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# RETROFITTING DETENTION BUILDINGS OF HISTORICAL-CULTURAL INTEREST. A CASE STUDY IN ITALY



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Silvia Pennisi

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## Highlights

The aim of the illustrated research is to study methods and solutions to safeguard historical penitentiary buildings, which can be improved in the whole respect of their architectural history. The treated example of an historic building in Sicily shows some suited modifies to improve the functionality and the comfort of some areas respecting the value of the building.

## Abstract

Penitentiary buildings in Italy include many buildings of undoubted historical and architectural importance. These have been, or will soon be, subject to structural changes necessary to adapt their spaces to the current regulations of prisons.

The idea of punishment itself has changed over the centuries, so it is a physiological necessity to adapt existing buildings accordingly. When, however, such buildings date back centuries, they should not be considered a mere container but a historical testimony rich in meaning for the entire nation.

The characteristics of the materials, distribution, and what these buildings have represented for the city should be the object of study and protection, whereas, at present, their historical-architectural qualities are often ignored and distorted with interventions that should often be better studied and evaluated.

The article takes its cue from the description of the recovery of a Sicilian prison that was built in the early twentieth century and which is considered emblematic. The type of construction and its distribution reflect a multitude of historical meanings, as evidence of architecture too often underestimated, that of prisons.

The aim of this illustrated paper is to study methods and propose solutions to safeguard these buildings that, while respecting current regulations on detention, can also let everyone in the future “read” the history of our civilization through this important architectural heritage.

## Keywords

Historic buildings, Penitentiary facilities, Preservation strategies, Cultural heritage recovery, Retrofitting guideline, Building adaptation.

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## 1. INTRODUCTION

Italian prisons are often housed in buildings going back many decades, with historical construction and distribution features that are interesting but obsolete by now.

In addition, prison buildings designed and built more than a century ago have double importance that is often subject to a difficult compromise: their function as a historical-architectural document and the guarantee of the respect of the norms and living conditions of prisoners.

The design of new prison buildings and the recovery of the existing ones, despite the numerous social, political, and economic implications, are not adequately considered in Italy, and they are based on criteria that are not consistent with some aspects of the current legislation [1].

Moreover, although prison architecture has been the subject of studies and treatises in the past centuries – even Vitruvius treats it in the *De architectura* – it is not covered at all by the protection actions applied to other historic buildings; this is also due to the current legislation, which, although extending the concept of “cultural heritage” to a wider typology of buildings, does not give adequate attention to prisons [2].

Obviously, the purpose of the detention buildings is to accommodate the detainees and rehabilitate them for their reintegration into society.

According to the constitutional dictate, “the penalties cannot consist in treatments contrary to the sense of humanity and must aim at the rehabilitation of the condemned”, and the Reform of the Penitentiary Law (L. 354/1975), in force for more than forty years, defines the new function of the prison that “from an institution of mere custody and isolation [...] becomes an institution that must favor the re-socialization of the prisoner” [3].

The current conditions in many prisons make detention a real punishment [4], in the worst sense of the term, which is far from the rehabilitation purpose that detention should possess, inducing even a deterioration in the psychological and physical conditions of the prisoners. In Italy, it is estimated that every 10 years 1000 prisoners die, so the discomfort is often not resolved. The main cause of discomfort is overcrowding. Although, in recent years, efforts have been made to improve the situation, there are often too many inmates in a single cell. The

problem, however, lies not in the size of the spaces but in the number of prisoners.

Therefore, prison institutions must have a function of reintegration into society [5], which obviously also involves a better performance of the building used as a prison [6] and, in particular, a review of the distribution of its spaces and the improvement of its indoor commodities; the historical-architectural importance of the building is often neglected.

Therefore, a cultural heritage dating back centuries, with noteworthy building characters, is destined to be lost because, in its recovery, only the norms of the adaptations concerning the rehabilitation of the prisoner referred to as “rules for rehabilitation” are considered [7]. The lack of attention paid to these historical buildings has therefore made possible, over the years, demolitions and functional recoveries that have devastated their architectural qualities, while careful preservation could have brought historical and architectural benefits.

Preserving the building and typological memory of these buildings, by studying adaptation methods that also entail benefits in more than one aspect [8], corresponds for this reason to preserve a slice of our history, sometimes hidden, and this is the main aim of this study.

Therefore, the proposed study on historical prisons, with a discussion on the different typologies, focuses on the functional distribution and construction features of the building in question, together with up-to-date history of its transformations. The latter has been made necessary by the indications of the Administration or the entry into force of new laws [9]. A crossed and reasoned reading of the current spaces in relation to the required needs, carried out from the perspective of conservation, can lead to solutions that respect the building itself [10]; respect that does not mean immobility, but compatibility, therefore minimum and declared changes through an appropriate choice of materials and construction techniques [11].

## 2. THE KNOWLEDGE PATH

Each prison building is a part of the historical-architectural memory of a nation in relation to an era, both for the functional conception of the environments and for its

building characteristics [12]. Like all architectural artifacts, however, it performs a function that, in the specific case, has undergone, and currently undergoes, necessary adaptations that often make it difficult to maintain its distributional and building qualities.

The proposed methodology can be subdivided into successive steps that lead to an improvement of the building by impairing its qualities as little as possible through a thorough knowledge of it and its history.

As a first step, the research methodology envisaged a broader preliminary study of the evolution of the prison building typology, with the identification of the main distribution models that have been established over the centuries accordingly with the evolution of the concept of punishment.

This path was necessary to better understand the characteristics of the historic buildings still in use today, although built decades or centuries ago, and to deepen the link between the material characteristics of the construction and the cultural and social evolution of the treatment reserved to the offenders.

The complete historical path, indispensable to be able to proceed to a compatible adaptation, has been in use in the practice of architectural restoration for years. The substantial differences in the case of penitentiary buildings reside in a greater number of limitations imposed by rigid and in-continuous-evolution legislation, and also by the little attention reserved, over the years, to the respect of the historical importance of such buildings.

In the second step, greater attention has been focused on Italy, and historical buildings still used as detention facilities were examined.

This research led to a synthetic vision of the most common distribution and construction typologies of historic buildings still used today, which resulted in an evident predominance of some of them on the national territory.

This consideration has further strengthened the intention of proceeding with the study and recovery of a building chosen as emblematic so that the design ideas elaborated in the last step could then be applied, with appropriate adaptations, even in coeval and similar buildings.

In the third step, an even more detailed analysis of the chosen building has been carried out. It consists of a direct study, through inspections, and an indirect one,

through written documents. The study made it possible to identify some environments that could be improved and adapted to the needs of both prisoners and legislation, in particular, the D.P.R. 30.06.2000 n. 230 (Presidential Decree).

In this way, it was possible to proceed to the last step, that is, the planning of the adaptation of some spaces of the chosen building, with the realization of demonstrative renderings.

Such a study must take into account the multidisciplinary aspect of the subject: detention as a means of rehabilitation requires an accurate study of the spaces and the paths, which must be conducted with specific professional figures.

For this reason, a decisive factor in the proposed methodology is that in the last steps, i.e., detailed knowledge of the building and design of the adaptations, the figure of the designer is supported by the professionals involved (psychologists, doctors) and the actors (educators, surveillance personnel, managers, commanders) who know and live the prison reality every day.

The proposed solutions will be, in many cases, adaptable and applicable to coeval buildings of the same typology, allowing to avoid unplanned and often “improvised” interventions, usually imposed by urgent needs, often created by limited times of adaptation foreseen by the new regulations, that do not take into account the historical-cultural aspects of the prison building. Figure 1 shows the summary of the procedure above-illustrated.

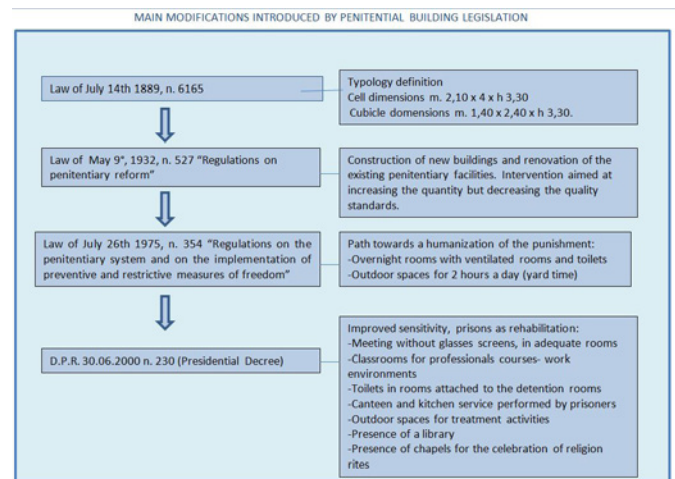


Fig. 1. Summary scheme of the normative path in Italy.

### 3. APPLICATION

#### 3.1. EVOLUTION OF PENITENTIARY CONSTRUCTION

As previously mentioned, as a first step in the research, an excursus on the general history of prison construction and the concept of punishment was considered essential in order to understand what aspects of a building's history to conserve and protect to preserve its meaning.

The concept of detention as a punishment has been "recently" acquired. Historically, in fact, punishments had the function of an example for those who were about to commit the same crimes; therefore, they were mostly corporal punishment, the expulsion of the guilty, or the death penalty.

Initially, in the Middle Ages, the judicial and the prison architecture coincided: the buildings housed the condemned, or those awaiting trial, on the ground floor, darker and with few openings to the outside; while on the upper floor, in large and bright environments, the activities of the judges were carried out.

Then, from the 1500s, a specific building was destined to the judicial activity, with architectural and symbolic characteristics that had to signal to the city its function and the importance of what took place inside.

The building for the prisoners, although close, was distinct; it marked the beginning of the path that led to imprisonment as a punishment.

At the end of the eighteenth century, thanks to the work of the Enlightenment thinkers and philosophers, the concept of punishment changed, abandoning corporal sanctions and replacing them with imprisonment.

The most important work on this subject is that of Cesare Beccaria *Dei delitti e delle pene* where the atrocities of the judicial system of the time were attacked and criticized. Inevitably, the mutation of the concept of punishment led to the creation of structures for the treatment of criminals.

In this period, the tendency to the symbolic and physical separation between courts of justice and places of punishment was accentuated, marking the beginning and development of a real penitentiary building with more functional typological models than in the past, with the consequence, however, that the physical place of de-

struction was destined to progressive segregation and estrangement from the urban civil context. Prisons were often housed in buildings originally constructed for other purposes and subsequently adapted to prisons. Convents, in particular, with their structure, seemed to already present suitable characteristics [13].

It was especially in the 1800s that many scholars devoted themselves to the "science of prisons", focusing in particular on two main aspects: the disciplinary one and the architectural one.

The second aspect has been developed with numerous schemes of buildings designed to reconcile the control needs with the disciplinary ones.

The models that were studied were different, the panoptic model, the Philadelphian model, and, in particular, the auburn model. Some had a future; others remained merely theories [14, 15].

In Italy, after national Unification, the penal code required revision [16], and the prison reform of 1889 had the merit of posing the problem of the availability of such structures.

Subsequently, in 1932, the second prison reform was launched, which aimed to solve the problem of the lack of places without taking particular care of the quality of the building [17].

Many historic buildings destined for detention in Italy date back to these two periods. From those years to date, some attempts and only one actual law, in 1975, concerned the care in the design of penitentiary buildings, but the attention was mainly focused on safety and, subsequently, on avoiding penalties from the European Community. Finally, with the Presidential Decree of 2000, an attempt was made to take certain measures nec-

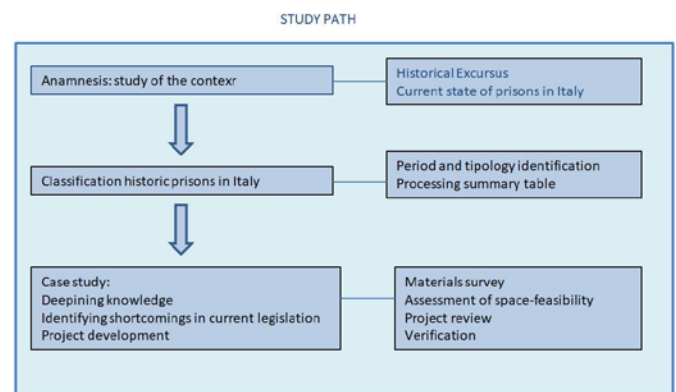


Fig. 2. Summary of the study path conducted.



essary for adequate detention without causing aggravated punishment due to the shortcomings of the buildings.

The diagram in Figure 2 summarizes the above-cited normative path.

### 3.2. PENITENTIARY BUILDINGS IN ITALY

By starting from a general analysis, this research focuses on the two main peculiarities of the Italian penitentiary building heritage in terms which are of its historical value and the inadequacy of the services provided by the Administration.

The building heritage destined for detention in Italy is currently made up of about two hundred state-owned complexes built in different periods and, therefore, with different design technologies and philosophies.

The limited attention given to the design and adaptation of buildings [18] by the regulations has caused Italy to have serious economic consequences.

With the Torreggiani sentence of January 8th, 2013 (Appeals No. 43517/09, 46882/09, 55400/09, 57875/09, 61535/09, 35315/10 and 37818/10), Section II of the European Court of Human Rights dealt with the structural malfunction of the Italian penitentiary system. Our country was convicted for the violation of art. 3 of the European Convention on Human Rights (ECHR), which – under the heading “prohibition of torture” – lays down the prohibition of inhuman or degrading punishment and treatment. The severe lack of space, exacerbated by the absence of hot water, as well as the insufficient lighting and ventilation of the cells, constitutes an inhuman and degrading treatment [19, 20].

The current and established idea of punishment refers to the rehabilitation value of detention, which is why, to avoid further sanctions, even buildings with historicized elements have been modified, without any criteria, to meet regulatory requirements.

The two main consequences resulting from these modifications have been a slight improvement in quantitative terms (reduction of crowding) but a devastating effect on historic buildings, not at all protected despite their undoubted architectural qualities.

Before 1889 there were 15 detention buildings. From 1889 to 1938, 35 prison buildings were built or adapt-

ed, most of them being originally convents. The most common scheme realized between 1800 and the early twentieth century was undoubtedly the “telegraph pole” one (about 70%). This scheme (Fig. 3) allowed with different variations the division of functions into different branches: a filter-building with administrative functions, the detention wings connected by a distributive body, and in the middle the outdoor areas. The scheme, repeated at least twice, made up the prison area, painted white and free of elements distinguishing the various areas, deliberately disorienting and aseptic. The long corridors of the detention wings created apparently identical intersections, absolutely devoid of any element on the walls. The absence of references, on the one hand, made any attempt to escape more difficult, but on the other, it created further psychological stress on prisoners and surveillance personnel.

The attention of this study was focused on buildings that existed before 1940 because they were more difficult to adapt to current and historicized needs.

The difficulty in adapting old buildings naturally also lies in their wall structure, which does not lend itself to radical changes, and therefore requires particular design considerations and onerous expenses for each intervention required.

For this reason, it is often easier to partially demolish the structure, maintaining only the outline of the building, as it has been done, for example, for a detention wing of the Piazza Lanza District House in Catania.

The numerous convents adapted to prisons, and today still used for this purpose, were chosen because the distribution of the nuns/monks’ rooms along the corridor



Fig. 3. Telegraph pole scheme. The Forlì prison.

seemed to fit well with the detention function, but the constraints of conventual environments, once useful for meditation, do not always fit to the currently shared rehabilitation dynamics.

### 3.3. THE CASE STUDY: THE LOCAL PRISON OF CALTANISSETTA

#### 3.3.1. HISTORICAL-CONSTRUCTION KNOWLEDGE

The chosen case study to deep the research is a penitentiary in Sicily.

The design of the District House of Caltanissetta was based on the law nr. 6165 of July 14th, 1889, concerning penitentiary construction. The buildings are arranged planimetrically in the “telegraphic pole” configuration. The promoter of the project was the technical office of the prison administration, and the design was entrusted to Michele Malaspina, designer of the juvenile prison in Palermo that bears his name. The project was defined as an imposing and severely decorous building for the detained population.

The newspapers of that period, in particular *L’Aurora* [21] and *L’eco del popolo* [22], reported the news of the interest of the *Ministro dell’Interno* for the acquisition of

the land and the construction of the prison. A common skepticism can be noted, deriving from the awareness of a lack of funds, but the interest in the project was strong, given the need for a new penitentiary facility outside the city.

The construction work started in 1908 and was completed in 1932. Subsequently, over the years, small changes were made, which brought the appearance of the prison to the one that can be seen today (Figs. 4 and 5). In 1994 the women’s section was definitively closed.

Currently, the District House hosts 250 common and maximum-security prisoners, 230 units of prison police personnel, and 25 administrative operators (educators, accountants, cleaners) and aggregated operators (doctors, psychologists).

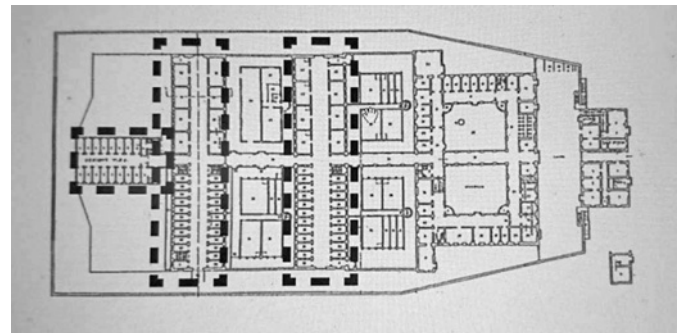


Fig. 4. The original plan.

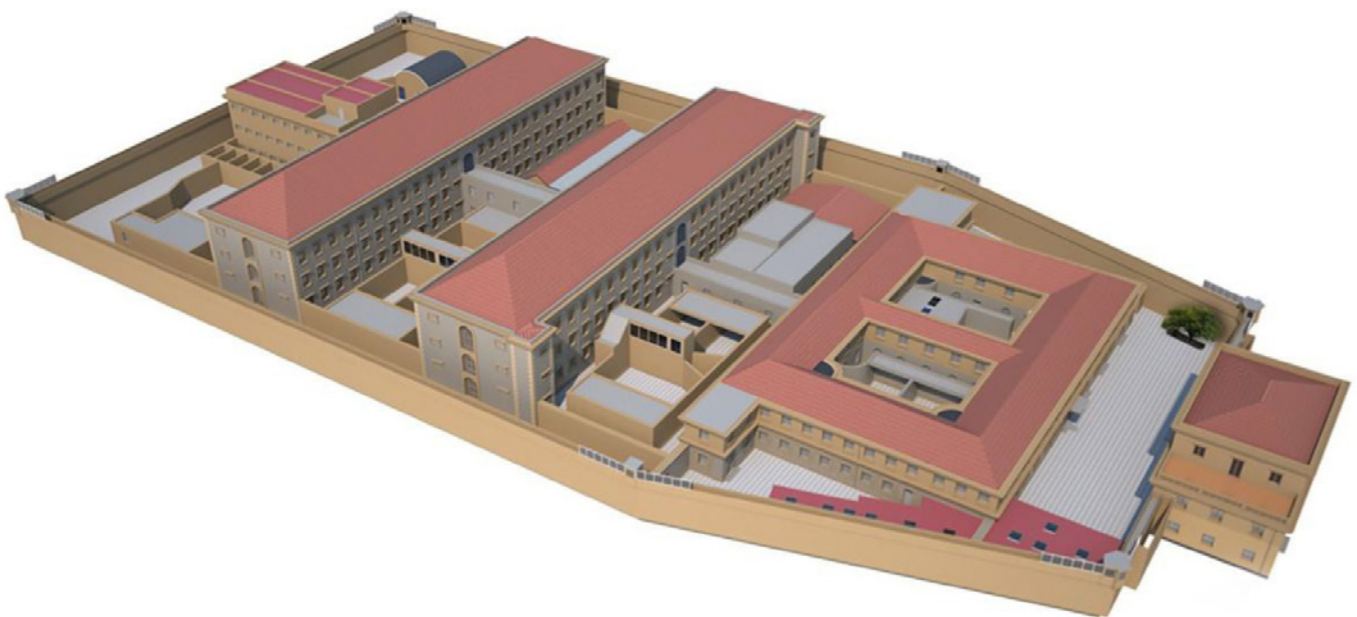


Fig. 5. Graphic reconstruction of the building. The additions are evident in all the free spaces, and they disturb the morphological balance of the complex.

The building is made of bearing masonry. The material used for the construction is the Sabucina stone, a high-prestige stone quarried since ancient times in Sabucina located in the area of Caltanissetta (Sicily). Some of the inner courtyards are used for the walk of the prisoners during yard times, while the intended use of the others has been changed according to the needs of the moment.

The District House includes a clinic, a gym, a library, three classrooms, and a room used as a place of worship.

The external façades have the typical features of the buildings of that period, such as the order of the openings and the ashlar in the lower part of the plaster (Fig. 6).

Inside the building, there are also some reinforced concrete structures added more recently, such as the kitchen, the laundries, and some warehouses.

The building, having been built in the early twentieth century, has continuous foundations. The, more or less recent, additions to the building are clearly visible from the floor plans and the rendering as they present reinforced concrete structure and, therefore, reduced thickness of the walls and do not, in any way, respect the formal order of the building (Fig. 5).

As it is customary in these cases, such additional interventions are an almost immediate response to a change in the legislation or to a sanction. Therefore, occasional

interventions, which do not take into consideration the whole structure. This process, which may include the addition of buildings, inevitably leads to solutions attentive to regulatory requirements and sometimes functional, but certainly not respectful of the historical-architectural value of the building.

### 3.3.2. IDENTIFICATION OF ADAPTATION MARGINS AND DESIGN PROPOSAL

The next step in the analysis of the building was the assessment of its compliance with the current legislation and also of its effective functionality.

The feasibility study of the proposed interventions here has taken into account the existing structures by rationalizing the spaces without distorting them and by properly choosing the forms and the materials of any necessary additions in order to make their construction time evident. A first study on the functions and the paths of the building has brought out the main critical issues present within the structure: the treatment areas are chaotic and poorly connected to each other and/or to the outside. Some badly arranged meeting rooms are in the immediate vicinity of the main entrance; there is also no outdoor meeting area, which is essential for a correct rehabilitation process [23].



Fig. 6. Graphic reconstruction of the main façade.

The proposed design solutions have taken into account, in addition to the regulatory aspects, also the current national and international design trends, very attentive to the rehabilitation path and, therefore, to the psychophysical health of the prisoners.

The first opportunity for action has been identified in the recovery of the former female promenade within the detention walls. This space would represent an optimal solution for placing an outdoor family-prisoners meeting area by also including an eventual play area for children to ensure better use of such space (Fig. 7).

This area will also be connected, through new internal paths, to the new structure destined for ordinary family-prisoners and lawyers/magistrates-prisoners meetings, designed according to the current legislation (Fig. 8).

The new meeting area, situated between the boundary walls and the barrack, is designed as a steel and glass structure in order to be immediately readable as a contemporary construction (Fig. 9).

As far as the ground floor of the first detention Pavilion is concerned, this space actually hosts the cells for

non-violent and semi-free inmates. The reconversion of block foresees the realization of classrooms, laboratories, and spaces for professional training in a totally free space system that could be opened and connected to the external area through the recovery of the courtyard and of the new canteen area (Fig. 10).

The proposal is indeed to re-use the spaces of the current kitchen to include a canteen where prisoners would be free to eat meals. This intervention aims at involving the prisoners both in the preparation of the meals and in the table service and shows how architectural features can give dignity to places.

The intention is to improve the treatment and social spaces, making them accessible to prisoners during the day. In this way, the new building becomes the head of a system able to connect the internal treatment spaces with the green area of the structure. It is, in fact, essential to make use of the open spaces in order to provide prisoners with a more dignified solution for walking and yard times [24].

Another intervention, consisting in the recovery of a second internal courtyard through the creation of a



Fig. 7. Graphic reconstruction of the outdoor family meeting area.



Fig. 8. Excerpt from the design plan: meeting area.



Fig. 9. Graphic reconstruction of the design of the outside of the meeting area.



Fig. 10. Excerpt from the design plan: canteen area.

synergic vegetable garden to encourage floriculture and horticulture activities, can be seen as a further step in the path towards legality, integration, and socialization between different cultures by means of promoting individual responsibility through cultivation and social production.

The envisaged interventions would allow solutions in line with the current legislation, also taking into account the existing structure through the use of materials that allow an immediate reading of the newly added constructions and with choices of re-functionalization that would improve the comfort of the prisoners (Fig. 11).

### 4. CONCLUSIONS

Historic buildings used today as penitentiary facilities have full dignity as a historical document and often as an architectural asset, which is why improvement interventions should be planned and designed with appropriate methods.

The methodology proposed in the present work, through the illustration of the case study, is based on the historical-architectural knowledge of the structure in order to ensure the respect of the historicity of the building, and it has not yet been applied to this type of building.

Evaluating an asset in its entirety before carrying out any project reviews is, in fact, at the basis of a conscious project. Combining this concept with the pressing needs of a difficult function, such as that of penitentiary facilities and with mandatory regulations, is a challenge worth undertaking.

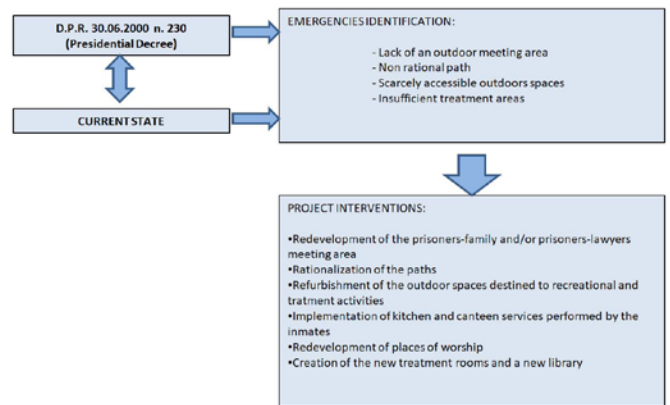


Fig. 11. Summary scheme of the carried-out research path.

A different approach, based on deep preventive knowledge instead of a response to immediate exigencies, could guarantee better results for requalification interventions.

It is hoped that, in the future, interdisciplinary studies will consent to solve the peculiar problems related to prison buildings in order to perform recovery interventions that will affect all the aspects concerning the life of the building and, at the same time, allow the building to be preserved for the benefit of future generations.

The illustrated methodology can be useful both for the process and for future applications. The recurrent analogies within the same building typologies make simpler the planning of solutions for requalification.

Following the same path, it would be possible to define a classification of interventions suitable for different types of classified buildings in order to respect their historical values and material characteristics.

“The degree of civilization of a country is measured by observing the condition of its prisons” (Voltaire).

## 5. REFERENCES

- [1] Andreuccioli C (ed) (2017) Oltre le sbarre. La questione carceraria e 10 anni di politiche di contrasto al sovraffollamento cronico. Documento di analisi n. 2, Senato della Repubblica
- [2] Vecco M (2010) A definition of cultural heritage: From the tangible to the intangible. *Journal of Cultural Heritage* 11:321–324
- [3] Cattaneo MA (1998) Pena diritto e dignità umana. Saggio sulla filosofia del diritto penale. Giappichelli, Torino
- [4] Gonin D (1994) Il corpo incarcerato. Edizioni Gruppo Abele, Torino
- [5] Awofeso N (2011) Disciplinary architecture: prison design and prisoners' health. *Hektoen International, A journal of medical Humanities* 3(1)
- [6] Neppi Modona G (1973) Carcere e società civile. In: *Storia d'Italia*, Vol. V/2 Documenti. Einaudi, Torino
- [7] Douglas J (2006) *Building adaptation*. Elsevier, Oxford
- [8] Highfield D (1991) *Refurbishment and upgrading in existing buildings*. Spon press (Taylor and Francis), London and New York
- [9] De Rossi D (ed) (2011) *L'universo della detenzione. Storia, architettura e norme dei modelli penitenziari*. Mursia, Milano
- [10] Groat L, Wang D (2002) *Architectural research methods*. John Wiley & sons, USA and Canada
- [11] Dvornik Perhavec D, Rebolj D, Šuman N (2015) Systematic approach for sustainable conservation. *Journal of Cultural Heritage* 16(1): 81–87
- [12] Douglas-Jones R, Hughes JJ, Jones S, Yarrow T (2016) Science, value and material decay in the conservation of historic environments. *Journal of Cultural Heritage* 21:823–833
- [13] Scarcella L, Di Croce D (2001) Gli spazi della pena nei modelli architettonici. *Rassegna penitenziaria e criminologica* 1/3:341–380
- [14] McConville S (2000) *Prison architecture: policy, design and experience*. Architectural Press, Oxford
- [15] Johnston N (2007) *Form of constraint: a history of prisons architecture*. University of Illinois Press, Urbana
- [16] Foucault M (1976) *Sorvegliare e punire. Nascita della prigione*. Einaudi, Torino
- [17] Fassone E (1980) *La pena detentiva in Italia dall'800 alla riforma penitenziaria*. Bologna, Il Mulino
- [18] Michelucci G (1993) Un fossile chiamato carcere. In: Marcetti C, Solimano N (eds) *Scritti sul carcere*. Angelo Pontecorboli Editore, Firenze
- [19] Michelucci G (1983) Carcere e città. In: *La Nuova Città, Quaderni della fondazione Giovanni Michelucci*. Angelo Pontecorboli Editore, Firenze
- [20] Burdese C (2011) *Le prigionie malate, Nono rapporto sulla condizione di detenzione in Italia, "Antigone"*. Edizioni Gruppo Abele, Torino
- [21] Carcere e... carcere (1904). *L'Aurora*, 14 August 1904
- [22] *L'eco del popolo*. 27 January 1901
- [23] Meyers TJ, Wright KA, Young JTN, Tasca M (2017) Social support from outside the walls: Examining the role of relationship dynamics among inmates and visitors. *Journal of Criminal Justice* 52(4): 57–67
- [24] McLean RL, Robarge J, Sherman SJ (2006) Release from jail: Moment of crisis or window of opportunity for female detainees? *Journal of Urban Health* 83(3): 382–393. <https://doi.org/10.1007/s11524-006-9048-3>