impact. The intervention involved an assessment of the building's energy performance and of the microclimatic implications of the architectural choices. The main objective was to minimise energy consumption and pollutant emissions while ensuring suitable levels of comfort for visitors and appropriate environmental conditions for the collections.

An important element of this strategy was the reuse of the water resources already present within the former industrial complex. The large water reservoir, historically associated with the textile production process, offered a significant resource for the new energy system. Its substantial water capacity was exploited as the primary source for a heat-pump system, allowing the existing industrial

²¹⁵ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 32

²¹⁶ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 35

infrastructure to contribute directly to the environmental performance of the museum²¹⁷. The water was used as a thermal source and, after the heat-exchange process, returned to the central reservoir. This approach allowed an element originally connected to the productive function of the factory to acquire a new role within the building's contemporary environmental infrastructure²¹⁸. The original roof structures and window frames were restored, while new insulated glazing was introduced where necessary to improve thermal control without compromising the historical character of the building. The resulting system was therefore conceived as a balance between the preservation of the existing architectural fabric and the technical requirements of a contemporary museum. From an environmental and economic perspective, the project demonstrates how the reuse of existing industrial infrastructure can also contribute to the reduction of the environmental impact associated with a new cultural use. According to the project documentation, the adoption of the heat-pump system resulted in lower operating costs than a conventional gas-fired heating system, together with a significant reduction in gas emissions²¹⁹.

Another layer of intervention and particular attention was given to the roof trusses: the first-floor rooms of the nineteenth-century quadrangle have several different roof types. The restoration project adopted a conservative approach to these historic structures, preserving the original structural composition wherever possible and replacing individual elements only when strictly necessary. The original structures were reinforced to improve their stability and meet current safety requirements, while preserving their overall configuration²²⁰. A particularly distinctive space is the large hall on the first floor of the southern building, facing the medieval city walls. Originally used for textile finishing, the room covers approximately 455 square metres²²¹ and is distinguished from the other spaces in the complex by its original steel roof structure. The roof was found to be in relatively good condition and

²¹⁷ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 35

²¹⁸ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 35

²¹⁹ M. MATTEI, *Il Museo del Tessuto di Prato nell'ex fabbrica Campolmi*, cit., p. 35

²²⁰ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 97

²²¹ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 97

represented an important surviving element of the building's industrial character. During the restoration, the structure was reinforced in order to meet current safety requirements while preserving its original appearance and lightweight character. Rather than replacing the existing roof, the project introduced limited additional structural elements and reduced the weight of the materials used above it²²².

2.3.4.2 Conservation of the Industrial Heritage

As previously discussed, the conversion project placed particular emphasis on the preservation and, wherever possible, enhancement of the site's industrial heritage. This approach is clearly reflected in some of the peculiarities of the complex: the 50-metre-high chimney built in 1896 to evacuate the smoke produced by the factory's coal-fired machinery is one of them (fig. 91). Located in the courtyard near the large water tank, the chimney was carefully restored while preserving its original industrial appearance. In particular, the restoration aimed to maintain the darkened surface resulting from decades of exposure to smoke, allowing the chimney to remain visually connected to its original function²²³.

Before the intervention, the original construction materials were analysed in order to identify compatible materials for the restoration, and with no major structural problems found, the chimney was locally reinforced to ensure its stability and long-term conservation²²⁴. The most deteriorated sections at the top were dismantled and rebuilt using mortar similar to the original, while smaller gaps and damaged areas in the masonry were repaired. The intervention therefore focused on consolidating the existing structure while preserving both its material characteristics and the traces of its industrial use.

²²² M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 99

²²³ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 104

²²⁴ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 104

Another particularly significant element of the complex, as well as one of the most deteriorated parts, was the former hydraulic mill, which is located on the eastern side of the historic quadrangle. The two-storey building was developed during the industrial period from the pre-existing structures of the Santa Chiara mill, and it had significant damage to the roof, load-bearing walls and floors, including the partial collapse of the original roof structure²²⁵. The restoration therefore focused on consolidating the existing building while reconstructing the missing portions of the roof according to its original configuration.

A distinctive element is the former dye-works pavilion, on the southern side of the complex and facing the medieval city walls. Built in the 1950s, it is one of the most distinctive elements of the complex and an important example of reinforced-concrete industrial architecture. Its characteristic roof, formed by a series of large concrete arches, gives the building a distinctive appearance²²⁶. However, its unusual form was not merely an aesthetic choice: it responded directly to the requirements of the textile production process. The openings incorporated into the roof allowed the acidic fumes produced during dyeing to escape, helping to improve the working conditions inside the pavilion. The building therefore represents a particularly clear example of how the architecture of the complex was shaped by its original industrial function. (Figs. 105-106-107-108)

At the same time, prolonged exposure to these substances contributed to the deterioration of the concrete structure. Despite this, the main structure remained sufficiently sound to be preserved. The restoration therefore focused on repairing the damaged areas and consolidating the existing structure rather than replacing it. In this way, the project was able to retain the pavilion's distinctive architectural form and, with it, the relationship between its physical characteristics and its former industrial use. During the restoration works, an underground water cistern was discovered beneath the floor of the former dye-works pavilion. The cistern had been used as part of the factory's industrial

²²⁵ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 107

²²⁶ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 108

activities and represents another surviving trace of the site's productive past²²⁷. Its discovery required the foundations of the pavilion to be reinforced before restoration could continue. The project was therefore adapted to accommodate the existing cistern, introducing new structural supports without altering or compromising the historic structure below²²⁸. The existing connection between the pavilion and the northern wall of the former hydraulic mill was also preserved, maintaining the structural and spatial relationship between the two buildings.

2.3.4.3 New Requirements: Safety, Accessibility and Building Services

The conversion of the complex into a cultural institution required the introduction of new spaces and services to meet the functional needs of its users. A new L-shaped volume was constructed alongside the former dye-works on its eastern and southern sides. The extension accommodates the library's cloakroom and service areas, while its upper terrace provides views towards the medieval city walls. The addition responds to the practical requirements of the new cultural use while also contributing to the overall stability of the complex. Rather than altering the historic pavilion to accommodate these new functions, the project concentrated the necessary new spaces within a contemporary extension. (Fig. 109)

More broadly, the conversion of the complex required its adaptation to the functional, technological and safety requirements of a contemporary public cultural institution. New building systems, fire-safety measures, circulation elements and an elevator were introduced while seeking to minimise alterations to the historic structures and preserve the character of the former industrial complex. Rather than reproducing the existing architectural language, however, the project deliberately expressed the new additions through a contemporary architectural vocabulary, allowing the different phases of the building's history to remain legible. Particularly significant in this respect is the terminal volume facing the medieval city walls, whose restrained concrete structure and minimalist design

²²⁷ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 110

²²⁸ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 110

establish a dialogue between the historic industrial complex, the medieval urban fabric and its new cultural function. At the same time, particular attention was devoted to accessibility and to the integration of the museum within the surrounding urban context. The project reorganised vehicular and pedestrian routes, introduced public parking areas and strengthened pedestrian connections, including through the reopening of an ancient passage in the city walls. New public spaces, such as the central courtyard and the square along the walls, further contributed to establishing a physical and visual relationship between the museum and the city (fig. 110). In this sense, the intervention extended the concept of reuse beyond the architectural preservation of the former factory, incorporating its existing material, structural and infrastructural resources into the environmental and functional strategy of the new museum. The conversion of the former Campolmi factory can therefore be understood as a combination of structural consolidation, architectural conservation, functional adaptation and environmental upgrading. Rather than radically transforming the industrial complex to accommodate its new cultural function, the project worked with the existing building, retaining its historical identity while selectively introducing the structural, safety, technological and environmental systems necessary for its transformation into a contemporary museum.

2.3.5 Museum Layout and Exhibition Spaces

The spatial organisation of the *Museo del Tessuto* was closely shaped by the existing configuration of the former Campolmi factory. In particular, the narrow and elongated layout of the western wing influenced the development of the exhibition route, which is organised across two floors. The main entrance is located on the ground floor beside the historic portal on Via Santa Chiara and accommodates the information desk, ticket office, cloakroom and bookshop. At the same time, the entrance hall provides the visitor with an immediate reading of the industrial character of the building, through the preservation of its large volumes, cast-iron columns and timber roof structures.

From the entrance, the museum occupies different spaces of the former factory according to a combination of exhibition, operational and cultural functions. The ground floor includes the introductory section dedicated to the history of textile production and its main stages, as well as the museum's restoration laboratory, storage facilities and administrative spaces. These functions coexist within the historic complex, maintaining a direct relationship between the public areas and the activities required for the preservation and management of the collections. Also located on the ground floor, in the western wing, is the historical collection. Occupying approximately 420 square metres²²⁹, the room represents one of the oldest parts of the complex and is characterised by its original cross-vaulted structure, restored according to a conservative approach (Figs. 103-104-111). It houses the museum's main historical textile collection, including fabrics from Italy and other European, American, Asian and African contexts, as well as examples illustrating traditional textile techniques. The preservation of the original architectural features contributes to maintaining a visible connection between the collections and the historical character of the former factory.

The first floor accommodates several spaces devoted to the historical, contemporary and temporary dimensions of textile production. The section "*Prato: città tessile*" focuses on the historical development of the city and its textile district, documenting the evolution of local production through archival material, photographs, textile machinery, fibres and other evidence of the organisation and technologies of the Pratese industry (figs. 101-102). The room is characterised by restored nineteenth-century timber roof trusses and large windows, whose preservation reinforces the relationship between the exhibition spaces and the industrial architecture of the building. Its configuration also allows a high degree of flexibility, enabling the space to accommodate changing exhibition and educational requirements.

From the entrance, the exhibition route begins with an introductory section presenting the history of textile production and its main stages. This area is connected to the museum's restoration laboratory, storage facilities and administrative spaces, combining exhibition and operational functions within

²²⁹ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 140

the same part of the former factory. A particularly significant space on this floor is the *Sala Cornovaglia*. The room preserves the original boiler used to produce the steam required for the textile manufacturing process and was restored through a strictly conservative intervention, retaining the material and technological characteristics of the industrial equipment²³⁰ (figs. 112-113)

The museum's programme extends beyond the historical dimension of textile production to address its contemporary development. A dedicated section documents recent industrial activity, research and technological innovation at both local and international levels. Particularly significant is its relationship with the productive sector of Prato: the museum collaborates with companies in the local textile district and presents innovative fabrics produced by local firms, while also incorporating educational and multimedia activities related to technological development. In this way, the museum maintains an active relationship with the productive identity of the city, interpreting textile heritage not exclusively as a matter of the past but also in relation to contemporary production and innovation.

2.3.5.1 The *Biblioteca Lazzerini*: Extending the Cultural Programme

The redevelopment of the former Campolmi factory was conceived not simply as the restoration of an abandoned industrial complex, but as a broader urban and cultural project aimed at reconnecting the former factory with the historic centre of Prato. Within this strategy, the relocation of the *Biblioteca Comunale "A. Lazzerini"* represented a fundamental component of the intervention (fig. 108). The new library, inaugurated in November 2009, transformed a significant portion of the former industrial complex into a contemporary public and cultural institution²³¹, complementing the *Museo del Tessuto*, which had already opened within the Campolmi complex in 2003.

For this specific part of the complex, the engineers had to check whether the existing structure could safely support the new use as a library²³². The reasoning was that the old floor loads, from heavy

²³⁰ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 156

²³¹ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 163

²³² M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 93

textile machinery and stored materials, were broadly comparable to what a library would require. Even so, they were cautious about overloading the historic structure with paper archives, both for structural reasons and for visual ones, fitting large shelving units and compact archive units would have been quite intrusive within the historic rooms²³³. The solution was to place the book deposit underground, beneath the floor of the sculpture courtyard. The underground depository was built using waterproof reinforced concrete and required a large-scale excavation: the foundations of the walls surrounding the depository and the walls of the excavation were reinforced using a design proposed by Arturo Bartoletti due to safety concerns²³⁴.

The project was based on a careful consideration of the relationship between the new cultural centre and its urban surroundings. Rather than treating the former factory as an isolated architectural object, the intervention wanted to re-establish its connections with the city through the creation of new public spaces and pedestrian routes. The most significant of these is the *Piazza della Cultura*, located between the southern façade of the Campolmi complex and the medieval city walls. Covering approximately 1,700 square metres, the square functions as the principal entrance to the cultural centre and as a point of convergence for several pedestrian routes connecting the complex with the surrounding urban fabric.

The configuration of the square derives directly from the relationship between the two historical structures that define it. The former factory follows the regular layout of the city, while the medieval walls are positioned diagonally in relation to it. The triangular shape of the square therefore results from the meeting of these two different layouts. The removal of the industrial structures built against the city walls also made the walls more visible, allowing them to become an important visual element of the new cultural complex²³⁵. This relationship between the medieval walls and the nineteenth-century factory constitutes one of the central principles of the redevelopment project. Rather than

²³³ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 93

²³⁴ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 94

²³⁵ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 167

attempting to neutralise the differences between the historical layers of the site, the intervention makes them explicit and uses their contrast as the basis for a new architectural composition²³⁶. The project consequently establishes a dialogue between medieval heritage, industrial archaeology and the contemporary city, seeking a balance between conservation and transformation. The existing factory represents the historical testimony to be preserved, while the new architectural additions introduce the contemporary layer of the intervention²³⁷.

2.3.5.2 Spatial Organisation of the Library

Within this framework, the *Biblioteca Lazzerini* occupies several of the historic industrial spaces. Its organisation is structured around a long exhibition and distribution gallery, approximately 98 metres in length, which extends from the southern side of the complex facing the city walls to *Via Santa Chiara*²³⁸. The gallery functions as the main circulation spine of the library, connecting the different reading rooms and specialised sections while also serving as an exhibition space for books, rare collections and other materials.

The distribution of the library's functions across the former industrial buildings demonstrates how the existing architecture was adapted to accommodate a complex contemporary programme. The ground floor includes the *Sala dell'Attualità*, or newspaper and periodicals room, which occupies approximately 200 square metres within the former hydraulic plant. The *Sala Generale* provides a larger space for reading and consultation, while the children's section is dedicated to educational activities, study and workshops for children and young people. Other functions are distributed on the first floor, including the *Sala della Creatività*, dedicated to multimedia, music and performance, the *Sala dei Fondi Speciali*, which houses important, specialised collections, and the *Sala dei Fondi Locali*, dedicated to local history and research materials. This distribution allows the different

²³⁶ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 167

²³⁷ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 163

²³⁸ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 167

functions of the library to coexist within the historic industrial structure, adapting the existing spaces to contemporary cultural and educational needs without losing their original architectural character. (Figs. 114-115-116)

One of the most significant spaces of the intervention is the former dyeing pavilion, which houses the main entrance hall of the library. Its monumental reinforced-concrete pointed vault represents one of the most distinctive surviving elements of the industrial complex. The project deliberately preserves and enhances this structure, transforming it into the architectural centrepiece of the library. The space accommodates the reception, information services, cloakroom and other entrance functions, while its architectural character provides visitors with an immediate perception of the industrial heritage of the building. The hall therefore acts not only as an entrance space but also as a first introduction to the history and architecture of the former factory.

The architectural language of the new additions remains deliberately restrained. New walls, horizontal planes, glazed surfaces and circulation elements introduce the contemporary functions required by the library while maintaining a limited visual impact on the historic structure. The long and precise lines of the new interventions echo the rational and geometric character of industrial architecture, while their relationship with the medieval walls establishes a broader dialogue between different historical periods. The project therefore relies on contrast rather than imitation²³⁹: the new elements are recognisable as contemporary interventions but are carefully positioned in relation to the existing architecture.

The same principle extends to the external spaces. In addition to the *Piazza della Cultura*, the project introduced the *Corte delle Sculture*, an open-air courtyard located between the eastern wing of the historic quadrilateral and the municipal property boundary²⁴⁰. Designed to host contemporary sculpture exhibitions, summer conferences and other cultural activities, the courtyard extends the

²³⁹ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 175

²⁴⁰ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 175

programme of the library beyond its enclosed spaces. A pedestrian route connects Via Santa Chiara with the Piazza della Cultura through a newly constructed portico, further integrating the cultural complex into the surrounding urban fabric.

The architectural transformation of the Campolmi complex is closely connected to the new cultural role assigned to the site. The former factory, once dedicated to the production of textiles, is reinterpreted as a place for the production and dissemination of culture. The concept of Campolmi as a “factory of culture”²⁴¹ therefore establishes a direct conceptual continuity between the original and the new functions of the complex. Industrial production has disappeared, but the idea of production itself is retained and translated into a contemporary cultural context: knowledge, research, education and cultural exchange become the new forms of production taking place within the former factory.

The Lazzerini was conceived as more than a traditional library focused on the preservation and consultation of books. Its programme addresses a broad and diverse public and includes spaces for reading and research alongside areas for children and young people, educational activities, multimedia resources, exhibitions, conferences, book presentations and other cultural events. In this sense, the library functions as a flexible and multifunctional public space, encouraging not only access to information but also social interaction and cultural participation.

The opening of this part of the space completed the transformation of the Campolmi complex into a major cultural centre for Prato. Together with the *Museo del Tessuto*, the library forms a complementary cultural programme within a building complex that is itself part of the collective memory of the city. The former factory therefore acquires a new public role while retaining the architectural traces of its industrial past. Its transformation demonstrates how adaptive reuse can preserve the historical and architectural identity of an industrial site while introducing new functions capable of responding to the cultural and social needs of the contemporary city.

²⁴¹ M. MATTEI, *Campolmi, la fabbrica della cultura...*, cit., p. 212

2.3.6 Site Visit: Experiencing the Museum and the Former Factory

The Museo del Tessuto occupies a site whose relationship with the surrounding urban fabric is immediately legible: the building stands directly against Prato's medieval walls, and this proximity is made visible both from the outside, where a small public green area with benches faces the medieval walls, and from within, where several points along the visitor route open views onto them. The result is a visual dialogue between the historic city boundary and the former industrial complex it now embraces.

The visit unfolds as a ring-shaped path. Entry is through a modest reception room combining ticketing and bookshop functions, after which the ground floor opens onto the first exhibition room: the well-preserved *Cornoviglia* boiler, presented alongside archival material, such as documents, letters, and photographs, recounting the history of the *Cimatoria Leopoldo Campolmi*. (117-118) The route then leads into the "*Tessuti antichi*" (Ancient Textiles) section, which at the time of the visit hosted the temporary exhibition "*Tesori di Seta*", a selection of European silk textiles and embroideries from the fifteenth to the eighteenth century. Here the museography is explicitly conservation-driven, dimmed lighting, covered windows, and climate control are all justified by the fragility of the silk on display, yet the room's architecture and design continue to frame and support the exhibition rather than compete with it. (Figs. 103-104) The ground-floor path concludes with a long corridor dedicated to "*Materiali e processi*" (Materials and Processes), where uncovered windows overlooking the internal courtyard, with its chimney and water basin visible, let in abundant natural light and guide visitors along a sequence of explanatory panels tracing the history of textile materials such as wool and linen. (Fig. 118)

A staircase leads to the upper level, created through the insertion of a mezzanine that reduced the original height of the factory floor to gain additional exhibition space (fig. 119). Here the museum narrates Prato's textile identity on a broader historical and social scale: "*Prato città tessile (1100–1950)*" presents the economic history of textile production in the city alongside everyday working

life inside the Campolmi factory, documented through attendance registers, payroll books, and worker time-clock plaques (figs. 120-121). This is followed by “*Prato e il sistema moda (1960–2000)*”, addressing the postwar fashion system and the ties it forged between Italy and the United States, as well as the way material scarcity, particularly during the Cold War, reshaped the sector. The itinerary closes with “*Tessuti contemporanei*” (Contemporary Textiles), which notably shifts register to engage with present-day concerns: textile waste, fast fashion, and material durability, framed through the museum’s own commitment to a closed-loop, fully recyclable model.

Throughout the visit, the building retains clear traces of its industrial past, for example with the wall-mounted ventilation fans among them, which the conversion project treats with evident care, integrating comfort-oriented museum functions without erasing the memory of the factory (fig. 122). Where the original fabric has been altered, the museum compensates through archival material and small curatorial gestures that keep the site’s history present. The route also passes spaces designed for public and educational use, an audio room, a conference hall, and a workshop room for educational activities, alongside a temporary exhibition area, set off by two dividing panels, which at the time hosted “*Feel the Contest. Il filo che unisce l'ispirazione alla creazione*”, a display of original garments conceived to “dress” the museum’s spaces, shown in a final room distinguished by its exposed brick ceiling, and, on a freestanding panel, Irene Pietrabono’s “*ArteMonium: Il filo di Arianna, la materia oltre la forma*”. This long corridor space on the upper level also serves as a flexible space for other museum activities. In addition to hosting conferences, it is used for temporary video installations, often addressing themes related to textiles and fashion. (Figs. 123-124-125-126-127-128-129)

The redevelopment of the complex wanted to remain as faithful as possible to its industrial history, with particular attention paid to preserving and enhancing the elements that hold witness to the history of the site. During the site visit, this approach was clearly perceptible. From the moment of entering the complex, its industrial past is conveyed through the architectural character of the former factory,

as well as through historical and archival references integrated into the museum environment. These elements contribute to recalling the former Campolmi factory and its productive history, while also reinforcing its significance within the local identity of Prato and its textile tradition.

This aspect appears particularly relevant when considering the relationship between the former factory and the local community. Campolmi was not simply an industrial building, but part of a productive reality that contributed to shaping the economic and social identity of the city. Its conversion into a cultural institution therefore represents more than the physical reuse of a disused industrial complex: it transforms a place associated with work and production into a space intended for cultural, educational and social purposes. In this sense, the redevelopment can be interpreted as a form of collective preservation, in which the memory of the city's industrial past is not separated from its present cultural life, but incorporated into a new function accessible to the wider community.

The architectural interventions introduced as part of the redevelopment also demonstrate a careful approach to the existing heritage. During the visit, the relationship between the original industrial character of the building and the contemporary museum functions appeared particularly well balanced. Rather than concealing the architectural features of the former factory, the museum makes effective use of its spatial qualities, including the generous ceiling heights, exposed structural elements and distinctive roof configurations. These features remain visually legible within the exhibition spaces and contribute to defining the atmosphere of the museum.

At the same time, the exhibition design does not compete with the architecture. In the temporary exhibition spaces, for example, contemporary displays are characterised by a restrained and elegant visual language, with neutral platforms and carefully controlled lighting that allow the exhibited textiles and garments to remain the primary focus. The contrast between these delicate interventions and the rawer character of the industrial structure creates a productive dialogue between past and present. Rather than treating the building simply as a container for the museum's collections, the

exhibition environment incorporates its architectural identity as part of the visitor's experience. (Figs. 124-125)

This balance is particularly significant in the context of adaptive reuse. The success of the intervention does not appear to derive from the complete transformation of the former factory into a conventional museum environment, but rather from the ability to accommodate new cultural functions while retaining elements through which the original identity of the building remains perceptible. This continuity is also evident in the preservation of functional and technological elements of the former factory, such as the historic boiler in the Sala Cornovaglia and other surviving industrial features integrated into the museum environment. Rather than being isolated as purely historical artefacts, these elements remain embedded within the architecture, allowing the productive history of the site to be experienced as part of the building itself. The Campolmi complex therefore demonstrates how industrial heritage can be preserved not only through the conservation of its physical fabric, but also through its continued ability to communicate the memory of work, production and the community that developed around it.

CHAPTER 3 – Industrial Heritage and Cultural Conversion

3.1 From Industrial Heritage to Cultural Use

The decline of industrial production has left many buildings and sites without their original function. Factories, warehouses and other productive structures, once central to the economic and social life of their surrounding areas, have become vacant or underused. Their subsequent transformation raises questions about how these buildings can be given a new purpose while retaining the architectural and historical features that make them significant.

The conversion of former industrial buildings into cultural spaces represents one possible response to this condition. Museums, exhibition venues and cultural institutions can provide new uses for structures that would otherwise risk deterioration or demolition. However, introducing a cultural function involves more than adapting a building to new practical requirements. It also requires decisions about which elements of its industrial past should be preserved, modified or incorporated into the new project.

The relationship between the original function and the new use can take different forms. In some cases, the cultural programme maintains a direct connection with the building's productive history, allowing its architecture and surviving equipment to contribute to the interpretation of the site. In others, the former industrial structure becomes the setting for activities that are largely unrelated to its original purpose. In these situations, the building's historical significance may be expressed primarily through its spatial qualities and material features, rather than through the content of the cultural programme.

These different approaches reveal that the conversion of industrial buildings is not a uniform process. Each project is shaped by the condition of the existing structure, the requirements of its new function and the significance attributed to its industrial past. The challenge is therefore to establish a

relationship between the existing building and its new use without necessarily reproducing its original function or meaning.

From this perspective, the conversion of industrial heritage into cultural spaces can be understood as a process of negotiation between continuity and change. The original architecture provides the physical framework for the new programme, while the intervention introduces new activities and ways of experiencing the space. The outcome depends on how these two dimensions are brought together and on the extent to which the industrial character of the building remains legible.

The three case studies examined in this thesis illustrate different ways of addressing this relationship. Pirelli HangarBicocca in Milan, Città della Scienza in Naples and the Museo del Tessuto in Prato differ in their architectural characteristics, cultural functions and approaches to the industrial past. Their comparison makes it possible to examine how former industrial buildings can accommodate new cultural uses and how the relationship between architecture, history and function changes from one project to another.

3.2 The Industrial Building as a Cultural Space

The conversion of an industrial building into a cultural space is closely connected to the architectural characteristics of the existing structure. Unlike buildings designed specifically for museums or exhibition venues, former factories and warehouses were conceived to meet the practical requirements of production. Their dimensions, structural systems and internal organisation responded to the movement of materials, machinery and workers. These features can offer opportunities for new cultural uses, but they can also impose limitations on the design of the converted space.

Large interiors, generous heights and open floor plans are among the characteristics that make many industrial buildings suitable for cultural activities. They can accommodate exhibitions, installations and events that require flexible spaces or dimensions that are difficult to achieve in conventional buildings. At the same time, the structural elements and materials of these buildings, such as exposed

brickwork, steel columns and concrete surfaces, can contribute to the identity of the new cultural venue.

However, the qualities that make industrial buildings attractive for cultural use do not necessarily correspond to the practical requirements of their new function. Museums and exhibition spaces need to provide appropriate access, circulation, lighting, environmental conditions and safety measures. These requirements may lead to the introduction of new architectural elements or to modifications of the existing structure. The design process must therefore respond to the needs of the cultural programme while taking into account the characteristics and limitations of the building.

One of the main challenges concerns the organisation of interior spaces. Industrial buildings often have large, continuous areas that were originally designed for production rather than for the movement and activities of visitors. Their conversion may require the creation of new routes, divisions and facilities. These interventions can change the perception of the original space, particularly when they introduce new partitions or alter the relationship between different areas of the building. The extent of these changes depends on the requirements of the new function and on the architectural approach adopted by the project.

The introduction of new functions also raises questions about the preservation of the building's original character. Some interventions aim to retain the existing structure as visibly as possible, allowing its materials and spatial organisation to remain part of the visitor's experience. Others require more substantial modifications to accommodate the new programme. In both cases, the relationship between the existing architecture and the new elements becomes an important aspect of the conversion. New additions may be designed to contrast with the original building or to integrate more discreetly into it.

Beyond the interior, the conversion of an industrial building can also affect its relationship with the surrounding urban environment. Former factories were often located in areas shaped by industrial

production, and their closure may have contributed to wider processes of urban decline or transformation. A new cultural function can bring renewed activity to these sites and establish new connections with their surroundings. The extent of this impact, however, depends on the scale of the intervention, the accessibility of the site and the activities introduced.

The architectural conversion of an industrial building therefore involves several interconnected decisions: how to organise the new spaces, which existing elements to retain, how to introduce the facilities required by the new function and how to relate the building to its surroundings. These decisions influence not only the physical configuration of the space but also the way visitors perceive and experience it.

The resulting cultural space is thus shaped by the interaction between the original architecture and the requirements of its new use. Rather than being a neutral setting, the industrial building can play an active role in defining the character of the institution. This relationship provides a basis for comparing the different approaches adopted in the three case studies.

3.3 Comparing Three Models of Adaptive Reuse

The comparison of Pirelli HangarBicocca, Città della Scienza and Museo del Tessuto can be approached in light of the Nizhny Tagil Charter for the Industrial Heritage, adopted by TICCIH in 2003. The Charter recognises the historical and social value of industrial heritage, understood not only as buildings and machinery, but also as infrastructure, industrial landscapes and evidence of past productive activities²⁴². It also identifies the adaptation of industrial buildings to new uses as a possible means of ensuring their preservation, provided that significant historical and material

²⁴² International Committee for the Conservation of the Industrial Heritage (TICCIH), *The Nizhny Tagil Charter for the Industrial Heritage*, 17 July 2003, p. 2, <https://ticcih.org/wp-content/uploads/2013/04/NTagilCharter.pdf>. (last accessed 12 September 2026)

features are respected²⁴³. These principles offer a useful framework for examining how the three projects address their industrial heritage while accommodating new cultural functions.

Pirelli HangarBicocca in Milan represents a case in which the original industrial architecture remains particularly visible. The large halls retain much of their raw appearance, considerable height and industrial finishes, preserving the spatial qualities of the former production complex. These characteristics also influence the exhibition programme, as demonstrated by Anselm Kiefer's *The Seven Heavenly Palaces*, whose monumental scale responds directly to the dimensions of the building. The interventions required for the new cultural function, including lighting, fire-safety systems, entrances and internal divisions, have generally been introduced without competing with the existing architecture. Although the division of the main space modifies its original configuration, it does not substantially alter the perception of the industrial building. Even the smaller space associated with the former engine-testing area retains its raw appearance. The project thus maintains a clear visual relationship with the building's productive past, while adapting its spaces to contemporary exhibition needs.

The *Museo del Tessuto* in Prato presents a different relationship between industrial architecture and cultural use, characterised by both adaptation and continuity. Unlike HangarBicocca, the complex has undergone more extensive architectural transformations, with contemporary elements clearly distinguishable from the surviving structures. New entrances, circulation routes and systems for accessibility and safety have been incorporated into the project, contributing to the reorganisation of the former industrial spaces. The relationship between the building and its present function is perhaps particularly direct: the museum's collections are connected to the textile history of Prato, establishing a continuity between the site's former productive activity and its current cultural role. The industrial

²⁴³ *The Nizhny Tagil Charter for the Industrial Heritage*, cit., p. 5, <https://ticcih.org/wp-content/uploads/2013/04/NTagilCharter.pdf>. (last accessed 12 September 2026)

past is therefore expressed not only through the surviving architecture, but also through the subject of the museum itself.

Città della Scienza presents a more complex trajectory, in which the reuse of existing industrial buildings has been combined with new construction and subsequent transformations. Developed within the former industrial area of Bagnoli, the complex brought together nineteenth-century structures and contemporary architectural additions. The original *Museo Vivo della Scienza* established a strong visual relationship with the waterfront through its large glazed openings, while elements of the former industrial landscape, such as the chimney and surviving tanks, continued to mark the site. The fire of 2013 destroyed a significant part of the complex, including the *Museo Vivo della Scienza*, profoundly changing the relationship between the surviving structures and the institution's cultural activities. Some buildings in the surrounding area remain unused or abandoned, and the surviving industrial elements do not always appear closely connected to the current cultural programme. *Città della Scienza* therefore illustrates a form of reuse shaped by partial preservation, reconstruction and new construction, in which the industrial context remains important even as the original architectural complex has been substantially altered.

Taken together, the three cases demonstrate that the relationship between industrial heritage and cultural reuse can take different forms. At HangarBicocca, the industrial character of the building remains central to the experience of the exhibition spaces. At Museo del Tessuto, architectural transformation coexists with a direct continuity between the former productive activity and the museum's collections. At *Città della Scienza*, the relationship is more fragmented, shaped by the coexistence of historical structures, new additions and the consequences of the 2013 fire. These differences suggest that the preservation of industrial heritage cannot be assessed solely in terms of how much of the original fabric survives.

3.3.1 From Container to Content: Meaning and Experience

A further question concerns the role of the former industrial building in the cultural experience: whether it remains primarily a spatial setting, becomes part of the content communicated by the institution, or assumes an intermediate role.

At Pirelli HangarBicocca, the current function is centred on contemporary art rather than on the history of the former industrial complex; nevertheless, the building remains highly visible within the visitor experience, and the industrial character of the halls creates a specific spatial context for the artworks. The scale and raw character of the halls are strongly perceived alongside the art on display: the architecture influences the experience without being its explicit subject.

At the Museo del Tessuto, the relationship is closer and more direct. The presence of the Cornovaglia boiler at the beginning of the museum route provides an immediate reference to the former productive activity, while the collections, historical textiles, materials and machinery contribute to the interpretation of the site's industrial history; here the container can be understood as part of the narrative rather than simply as its setting. Consequently, the visitor encounters not only textile objects but also a former place of textile production, experiencing a direct relationship between the material culture on display and the physical environment in which that production history took place.

At Città della Scienza, the relationship between the current cultural programme and the industrial architecture is less direct. The institution is primarily concerned with the dissemination of scientific knowledge rather than with the interpretation of Bagnoli's industrial history, and the visitor experience is therefore shaped more by the exhibitions and activities than by the historical identity of the former industrial buildings. In areas such as *SensAzioni!*, the exhibition design responds primarily to the requirements of the scientific display and remains clearly distinguishable from the industrial architecture. *Insetti & Co.*, by contrast, adopts a more linear organisation that responds more closely to the longitudinal character of the building. These differences show that even within the same

institution, the relationship between exhibition content and the existing architecture can vary. The industrial context remains part of the broader experience of the site, particularly through its open spaces and relationship with the surrounding landscape, but it is not the principal subject communicated by the institution.

The three cases show that a cultural institution located in a former industrial building does not necessarily become an institution devoted to industrial heritage. The meaning of the industrial building therefore depends not only on the survival of its material fabric, but also on the relationship established between its architecture, the cultural content and the visitor. While HangarBicocca uses the industrial building primarily as a setting for contemporary art, Museo del Tessuto establishes a closer connection between the former productive space and its collections. At Città della Scienza, by contrast, the industrial past remains part of the wider context but is secondary to the scientific programme. These different approaches demonstrate how the architectural and historical characteristics of former industrial buildings can continue to shape the experience and interpretation of their new cultural functions.

3.4 Industrial Heritage and Cultural Reuse in the Italian Context

The three cases examined in this chapter form part of a wider Italian context in which former industrial buildings and sites have been abandoned, underused or adapted to new functions. In some cases, the new cultural function maintains a direct connection with the productive activity that originally took place in the building. Industrial museums and company museums, for example, may preserve not only the architecture of former factories, but also machinery, tools, documents and other material evidence of production. In other cases, the industrial building provides a spatial and architectural setting for a cultural programme whose content is largely unrelated to its productive history. Between these conditions are numerous intermediate situations, in which elements of the industrial past remain visible while the new function establishes a different relationship with the site.

This range of possibilities is particularly relevant in Italy, where former factories, mines, power plants, workshops and other productive structures constitute a significant part of the country's industrial heritage. Their reuse raises questions not only of architectural conservation, but also of how the historical and social identity of these places can be maintained when their original functions have disappeared. As Simona Politini, founder of *Archeologiaindustriale.net*, observes, one of the challenges of reusing industrial spaces is to give them a new function while preserving their identity, rather than reducing them to anonymous containers. The examples discussed in this thesis can therefore be understood within a broader tension between transformation and continuity. Some Italian cases are particularly relevant because the industrial past remains directly connected to the new cultural function, as observed in the Museo del Tessuto in Prato. The Museo dell'Arte della Lana in Stia, for example, occupies a former wool mill and uses the building, machinery, tools, documents and testimonies to present the history of textile production and of the people who worked there. Similarly, the Museo del Carbone in Carbonia reuses the spaces of the former Serbariu mine to preserve and communicate the memory of mining and of the community connected to it²⁴⁴. In these cases, as at Prato, the industrial heritage is not simply the architectural setting of the museum: the building and its material traces become part of the museum's narrative, while the new cultural function remains directly connected to the productive history of the site. Other projects establish a different relationship between industrial heritage and cultural use, closer to that observed at Pirelli HangarBicocca. The former Fiat Lingotto in Turin, for example, has been transformed into a multifunctional complex in which the industrial building provides the architectural framework for a range of contemporary activities. BASE Milano occupies part of the former Ansaldo complex and similarly combines the industrial character of the existing structures with new cultural and creative functions. At the former Centrale Montemartini in Rome, meanwhile, classical sculpture is displayed within a former power plant, creating a deliberate juxtaposition between the archaeological

²⁴⁴ Giorgio VINCENZI, *Beni Comuni in uno Stato di abbandono*, in «il manifesto», 10 settembre 2026. <https://ilmanifesto.it/beni-comuni-in-uno-stato-di-abbandono>. (last accessed 15 September 2026)

collections and the industrial architecture. The existing architecture may instead contribute to the identity and experience of the institution through its scale, material character and historical associations.

The wider scale of this phenomenon is also reflected in the national mapping of abandoned cultural heritage. The *Ministero della Cultura* has established a national census and interactive mapping system for public abandoned heritage sites, although the mapping remains incomplete and is continuously updated²⁴⁵. The database includes thousands of abandoned buildings and sites across Italy, encompassing former industrial structures as well as schools, churches, military buildings and other forms of historical heritage. The mapping is therefore broader than industrial heritage alone, but it provides an indication of the scale and geographical distribution of the wider problem of abandonment. It also demonstrates that many sites remain outside processes of cultural reuse and continue to require forms of recovery, conservation or new use. The existence of a large stock of abandoned heritage has also led to the development of specific public instruments for its recovery. Since 2019, the *Ministero della Cultura*, through the *Direzione Generale Archeologia, Belle Arti e Paesaggio* and the *Soprintendenze Archeologia, Belle Arti e Paesaggio*, has coordinated activities relating to the identification and recovery of abandoned cultural heritage²⁴⁶. This framework was complemented by Law No. 160 of 27 December 2019²⁴⁷, which established the *Fondo per il recupero di immobili statali di interesse storico e culturale in stato di abbandono e la riqualificazione delle aree industriali dismesse ove insistano manufatti architettonici di interesse storico*. The implementing criteria were subsequently defined by Interministerial Decree MIC-MEF No. 583 of 16 December 2020.

The criteria established for the allocation of the Fund indicate the factors considered in the evaluation

²⁴⁵ *Mission*, Beni culturali abbandonati, Ministero della Cultura – Direzione Generale Archeologia Belle Arti e Paesaggio, <https://beniabbandonati.cultura.gov.it/mission/>. (last accessed 9 September 2026)

²⁴⁶ *Mission*, Beni culturali abbandonati, Ministero della Cultura – Direzione Generale Archeologia Belle Arti e Paesaggio, <https://beniabbandonati.cultura.gov.it/mission/>. (last accessed 16 September 2026)

²⁴⁷ Law n. 160, 27 Dicembre 2019, *Bilancio di previsione dello Stato per l'anno finanziario 2020 e bilancio pluriennale per il triennio 2020-2022*, art. 1, comma 384.

of recovery projects at the national level. These include the feasibility and timing of the proposed reuse and its intended function, particularly where it has a social dimension; the relationship between available resources and the costs of the intervention; the degree of development of existing restoration and reuse projects; environmental sustainability, with reference to the United Nations 2030 Agenda; and the presence of partnerships or co-financing arrangements with other institutions²⁴⁸. Proposals are evaluated through a dedicated commission within the *Direzione Generale Archeologia, Belle Arti e Paesaggio*, on the basis of documentation submitted by the *Soprintendenze*. The scope of this instrument is necessarily limited, as it concerns state-owned properties and specific industrial areas containing architecturally significant historic structures, rather than the entire stock of abandoned private and public industrial sites in Italy.

The Italian context therefore extends the questions raised by the three case studies beyond the individual buildings examined in this thesis. The relationship between preservation and adaptation, and between container and content, recurs across a much wider landscape of industrial reuse, but assumes different forms according to the history of each site, the nature of its new function and the degree of continuity maintained with its productive past. At the same time, the existence of numerous abandoned sites shows that cultural reuse is only one possible outcome of industrial heritage and that many buildings remain outside processes of transformation. The recovery of industrial heritage in Italy thus involves both the architectural negotiation between existing structures and new uses, and the broader institutional and social conditions that determine whether these places can acquire a new role.

²⁴⁸ *Mission*, Beni culturali abbandonati, Ministero della Cultura – Direzione Generale Archeologia Belle Arti e Paesaggio, <https://beniabbandonati.cultura.gov.it/mission/>. (last accessed 29 September 2026).

Conclusion

The comparison of Pirelli HangarBicocca, Città della Scienza, and Museo del Tessuto has shown that the history of an industrial building does not end with the interruption of its productive function. On the contrary, dismission can mark the beginning of a new and often complex phase in the life of the architecture. The three cases examined in this thesis have different histories, scales, architectural characteristics, and relationships with their territories, but all demonstrate how the meaning and use of an industrial building can continue to evolve after its original function has disappeared.

Reconstructing the history of these sites has made it possible to understand their present condition as the result of a long process rather than as the outcome of a single redevelopment project. Their architecture was shaped first by industrial production and later by changes in technology, organisation, urban development, and use. The period of dismission and abandonment introduced another significant moment of transformation, during which questions concerning preservation, demolition, regeneration, and reuse became central. The subsequent cultural projects can therefore be understood as further stages in the architectural history of these places.

The analysis has also shown that the value of industrial architecture extends beyond the physical characteristics of individual buildings. The factories and complexes examined were part of wider productive systems and were connected to the development of their cities and to the communities that worked and lived around them. Their histories are consequently architectural histories, but also social and territorial histories. Understanding these dimensions is important when considering the future of industrial buildings after their productive life has ended.

From this perspective, adaptive reuse emerges not simply as a contemporary architectural strategy, but as a continuation of the history of the building itself. Reuse introduces a new layer without necessarily cancelling the previous ones. The three case studies demonstrate different degrees and forms of transformation. At HangarBicocca, the large industrial halls retain a strong presence and provide a distinctive spatial condition for contemporary art. At Museo del Tessuto, the former Campolmi complex has been more substantially adapted, while selected architectural elements

continue to communicate its industrial character and its connection with the textile history of Prato. At Città della Scienza, the situation is more fragmented, as the cultural institution developed through the combination of existing industrial buildings, later additions, new construction, and, subsequently, the destruction caused by the 2013 fire.

These differences show that there is no single architectural model for the cultural reuse of industrial heritage. The comparison cannot therefore be reduced to the amount of original fabric that has been preserved. What matters is also the relationship established between the existing architecture and the new use, and the extent to which the characteristics and history of the former industrial site remain legible within its present condition. Preservation and transformation are not necessarily opposing approaches. A building may retain its industrial identity through its spatial configuration, structural system, materials, surviving elements, or relationship with its setting, even when significant changes are introduced.

The comparison also highlights different relationships between the industrial building and the cultural function it now accommodates. At Pirelli HangarBicocca, the industrial architecture strongly influences the spatial and visual experience of contemporary art, although the history of the site is not the principal subject of the institution. At Museo del Tessuto, the relationship is more direct, since the former textile complex and the collections displayed within it are connected to the same productive tradition. At Città della Scienza, the relationship is more complex and functional: the institution's main purpose is the dissemination of scientific knowledge, while the industrial history of Bagnoli remains part of the wider context in which the museum operates.

These different relationships make the concept of container and content relevant to the interpretation of the three cases. The former industrial building does not automatically become part of what a museum communicates simply because it houses a cultural institution. Its role can instead range from an architectural setting that influences the experience of the cultural programme to an explicit part of the institution's historical narrative. In this sense, the container can acquire cultural meaning of its

own, but this relationship depends on the specific history of the building, the character of the new function, and the architectural choices made during the reuse process.

The wider Italian context examined in the final section of the thesis confirms that these questions extend beyond the three selected cases. Italy contains a large and diverse heritage of former industrial buildings and sites, many of which remain abandoned or underused. The examples considered show that cultural reuse can take different forms, from museums that directly communicate the history of the industrial site to cultural institutions that use former industrial spaces primarily for their architectural and spatial qualities. The national initiatives concerning abandoned cultural heritage further demonstrate that the future of these sites is also part of a broader institutional discussion concerning preservation, reuse, public access, and the social value of heritage.

The contribution of this thesis lies in bringing together the historical reconstruction of three former industrial sites with the analysis of their architecture, transformations, territorial relationships, and present cultural functions. By following the buildings from their productive origins to their current condition, the research considers adaptive reuse as part of a longer architectural process rather than as a single moment of intervention. The comparative approach makes it possible to identify different ways in which industrial architecture can accommodate new cultural functions while retaining, transforming, or reinterpreting elements of its previous identity.

The analysis therefore suggests that the end of industrial production does not necessarily mean the end of the life of industrial architecture. A former factory, production complex, or industrial structure can acquire new uses and meanings without becoming disconnected from the history that preceded its transformation. Its present condition is not necessarily a break with its industrial past, but another layer in an architectural history that continues to evolve.

This perspective also raises a question for the many industrial sites that have not yet found a new function. Their future cannot be separated from the history already contained in their architecture. Reusing them means making decisions about which aspects of that history remain visible, which are transformed, and which can acquire new meanings. The challenge is therefore not simply to find a

new use for an abandoned building, but to introduce that use while recognising the architectural and historical identity that already exists.

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