

MULTISCALAR APPROACHES TO RE-APPROPRIATING THE VISCONTI-SFORZA CASTLE IN NOVARA BETWEEN CONSERVATION AND RE-USE

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ABSTRACT

At the beginning of this century, after more than a hundred years of controversy, the Novara city administration finally recognized the great potential of the Visconti-Sforza castle to increase the quality and prestige of the city and ruled that it should be renovated for use as a museum. This long-term project, delineated over the years from 2005 to 2016, was supported by an interdisciplinary process of information-gathering involving a wide range of professionals (archaeologists, architects, historians, engineers, chemists and petrographers) with a multiscalar approach to the city and the details. The project required a multiscalar approach because of the ‘urban’ dimension of the intervention. Indeed, the castle, which coincides with the ancient layout of the south-west corner of the city, plays a crucial role in the new urban dynamic that can evolve thanks to its connection with Piazza Martiri and, in general, with the entire historic city of Novara, as well as for the many ‘stories’ that the walls can tell.

KEYWORDS

stratification, conservation, re-use, enhancement, Visconti-Sforza Castle

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For several decades, the city administration was asking the government to cede the old buildings and the entire area of approximately 22,000 sqm to the Municipality; at the time, the fortress was used as a district prison, and its awkward presence seemed to compromise the development of the urban centre (Andenna, 1982). Writing in 1982 in a text that remains the best source of information on the Visconti-Sforza Castle, Giancarlo Andenna used these words to describe how the Castle was perceived in the city of Novara. After more than a century of controversy about the proper role for the Castle within the dynamic of the city and the transfer of the prison in 1973 to a building better adapted to contemporary hygiene and social requirements, it was not until 2005 that a process began, ending in 2016, that shaped a new role for this significant fortified complex, whose walls tell countless 'stories' about urban, social, political and economic matters.

The Visconti-Sforza Castle is a historic Visconti-era fortress that guarded the western border of the Duchy of Milan. Situated in the south-west corner of Novara, it was enclosed by a large crenellated wall made with elements from the pre-existing Roman and early-medieval city walls. The complex, built in the second half of the 13th century (Corio, 1565), had an L-shaped block known as the Rocchetta, towers to guard the entrances and ring wall (Pellini, 1902). As it was built in an area with many pre-existing structures – brought to light since 1983 by a series of excavations – the complex had one of the best-preserved archaeological stratifications in the city. It was 'modernized' and reinforced between 1473 and 1476 with the construction of the Ghirlanda, a large fortified wall with keeps and corbels protected by a deep, wide moat (Morandi, 1912). The old walls surrounding the castle, no longer fulfilling any defensive role, were re-used in the construction of stables and service buildings, and the entrance system was modified. Whereas previously the castle could be entered from each side, after the construction of the Ghirlanda, entry from the city was possible only on the north and from the countryside, on the south (Bianchini, 2003).

In the mid-16th century, the Spanish, having been defeated by the French, converted the city into a stronghold to defend Milan and its territory by building a great bastioned wall (Gavinelli, 1976; Fig. 1), thereby setting in motion the transformation of Novara¹. The strategic role of the castle itself also changed as it now stood between the city and the new ring wall (Andenna, 1982). In 1643, during the last phase of the Thirty Years War, all that remained of the suburban areas was razed, and new structures began to appear designed to bolster the defence system, of which the castle was also a part (Piccoli and Pruno, 2010).

The evolution of the art of war, along with political changes, soon made the new fortifications obsolete, so, in the second half of the 1700s, the city walls and its bastions were gradually torn down (Morandi, 1923). Converted into a prison in 1803, the castle itself was untouched by the construction that brought major changes to the south-west portion of the city. Public walkways were created around it (Viglio, 1924) and a large square, called Piazza Vittorio Emanuele II (now Piazza Martiri della Liber-

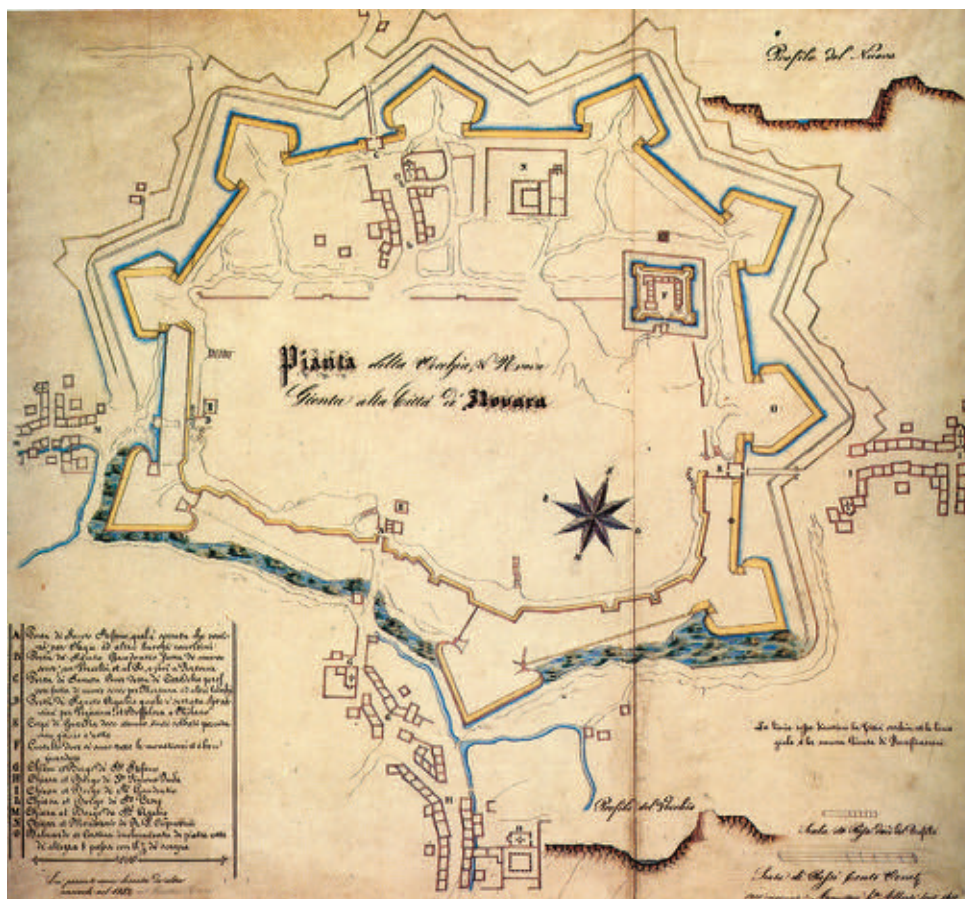


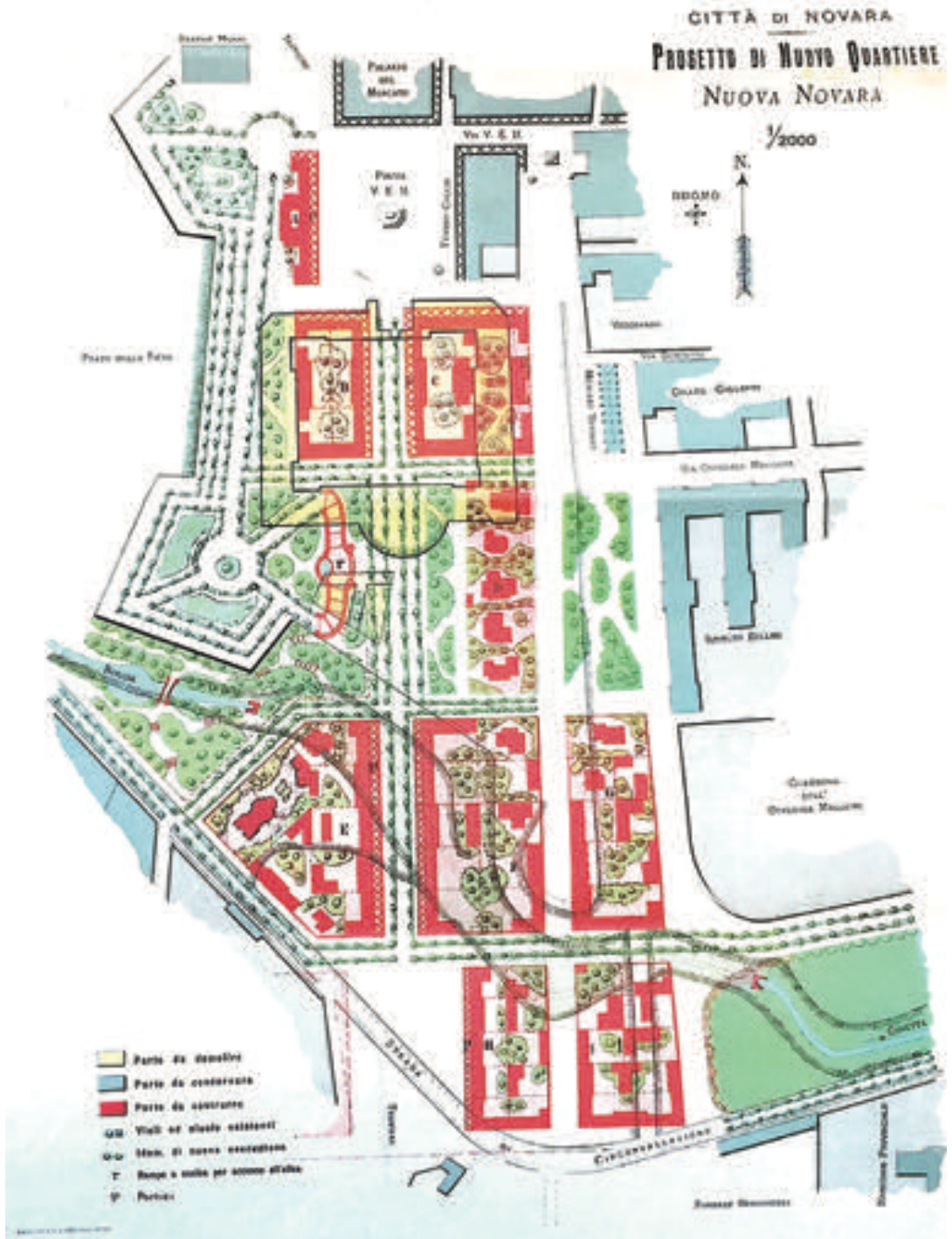
Fig. 1 | Moment of transition between the fortified system of the medieval city and the new ring wall with bastions (source: Alberti, A., 1610, *Pianta della Vecchia e Nuova Gionta alla città di Novara*, Novara, an 1852 copy by the surveyor Nasi, G., Archivio di Stato, Disegni, L/1; Archivio Storico Novara).

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Fig. 2 | Plans for Nuova Novara requiring the demolition of the Castle (source: Gazzetta di Novara, 22 October 1989).

tà), was built on the northern front, which definitively changed the perception and axis of the relationship between the fortress and the city (Perogalli, 1969). This period of introversion gradually isolated the castle from the 19th century life of a city during a profound transformation, although of course such a significant element as the castle could not be completely ignored.

20th century controversies and projects | At the end of the 19th century, in the wake of widespread discussion about conserving and upgrading monuments in general, an



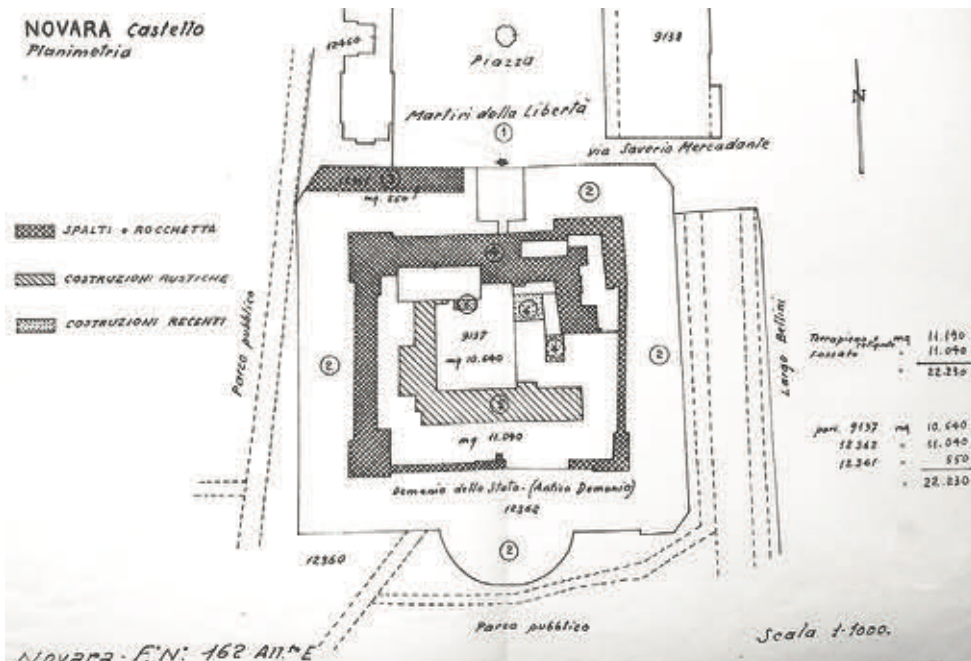
extraordinary, productive debate began about the future of the Visconti-Sforza Castle. Critical considerations, reflections, studies and projects followed one another throughout the early years of the 1900s, though without converging on a workable strategy to enhance and re-use the building. Only after the Castle no longer functioned as a prison, in 1973, did a lengthy process begin that eventually – in the early 21st century – resulted in a project to re-use the Castle as a museum and venue for cultural activities. This project was completed in 2018. Over the years, especially at the end of the 1800s, some people had advocated for the demolition and clearing of the area in order to build new public structures as well as a new residential district, named Nuova Novara², which involved redesigning public spaces, green areas and, in general, the entire area within the south-west bastion (Fig. 2).

The group associated with the weekly magazine *La Libertà* had been urging since 1887 that the shapeless, cracked mass of medieval bricks be eliminated to make room for new buildings to beautify the city (Andenna, 1982). In 1902, when it was believed that demolition was imminent, a group who expressed their views in *La Gazzetta di Novara* and *Il Corriere di Novara*, along with influential studies such as that by Silvio Pellini originally published in episodes in *La Gazzetta di Novara* and later in an anthology (Pellini, 1902), set in motion a process in which Luca Beltrami and the *Nuova Antologia* and *Emporium* reviews became involved. In Turin, Alfredo d'Andrade, Director of the Office for the Conservation of the Monuments of Piedmont and Liguria, refused to allow the castle to be sold to the municipality by the government department that manages the state-owned property, writing: «Nel giugno 1894 previa visita al monumento, lo scrivente comunicò al Governo che il Castello possiede ancora abbastanza resti interessanti da meritare di essere conservato, che salvo un bisogno urgente non converrebbe venderlo, e qualora le condizioni finanziarie lo permettessero sarebbe il caso di addivenire al restauro del monumento nell'interesse non solo dell'arte e della storia, ma anche della città di Novara»³ (cit. in Biancolini Fea, 1981).

In the same years, Luca Beltrami also supported restoration, writing in the *Corriere della Sera*: «Oggi a Novara si rinnova ciò che, vent'anni or sono, si verificò a Milano [...] anche qui si voleva, come ora a Novara, mutilare il castello allo scopo di tracciare un'arteria stradale per dare il passo all'aria salubre dei monti: anche qui si trovava che il castello era spoglio di qualsiasi pregio artistico, e solo ricordava la triste dominazione straniera: anche qui si distruggevano vecchie piantagioni per far posto a case a cinque piani; eppure bastarono pochi anni per darci una misura dell'errore irreparabile che si sarebbe commesso attuando quel piano, per quanto, al pari dell'attuale di Novara, avesse riportato il voto favorevole delle solite Commissioni competenti»⁴ (Beltrami, 1900).

Beginning in 1893, a variety of well-developed proposals were advanced, from that of Opera Pia Omar, which sought to build new schools, followed in 1912 by architects Rizzotti and Bergomi, who proposed using it as the seat of the city government upon its restoration and expansion in a matching style (Fig. 3). Just a few years later, in 1925, the mayor supported a project to create a museum in the castle and

transform the grounds into a Parco della Rimembranza. In the early 30s, before the new Urban Development Plan was issued, there was a proposal to demolish the castle to build a new main post office, which was in fact later built by the architect Angiolo Mazzoni in the immediate vicinity on the site of the demolished Politeama Theatre.



Figg. 3, 4 | Plan for the realization of the seat of the city government in the Castle, 1912 Rizzotti and Bergomi (source: Archivio Storico di Novara); Plan for the re-use of the Castle as a museum, Medardo Arduino, 1982 (source: Archivio Corrente della Soprintendenza di Torino).

The new Urban Plan issued in 1934, drafted by the engineers Marco Cassinis and Federico Magistrini and the architect Oscar Prati, sanctioned the conservation approach, which had always been strongly supported by the Superintendence, and designated the area of the Castle as a public park for the common good (Oliaro and Coppo, 1983).

Although the provisions of the Urban Plan left no doubt about the intended use, three other proposals were still put forth for the construction of the new city government seat: the first in 1936, designed by the architect Carlo Nigra; the next in 1939 by the architect Rizzotti and the last in 1952 by the architect Giovanni Lazanio. In 1964, the Municipality of Novara announced an important competition for the new municipal headquarters in the area of the Collegio Gallarini. Among the participants was a team coordinated by Guido Canella, which drew up a project to convert the moat and basement of the castle into commercial and parking spaces. Finally, in 1981, Medardo Arduino, commissioned by the City, drew up a project calling for the castle to be used as a museum, requiring substantial demolition work on the more recent structures, which was, in fact, carried out, as well as restoration of the Rocchetta and the North Wing, which was not (Fig. 4). Nothing further was done, and the question of the use of the castle remained for several years at the centre of a local political and cultural controversy until regional financing was obtained in the 2000s and the re-use project was begun, coordinated by Paolo Zermani (Novelli, 2018).

From brick to the city | Having abandoned the idea of partially or totally demolishing the fortified complex to make room for new construction – years after other places with Visconti-era fortifications had made such a decision – they finally began to consider how to re-use the fortress and integrate it into the life of the contemporary city. The first step, taken in 2005, was to organize a complex information-gathering process about this little-known place. It had been entirely closed until that moment, so the few existing worthy studies had not had the opportunity to observe the actual construction directly, focusing instead on historical events and the political role of the castle. The building offers itself – precisely through the apparent chaos of its superimpositions – to be deciphered as an actual text written in stone (Torsello, 1997). In architecture such as that of the Visconti-Sforza Castle made of numerous stratifications, the actions that affect the building are based on varying levels of intentionality.

The enlargement of a block, the subdivision of internal spaces and the opening of new windows are all conscious actions that manifest a precise intention, a given historical-cultural environment and a specific technical context. On the other hand, lack of maintenance, land subsidence, and signs of deterioration – which themselves make up part of the building's history – are not the result of intentional acts. In order to identify a correlation between the phases of construction, processes of deterioration, and modifications due to changes in designated use, the stratigraphic analysis was used to study, record and time the various phases in the life of the building (Harris, 1983, 2003). This correlation between the stratigraphic diagram and the project is use-



Fig. 5 | Wall standing alone inside the Castle (credit: Albani, 2005).



Fig. 6 | Internal side of the wall (credit: Albani, 2005).



Fig. 7 | Stratigraphic survey of the western facade of the wall (credit: Albani, Gambaro and Mittermair, 2005).

ful to identify a methodological approach that will allow in-depth knowledge of the building, a fundamental pre-condition for drawing up a precise, well-developed project, designed specifically in response to the characteristics of the building.

Emblematic of the repercussions that this now-consolidated relationship between archaeology and architecture can have on the project are the vicissitudes of the wall, which stood isolated inside the courtyard in the west side, precisely at the place where the new museum wing was planned. In order to understand the role that was, or was not, played by the historic wall in the plans for the new structure, it was essential to understand all the various stratifications of the building³. This approach necessarily involved focusing on the building materials, and thus, on individual examples of brickwork, or better still, on a single stratigraphic unit. Luckily, the building was easily analyzed as it was even possible to measure the thickness of the walls and because the only plastered area was the lower part on the eastern side. Thus, commissioned by the Municipality of Novara, a study was launched to combine data from archival sources and information from the stratigraphic analysis of the elevation⁶ (Figg. 5-7).

After localizing and determining the perimeters of the various stratigraphic units, identified thanks to discontinuity in the walls, the data was plotted in graphs and data sheets to guarantee uniformity, thoroughness, and easy interpretation. The data sheets included information on materials, construction techniques, morphological characteristics of the elements and the physical relationship between the stratigraphic units⁷. This made it possible to determine a relative sequence that reconstructed the different phases of construction and transformation of the walls.⁸

A comparison of the data gathered from different investigations (of the structure and in the archives) revealed complex usage and stratifications beginning in the Roman/early medieval period and continuing through to interventions in the 1900s. The existing wall stands on top of the ring wall of the Roman/early medieval city, as confirmed by archaeological excavations carried out in 2005⁹ (Figg. 8, 9). Located in the south-west corner of the raised city walls, it has a sentry walkway¹⁰ built in a later epoch¹¹. On the south facade of the Monicione Tower, situated to the east in the Rocchetta, traces of these early medieval walls were found, suggesting the theory that it was not laid out in a straight line, as had been assumed, but that there was a sort of 'recess or indent', probably related to the configuration of the terrain¹² (Motta, 1987).

Later, in the Visconti period, it was used again in the construction of the first fortified circuit, at which point it was raised and a second walkway was created, higher than the first¹³. Significant portions of this first fortified circuit remain in the south and east areas of the castle, where a massive entrance with a drawbridge and smaller pedestrian entrance is visible. The wall, which stood isolated in the middle of the courtyard as a result of demolitions carried out by the Civil Engineering Department after the prison was moved, is the only testimony of this effort to provide defence for the city, which continued to use the same stretch of the city wall from the Roman



Fig. 8 | Phases of construction from the early medieval period to the 20th century (credit: Albani, Gambaro and Mittermair, 2005).



Fig. 9 | Detail of the crenellated walls that rose above the wall of the early medieval city (credit: Albani, 2005).



Fig. 10 | Castle entrance in the early 1900s when it was a prison (source: Archivio Storico di Novara).

period to the 14th century, raising and reinforcing it periodically. All this lost its relevance when the Ghirlanda was built in the mid-1400s and later with the presence of the ramparts of the new fortified ring wall. The wall, therefore, no longer represented the ‘limit’ of the city’s defence, but served instead as the ring wall of a building, having been reused in a newly-constructed service block.

There is evidence of the use of this building during the period in which it functioned as a prison. In 1803, when the prison was moved into the castle, numerous works were carried out to transform and maintain the entire complex (Fig. 10). A

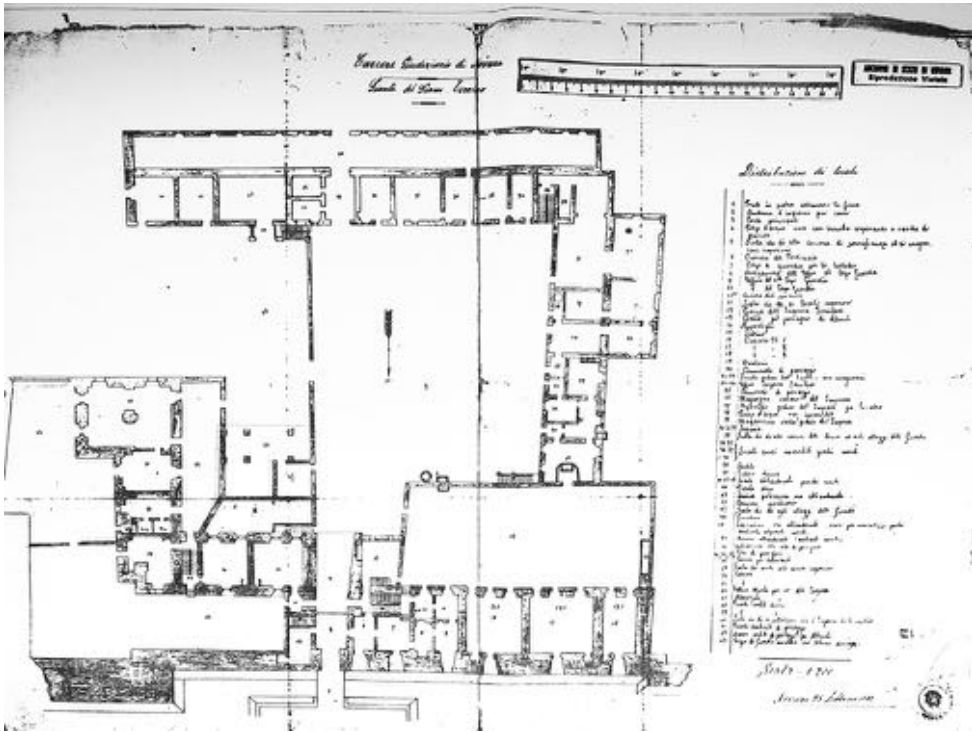


Fig. 11 | The ground floor of Visconti-Sforza Castle, 28 February 1882 (source: Archivio Storico di Novara).



Fig. 12 | Buildings built up against the wall of the early medieval city re-used in the fortress and demolished in the 1980s (source: Archivio Corrente Soprintendenza Archeologia Belle Arti e Paesaggio for the Provinces of Biella, Novara, Verbano-Cusio-Ossola and Vercelli).

survey of the ground floor of the Visconti-Sforza Castle carried out on 31 October 1814 by the royal surveyor F. Baglione, kept in the ISCAG archive in Rome, shows that it was a two-storey building with five rooms and two gun storerooms on each floor. Around the end of the 19th century, when the needs of the prison had changed, the building underwent another series of transformations. Records show that the windows were modified as interior spaces were partitioned differently to correspond to new functions. In fact, a floor plan of the Castle dated 28 February 1882 and kept

in the State Archive of Novara shows an oratory and a series of storerooms on the ground floor and a surveillance room on the first floor (Fig. 11).

When the prison was moved elsewhere in 1973, the entire complex was abandoned. A series of images found in the Current Archives of the Superintendence of Turin¹⁴ shows several buildings supported directly by the early medieval city walls that had been reused in the fortifications. These buildings were abruptly demolished in the 80s, probably without anyone realizing the importance of those walls that bear the traces of almost 2000 years of history of the city of Novara (Fig. 12).

The (partial) re-appropriation of the Castle | The process of re-appropriating the historical structure began in the 80s, both institutionally, with the transfer of ownership – after ten years of complicated negotiations – from State Property to the Municipality of Novara, and physically, with its designation and temporary use as the seat of the Forestry Authority. However, a broader-ranging project to reuse and increase the value of the Castle was not launched until the beginning of the 2000s, when regional financing was obtained and a competition was announced for proposals to restore and reuse the Castle as a museum and cultural centre, won by a team coordinated by Paolo Zermani.¹⁵

The interdisciplinary information-gathering campaign – still ongoing – revealed a highly stratified palimpsest and has gradually contributed to a recognition of the importance of the Castle's rich history and role within the identity of the city. Therefore, clear limits were set as to the transformations possible to fulfil the needs of its new use. The project to re-use the Castle as a museum and cultural centre was the culmination of a debate that had begun in the late 1900s. It was based on in-depth knowledge of the site, although it only involved one portion of the fortified complex. Specifically, the intervention called for the restoration of the north wing and the east Rocchetta, re-composition of the buildings to the south and reconstruction of the west wing built along the existing medieval wall, in correspondence with the ancient Roman wall, which represents the backbone of the new structure and is visible at all levels from the basement to the two floors above ground (Mugnai, 2019).

Another important decision was to build the tower above the north-facing entrance, at the point with traces of the medieval tower, in order to create a scenic viewpoint overlooking the city and its principal monuments: Piazza Martiri, Teatro Coccia, the Baptistery and the Dome of San Gaudenzio by Antonelli (Savorra, 2018). The compositional intention was to complement the pre-existing structures with the new ones, in a unified logical plan, progressively revealing the stratifications of the construction. The origins of the building and the stratigraphy of the Roman, Visconti and Sforza constructions can also be appreciated from the basement of the new west wing, from where one can gain access to other Roman remains discovered during the archaeological excavations as well. The Castle will house the archaeological collection of the Mu-



Fig. 13 | The new museum wing by Paolo Zermani, 2016 (credit: R. Emili, 2020).



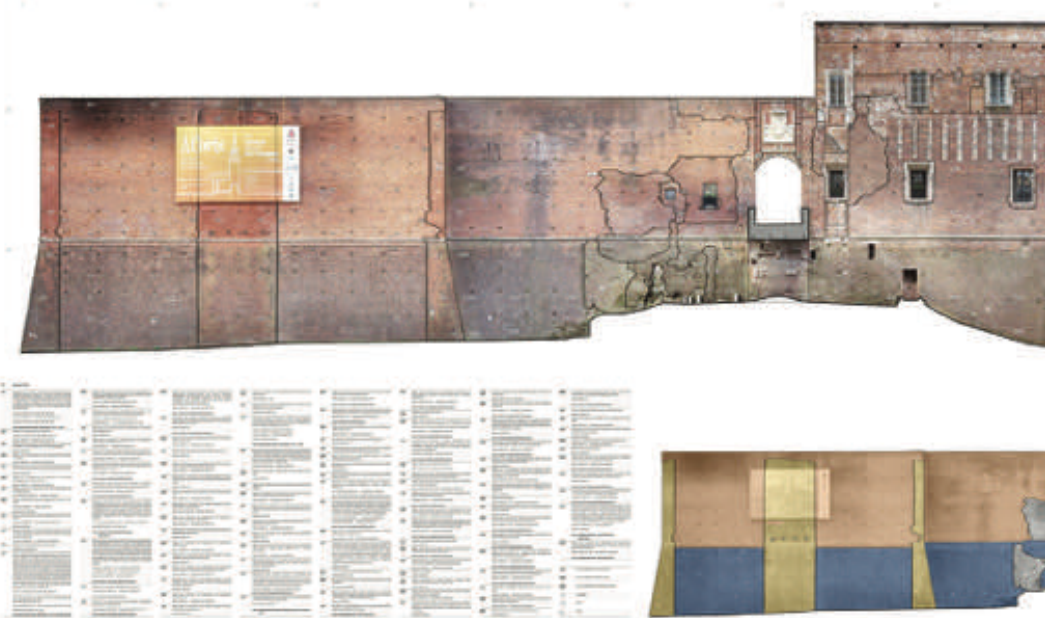
Fig. 14 | Southern entrance to the Castle (credit: R. Emili, 2020).



Fig. 15 | Views of the Castle from the city today (credits: R. Emili, 2020).

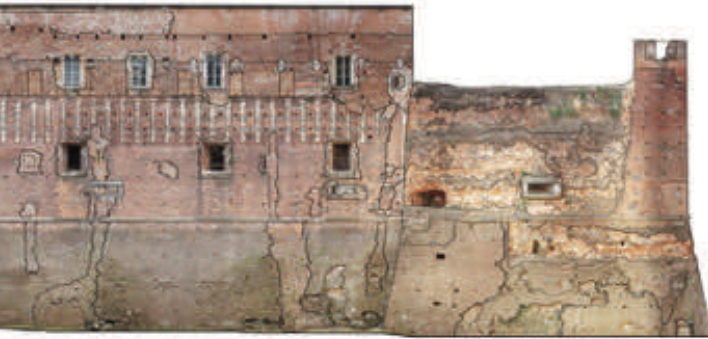


Fig. 16 | Views of the Castle from the city today (credits: R. Emili, 2020).



Figg. 17, 18 | Stratigraphic survey of the North facade of the Castle; Decay survey and maintenance project of South-North facade of the Castle (credits: Politecnico di Milano, DASTU and ABC Departments, F. Albani, M. Gambaro, 2018).





nicipality of Novara, the Civic Museum and a contemporary art gallery – the only venue that has operated so far, mounting temporary exhibitions.

The project took more than a decade to complete and involved a diverse group of scholars, archaeologists, professors, architects and engineers who contributed over the years in varying scales. Unexpectedly, however, the citizenry was divided in their reaction to the intervention. On the one hand, the importance of conserving the fortified complex was (finally!) widely acknowledged; on the other, however, the symbolic value of the additional storey of the tower with the coat of arms facing towards the city rather than towards the interior, as dictated by the medieval art of war, was not well-received. In fact, the castle continues to be a place that is not exactly ‘of the city’ and only partially included within its borders.

In 2019, after further European financing¹⁶, a new phase of study and research began on the Castle moat and the San Luca and San Giuseppe bastions, which form the perimeter of the Spanish fortifications on the west. This second phase of the intervention will create a connection and greater integration between the city and the restored structure, now re-opened to the public. The re-appropriation of the complex will be completed with the renovation and installation of safety features in these sites that have been inaccessible for so many years and were originally built for defensive purposes, while also offering a unified vision of Novara’s little-known fortified defence system (Fig. 13). Meanwhile, an anthology of all the studies carried out over the past fifteen years is being published, which, along with the various cultural events being planned, will allow the city to experience and ‘re-interpret’ this important site, capable of generating social, economic and spatial synergies and dynamics in the city of Novara.

Open questions | After the controversy lasting more than a century, which culminated in the construction of the new museum wing and the conservation of the medieval structures, the city of Novara has finally ‘re-appropriated’ this site (at least physically), with its great value and significance. From the very beginning, its position within the city, proximity to large public parks, and easy access ensured the presence of a large, enthusiastic public. The construction of the bridge on the southern side in 2002 created a permanent connection between Piazza Martiri and the Allea di San Luca. The bridge played a decisive role in the relation between the city and the Castle and created a spatial sequence between the entrance on the ravelin, the inner courtyard and the park on the bastions (Fig. 14). For almost twenty years now, the people of Novara have been able to enter and fully enjoy a site that had previously been off-limits. Furthermore, thanks to the activity of the Fondazione Castello Visconteo Sforzesco, for the past five years there have been frequent, often world-class cultural events, both permanent and

temporary. Thus, the Castle has assumed an entirely new role: whereas once it was a place of exclusion, it is now a place of inclusion that has revitalized the city museum circuit and a tourist place of cultural interest, with social and economic repercussions.

There are still numerous issues to confront within this dynamic, including the relationship of the Castle and the Park, and specifically, the conservation and enhancement of the Ghirlanda surrounding the fortress. After the construction of the bridge spanning the moat from the park, the question of restoring relations with the surrounding spaces became more urgent, but especially with the still-existing fragments of the Spanish wall hidden within the Parco dei Bambini. This relationship, still only partially explored (Gambaro, 2019), offers a valuable opportunity for the Visconti-Sforza Castle to redefine its interaction with the contemporary city. Studies began in 2018¹⁷ – before the 2019 competition¹⁸ – revealed the cultural, spatial and relational complexity of this area of Novara, which still awaits proper interpretation, where new uses and stratifications can be added to the many stratifications of the past.

The example of the Visconti-Sforza Castle and the multiscalar and multidisciplinary approach of the process that led to its re-appropriation by the city can serve as a model in the search for new strategies for managing our cultural heritage,



which represents such an important cultural and economic resource. For Novara, and more generally, for Piedmont and Lombardy, the dynamics of the case can serve as a model in the debate about the future of fortified architecture, which has traditionally been excluded from the development of the city. The delay in this process of re-appropriation compared to other national and international examples is due to local matters that resulted in the transfer of the prison being delayed by more than fifty years, although it had been recognized since the early 1900s as unable to guarantee even minimal standards of hygiene and health. This delay created a distance between the people of Novara and this austere place, which was lacking in artistic elements or stories of famous characters that could make it more readily appreciated.

The process began about twenty years ago to 're-connect' the Castle and the city in a variety of ways was largely based on the interdisciplinary, multiscalar information-gathering about the construction, which demonstrated the importance of conserving the signs of transformation and, in general, of the passage of time. These ongoing dynamics are an example to be studied by other places facing a lack of connection between historical sites and a society that has become too artificial and hectic to take the time to appreciate and understand their surroundings. For such places, a methodological approach and a strategy of enhancement can be an example and an inspiration. When the architectural project is fundamental to attaining the goal, the implementation of strategies on several distinct scales reflects the contemporary city's desire to re-appropriate the many 'stories' that these sites can tell, seeking to experience the sites fully and integrate them into the urban community dynamics, which have been waiting far too long for the resolution of these issues (Figg. 15-18).

Acknowledgements

This article is the fruit of the authors' joint reflection; however, the paragraphs 'introduction' and 'From brick to the city' should be attributed to Francesca Albani, '20th century controversies and projects' and 'Re-appropriation of the Castle' to Matteo Gambaro, and 'Open questions' to both authors.

Notes

1) In the 16th century, before the new fortress was built, the city was defended by a massive wall and a moat known as 'fossatum Novariense'. Access was gained through five main gates: S. Stefano on the north, Sant'Agabio on the east towards Milan, San Gaudenzio on the west towards Vercelli, Santa Maria, also known as the Cittadella, to the south, and Porta Nuova by the Church of Sant'Agnese. There was also a series of posterns for convenience. Many buildings stood along the communicating roads, especially near the city by the wall; the further from the city, the more deteriorated the buildings (Frasconi, 1995).

2) The Nuova Novara project was presented to the Municipality of Novara on 23 May 1899 by the architects Giachi and Andreoni on behalf of a group of entrepreneurs.

3) The English translation of the text is as follows: «In June 1894, upon visiting the monument, I informed the Government that the Castle still has enough interesting remains to merit its conservation. Thus, unless there were an urgent need, it would not be advisable to sell it, and assuming financial conditions allow, it would be the case to initiate restoration of the monument in the interest not only of art and history but also of the city of Novara».

4) The English translation of the text is as follows: «Today, in Novara, we see a repetition of what happened in Milan more or less twenty years ago [...]. There, as now in Novara, some wanted to sacrifice the integrity of the castle in order to lay a roadway that would allow healthy mountain air to blow through: here too the castle was believed to be devoid of any artistic value, serving only to recall the unfortunate foreign domination: here too old farm estates were destroyed to make room for five-storey apartment buildings; and yet it took only a few years to understand the scope of the potential irreparable damage of the plan if, like the current plan in Novara, it had been approved by the usual competent Commissions».

5) A stratigraphic unit refers to what remains of a part constructed as a single unit in a building, that is, laid in a single act of construction.

6) In 2004, the Municipality of Novara, specifically the Qualificazione Territorio e Ambiente Department, with the architect Roberto Guasco in charge of the procedure, commissioned scientific research overseen by Francesca Albani, Matteo Gambaro and Martin Mittermair. The work, which lasted into 2005 and 2006 in order to complete the archival research, included a stratigraphic analysis of the Visconti complex (Visconti Tower, Monicione Tower, the Rocchetta and South Wing), an analysis of signs of deterioration, and guidelines for the conservation of the structures in elevation.

7) From the beginning, the research clearly revealed the delicate balance between the complexity of the information and its quality. This widely-recognized problem was discussed repeatedly. The weak link of the system is certainly the set of hundreds of U.S.M. data sheets and the increasingly complicated and hard-to-interpret matrix; these research tools have been reduced over time to a sort of 'certificate of quality' ritual, whereas in fact, they are merely a summation of the data with no practical function for the project (Pertot, Tagliabue and Treccani, 1996).

8) As for the Visconti-Sforza Castle, questions were raised as early as the first phase of the research project about whether Harris's simple two-dimensional diagram was capable of representing the many interrelations between the stratigraphic units of an architectural complex with so many distinct parts. This debate on the question of the matrix applied to architectural analysis is ongoing, with some proposing that it be simplified and others that it be abandoned entirely (Giannichedda, 2004; Parenti, 2003; Gallina, 2012).

9) U.S.M. 852 is made with gravel and a brick course, which ensure that the laying surface is level. It has the same characteristics as the walls discovered in the archaeological excavations. The perfect alignment of the walls virtually proves that they were built at the same time.

10) The masonry of the battlements has a thickness of 46 cm while the surface supporting the wood beams of the walkway is 45 cm thick. The walkway probably had a wooden gallery supported by beams, though no trace remains today. Thus, the parapet of the battlements, recognizable on the west façade, was about 72 cm high. The merlon was able to protect an area about 73 cm above the parapet, for a total height of 145 cm. Such are the dimensions today, but it is quite probable that the upper parts, being more vulnerable to deterioration, were eliminated during successive transformations. A geometric survey showed that the space between one merlon and another varies between 108 and 117 cm.

11) The 94-cm rubble masonry wall, identified as U.S.M. 804, is made of two brick facings of about 14-14.5 cm filled with river pebbles and brick fragments with whitish lime mortar with good bonding strength and a fine-grained aggregate.

12) A reconstruction of the perimeter of the wall surrounding the Roman city (Motta 1987).

13) Unlike U.S.M. 804, this U.S.M. 801 wall is made with 3 headers brickwork and has exactly the

same thickness as the earlier wall, that is to say, slightly less than one meter. The bricks, approximately 29.5-30 x 6-6.5 x 1 1.5-12 cm in size, are a darker red than those in U.S.M. 804 and are laid with an irregular header/stretcher pattern. The greyish lime mortar has excellent bonding strength and a sandy/pebbly aggregate with small limestone fragments. The joints are smooth, flush with the brick, and vary in size between 2 and 2.5 cm. The wood sentry walkway rested on thickness of about 45 cm, while the merlon is 46-48 cm thick. The crenelations were 225 cm above the floor and the parapet offered protection up to 106 cm. Given that the space between merlons measured between 118 and 120 cm., it is reasonable to assume that there were also wooden closing elements for this battlement.

14) Archivi Correnti Soprintendenza Archeologia Belle Arti e Paesaggio for the provinces of Biella, Novara, Verbano-Cusio-Ossola and Vercelli and the Soprintendenza Archeologia Belle Arti e Paesaggio of the Metropolitan City of Turin.

15) The design team included Paolo Zermani (team leader), Alberto Andreis, Giuseppe Arena, Carmela Barillà, Mauro Grimaldi, Ezio Mancini, Fulvio Nasso, and Alberto Tricarico.

16) POR FESR 2014-2020 Asse VI – Azione VI.6c.7.1 – Interventions to safeguard, enhance and digitalize the cultural heritage, both material and immaterial, in strategically important areas of attraction in order to consolidate and promote development.

17) ‘Studi e ricerche per la definizione delle opere di conservazione, valorizzazione e fruizione delle mura del Visconti-Sforza Castle e dei bastioni di San Luca e San Giuseppe’. Research contract stipulated in 2018 between the Politecnico of Milan (scientific leaders Francesca Albani and Matteo Gambaro) and the Municipality of Novara, Servizio Lavori Pubblici e Sviluppo del Patrimonio Immobiliare.

18) POR FESR 2014-2020 Asse VI – Azione VI.6c.7.1 – Open tender for the procurement of professional engineering and architectural services involved in the design and determination of seismic vulnerability for restoration and conservation work on the walls of the Visconti-Sforza Castle and the San Luca and San Giuseppe bastions in Novara.

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