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Editors: Ilaria Garofolo
Giulia Bencini
Alberto Arenghi

An environment, or any building product or service in it, should ideally be designed to meet the needs of all those who wish to use it. Universal Design is the design and composition of environments, products, and services so that they can be accessed, understood and used to the greatest extent possible by all people, regardless of their age, size, ability or disability. It creates products, services and environments that meet people's needs. In short, Universal Design is good design.

This book presents the proceedings of UD2022, the 6th International Conference on Universal Design, held from 7 - 9 September 2022 in Brescia, Italy. The conference is targeted at professionals and academics interested in the theme of universal design as related to the built environment and the wellbeing of users, but also covers mobility and urban environments, knowledge, and information transfer, bringing together research knowledge and best practice from all over the world. The book contains 72 papers from 13 countries, grouped into 8 sections and covering topics including the design of inclusive natural environments and urban spaces, communities, neighborhoods and cities; housing; healthcare; mobility and transport systems; and universally-designed learning environments, work places, cultural and recreational spaces. One section is devoted to universal design and cultural heritage, which had a particular focus at this edition of the conference.

The book reflects the professional and disciplinary diversity represented in the UD movement, and will be of interest to all those whose work involves inclusive design.

Everyone Inside. Transformation of an Inaccessible Heterotopy. The Case of Buoncammino's Prison

Francesca MUSANTI[a,1]
[a] *University of Cagliari*

Abstract. The specific architectural typology of the prison, congenitally inaccessible to the urban morphological and cultural context in which it sets, as heterotopia carries in itself physical and cognitive barriers. The day after their abandonment, as happened for the former prison of Buoncammino in Cagliari, it's interesting to understand what new relationships should be put in place to make it accessible to all of the city users, in both material and immaterial terms.

Keywords. Inaccessible places, multiscalarity, multidisciplinarity, synaesthesia

1. Introduction

There is a subtle relationship between what each of us experiences in relation to our own corporeality, and what society feels in front of an architecture that opposes it without accepting it: "to feel as an insuperable limit or even as a prison our being confined here, in this body [...], our being something limited and unlimited at the same time, locked in the confines of our bodies, but also curious and anxious to go elsewhere" [1].

The investigation originates from this consideration and chooses to explore a specific architectural typology, the prison, which is congenitally inaccessible to the morphological and cultural urban context in which it is included, an other-place, suspended in time and space, in perpetual dispute with the reality outside it.

In order to understand which characters are specific to this category, it is particularly interesting to recall the Foucaultian concept of Heterotopia: "is a determined space that opposes and denies another defined space and inserts a substantial discontinuity in the *continuum* of the space. [...] Heterotopias are not places like any other, from which one enters and leaves, like from this room, this street or this city. They are places that neutralize and contradict all other spaces, because once we go into them, the difference is absolute" [2]. Prisons, in addition, belong to a peculiar typology of heterotopias defined as 'deviant', which includes all places organized by society on its margins, because they are dedicated to individuals whose behaviour is deviant from the norm [3].

The inaccessibility of prison architecture, therefore, is a result of the very nature of the institution, which segregates the society of the guilty, isolating it, clearly and without possibility of reconciliation, from the society of the good, as well as from the presence of physical, perceptive and cognitive barriers that exalt and explain the bi-directional incommunicability between the inside and the outside.

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[1] Francesca Musanti, University of Cagliari; francesca.musanti@unica.it

To this purpose, we consider the project experimentation carried out on the former Buoncammino prison in Cagliari, result of departmental research which, with the help of the competences of different disciplines [4], has brought out the imperative to enhance, and therefore make accessible, the material and immaterial values of the building, listening to the needs that emerged from the continuous comparison with different categories of users [5]. In accordance with the enthusiasm promoted by the Faro Convention, which emphasises the necessary interdependence between cultural heritage and the community, as well as the role that the first one has in the "construction of a peaceful and democratic society" [6], the proposals have been completed with different points of view, further confirming the interest that this kind of architecture moves towards the society that has always been excluded from it.

2. Method

This work is structured according to an analytical-taxonomic approach with the aim of selecting and categorizing, starting from the study of the architectural elements of the typology in discussion, the composition and the heterogeneity of the barriers inherent in it, as well as the relationship that they establish with the users, the latter read in its infinite complexity.

The very meaning of "Barrier" should be understood in the broader sense of "Limit", including all those physical and symbolic elements that have an influence on individual freedoms, and the definition of the restrictions imposed by prison architecture is necessarily understood in terms of accessibility, especially when the use has changed as a result of decommissioning, which also determines a radical change in the community with which it relates.

It is with this aim that the barriers generally linked to prison structures, perceived and recognized differently by the prisoner population and by the city, are listed and discussed below (Figure 1).

Figure 1. Barrier's Taxonomy. Design of the author.

- **Morphological Barriers:** considering the relationship between prison and city on a territorial scale, it is clear that the construction of structures specifically designed for prison use between the nineteenth and twentieth centuries can be identified along the axes of expansion of the consolidated historical city center, in marginal and distant areas. In some cases, such as the Buoncammino prison, the new penitentiaries are housed in elevated and isolated positions, further increasing the invisible but tangible barrier between the city of punishment and the *Urbs*.

- **Typological barriers:** These are all those devices structuring prison architecture which clearly define the space, physically enclosing it. In fact, the prison is characterized by the presence of segregative elements found in the segmentation into bodies or blocks and, on a smaller scale, in the division of the same into cells. The cubicles represent the minimum dimension of confinement, almost to the point of being identified with the prisoner's own body. Even the open *intramuros* space is not freely usable but, on the opposite, is parcelled out by high walls that are inaccessible to the sight, deforming any kind of perception of the outside world and disorientating the prisoner with regard to his position. But certainly the most emblematic element which constitutes a typological barrier is represented by the fence, an absolute limit that, coherently with the concept of heterotopia, is able to manage the inside and the outside: "Heterotopias always have a system of opening and closing which isolates them from the surrounding space. In general, one does not enter a heterotopia at will" [7].

- **Architectural Barriers:** Under this category are identified all the physical and non-physical elements connected to the architectural scale. The movements inside the prison spaces are marked by the exceeding, always controlled and mediated by the guards, of gates that divide different areas, although they allow the intervisibility and transmission of sounds that bounce from one wing to another. Moreover, their metal structure, which is determined by utilitarian reasons, amplifies in a tactile way the perception of a glacial and rigorous atmosphere. If the gates prevent autonomous access to specific spaces, the *blindo* constitutes the individual limit for each prisoner. Completely matt except in correspondence to the spyhole, which allows one to be seen and never to see, the serious door of each cell opens only at fixed times of the day and never at the wish of the prisoner. Inside the cell, when the closure of the *blindo* does not allow anything except introspection, the only element that facilitates a relationship with the outside is the window, generally placed at the top and always partitioned by the presence of a grate. Although considered inhumane and demolished in many penitentiary structures, the "*bocche di lupo*" openings are still visible, characteristic ventilation devices that only allow the view of a blade of blue sky, directing and forcing the eyes upwards. The tiny dimensions of all the cell's constitutive elements can also be seen inside the detention blocks, where corridors, galleries and stairs oblige each prisoner to pass individually and it is almost impossible to change direction.

- **Institutional Barriers:** The fourth type of barrier is closely linked to the as an institution in which prisoners are deprived of their liberty to serve a sentence. As an exclusive and excluding structure, access is allowed only to prisoners and surveillance staff. Overturning the logic and relational dynamics of the city, the wall limits the freedom of those who are not guilty and, at the same time, establishes a new system of rules to which everyone (inside and outside) is forced to respect. Life inside the prison is marked by different rhythms that preclude a synchronic

perception of time in comparison to the other side of the wall, a concept perfectly explained by Foucault himself with the term "heterochrony" [8].

- **Symbolic-psychological barriers:** Finally, there is a category of barriers that dialogues with our interiority and sensitivity. It is that inner perception of limit that leads us to keep a certain distance from these places because of their segregative nature. We are scared even though we have not had any direct experience of it because we have developed an image of prison based on the narratives and representations offered to us by some cultural media. This feeling of fear, however, leads to a fascination with inaccessible and unknowable things. There are also some physical devices placed on the border between the inside and the outside, such as barbed wire, patrol paths and sentry boxes, which contribute to the distressing perception of authority and affirm the asymmetrical relationship between prisoner and guard. The most common and consequential reaction is to isolate and ignore the presence of the prison, as if it were hidden by a veil that makes it transparent. "In the case of prison, however, it must be pointed out that this invisibility corresponds to a specific demand of public opinion which "perceives prison - understood as a building deputed to guard criminals - as an isolated place to be isolated from the social fabric" [9].
  Moreover, this specific type of barrier sometimes generates a devaluation of the immediate surrounding context, which is degraded and not very experienced, far from urban dynamics.

At the end of the survey and taxonomic analysis of the types of barrier related to prison architecture, the discussion leads us to ask ourselves if, when the function ends, these characteristics persist or change in intensity and on which ones it is necessary to work on.

2.1. From the Barriers to the Frontiers

After the historical prison establishments were closed down as a result of the 2010 Piano Carceri [10], the Buoncammino prison in the Sardinian regional context, losts its institutional role, suddenly showing all its fragility, which had always been hidden behind the austerity and seriousness of its segregative nature.

The research, carried out on the former penitentiary in Cagliari, has tried to rethink the different barriers related to prison architecture with the aim of making them living matter for the project, elements from which to set the strategies of valorization and cultural accessibility of the heritage. Before any design activity, it is necessary to ask how it is possible to work on barriers to make accessible a place born not to be accessible. The most immediate answer to this question would be the strong decision to break them down, physically and symbolically where possible, but risking the loss of the memory and values embodied in the inaccessible nature of the building.

A first interesting observation can be taken from Augè's distinction between the terms *barrier and frontier*: "A frontier is not a wall that forbids access, but a frontier that invites access. [...] it is only thanks to the idea that it can be crossed in both directions that the frontier does not irrevocably cancel the relationship between one and the other" [11].

Therefore, the project of these architectures can operate on the barriers with the aim of transforming them into frontiers, capable of granting and facilitating access, while continuing to make intelligible the identity memory of heterotopia.

"Our own ideal should not be the world without borders, therefore, but a world in which all borders are recognized, respected and crossable [...]" [12].

2.2. The project as a method: the case of the former Buoncammino prison in Cagliari

With the support of the analyses and discussions expressed until now, we have consequently evaluated the method through the project of the Buoncammino prison, a majestic penitentiary complex decommissioned in 2012 and still waiting to discover its new role in society and in the urban context of Cagliari. (Figure 3).

Abstractly isolating the different types of barrier that can be related to the case, we will try to understand the ways in which we can transform them, aware, however, that there is such an interconnection that the project for one of them is able to generate resonances on the others. In fact, it is clear that when the institutional barrier collapses, the exclusive relationship and the laws that have governed the interaction between inside and outside inevitably change forever. Built at the end of the nineteenth century on the San Lorenzo hill, in an elevated position, far from the historic center, it is now part of the urban texture while maintaining, thanks to its topography, its character of isolation and emergency. The large empty factory now offers an important opportunity for defining and implementing the currently latent relationships between the different polarities in the north-western area of Cagliari, so it is necessary to take a transcalar approach to the project, working on the urban accessibility of the site and, only later, on the interior accessibility.

It was considered efficient to use an opposite strategy to the one adopted for the prison: to the question formulated by the emergency, we responded with the definition of an implosive architecture, which quietly dialogues with the building through underground routes. In this way, the unicity of Buoncammino in the skyline is preserved while establishing numerous physical and visual relationships with its surroundings and maintaining its role as a landmark. In line with this, have been designed new architectures which, like telescopes, are projected from the heart of the hill towards the landscape: the conference room to the west and the reading room to the north. Concealed from a superficial view from above, they conceal underground spaces that find an escape route through their large glass mouths. Gradually and slowly accessible by the presence of ramps, the new rooms pursue a synaesthetic approach, thanks to the composition of the forms, the materials that differently react to light, and the relationship with the natural element, which is included in the design process in a multi-sensorial way. The continuous change of levels, determined by the orography of the site, permits evocative solutions which refer to the different meanings that darkness and light take on in the prison context, playing with visual and acoustic perception and the ever-changing emotivity of the users. (Figure 2).
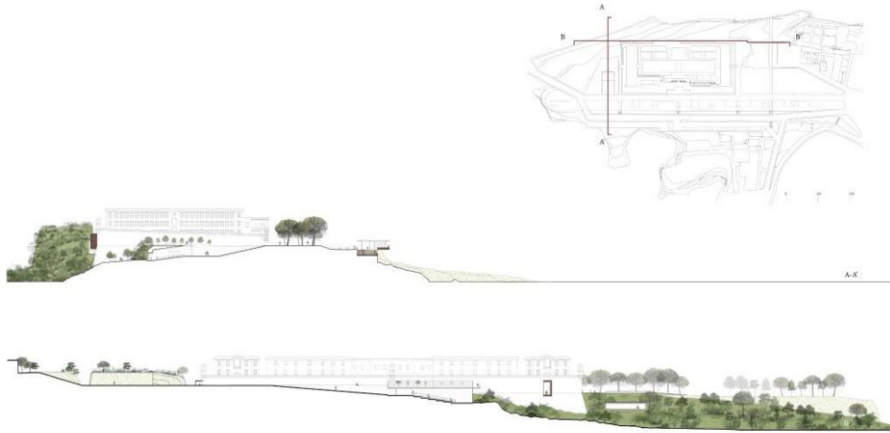
Figure 2. Territorial sections. Project of Buoncammino Prison. Design of the author.

To the west, the prison opens onto Viale Buoncammino, a historic tree-lined boulevard which, until the middle of the 19th century, connected the historic center to the agricultural lands. Designed with the ambition of providing a *locus amoenus* for the inhabitants of Cagliari, it soon came under the influence of the symbolic-psychological barrier of the nearby penitentiary, and is now in a serious state of degradation. The presence of a disconnected pavement, where the emergence of large tree roots alternates with dangerous cracks and gaps, the absence of services and total disaffection make it an inaccessible and inhospitable place. The problems described and the investigations carried out with the participation of physically and sensory disabled users have made it possible to formulate a strategy to revitalize the long ribbon of vegetation, fortifying its historical character by planting new compatible tree species, selected thanks to the expertise of botanists, capable of restoring the linearity of the avenue by orienting and facilitating the walk. New mineral paving is also planned, where large flowerbeds are cut out to contain the root system of the trees, whose design changes at intersections with orthogonal paths or in correspondence with the access to the prison. Along its extension there are also punctual elements, the *folies*, small pavilions hosting services for refreshments, which dialogue with the quadrangular platforms, characterized by different uses such as seating, green areas and play grounds, to respond to the needs of the extended users. Linear *portico* and systems define shaded walking areas which, together with the plant element, cooperate in the creation of a contemporary *promenade* that ends with the historic *rondò*. From this point, it is possible to access through two parallel ramps a renovated space, voted to the sports function. The paved area is characterized by a gentle and continuous slope and hosts a "life path" that finds in the initial pavilion the necessary services for the public. The regeneration of the system also included the infrastructure that currently surrounds the avenue with its lanes, forming a break in the system of relations with the building. Thanks to the skills of specific disciplines, it was decided to expand the avenue as far as the boundary wall, making the entire area accessible to pedestrians, cyclists and, in a differently signalized lane, public transport and emergency vehicles. On the eastern side, a path parallel to the wall crosses and cuts through the rocky bank, reconnecting this area to the historic route down to the public gardens. The reduced size of the path, amplified by the height of the rock surface, invites

and encourages silence and slow walking, increasing the perception of smell and touch, instead of the sense of sight: "The eye is the organ of distance and separation, while touch is the sense of closeness, intimacy and affection. The eye investigates, controls and surveys, while touch approaches and caresses" [13].

At the confluence of the two paths, there is a square for resting, enhanced by a view of the landscape, from which a suspended walkway originates. At the end of it, a lift carries to the level of Viale San Vincenzo, making it easy for everyone to access and climb up, and transforming it into a further emotional experience. After that we worked on the transformation of the typological barriers starting from the border element of the boundary wall. With the aim of modifying the circulation system of the whole prison complex, today accessible only from the avenue and walkable in a circular way, a longitudinal crossing was defined, able to connect, through the perimeter wall and the inner buildings, the external spaces to the east and west. This new direction, together with the transversal one, the symmetry axis of Buoncammino, generates partial interruptions of the perimeter wall. As previously mentioned, it is particularly delicate to work on this element because, after the prison was decommissioned, it became a barrier to new uses, as well as a symbol of inaccessibility, but, if we look at it in terms of a frontier, its punctual demolition makes it possible to understand the heterotopic memory of the prison while still permitting its total usability.

A further movement to the outside can be seen in the internal courtyards, which are now free of the partitions that used to enclose them, to acquire space and extend beyond the boundary wall. The western detention block, unlike the other buildings that make up the complex, has a basement level, currently accessible from the inside, which is made accessible thanks to the connection with the underground square and the demolition of the high internal wall, delimiting the walking courtyards. The levels are therefore reformulated and a system of ramps leads to the ground floor, previously reached only from a monumental staircase. This gives to the basement the possibility of hosting public functions, as well as looking directly onto the courtyard, an element of freedom able to condense in itself a new vitality and inclusion. Symmetrically, other ramps lead to a designed space in which the walls of the walking courtyards delimit a contemporary box, the new cafeteria. In spite of the many transformations described above, a certain introversion persists, while creating large, light-filled collective spaces in which the view can flow freely and the voices of the people can cross the boundary of the wall, animating the former prison with life.

Entering the prison blocks, the rhythmic, serial system of cells maintains its typological configuration but is adapted to new uses through the partial demolition of the walls, permitting expansion and the addition of groups of cells. The construction of accessible platforms with sloping planes makes it possible for each cell to reach the level of the interior windows, which are typically high, and to see what is happening outside. The partial removal of the grates amplifies the feeling of re-conquered freedom, but their preservation in the north wing, chosen as the most suitable for enhancing the prison's memory thanks to the presence of the "*bocche di lupo*", allows visitors to have an immersive and authentic experience of the institution's history. The installation of lifts in carefully selected points inside the buildings completes the project, making the architectural complex almost totally accessible and granting autonomy to everyone. Probably the most interesting and symbolic change in perception takes place along the walls, on the guard route: it is possible to enjoy one of the best views of the city, replicating the same path that was followed by the guards for 150 years. The *garitta*, the corner element of the wall, is declined and reinterpreted by the project through different

forms at certain nodal points, generating views of the landscape and defining visual connections with Cagliari's most important landmarks. These same elements establish a network of links in since they can observe each other. Their position and size also have an influence on the perception of the back side of the Buoncammino prison, which is rarely and hardly caught by the quick gazes of people. On the other hand, it is believed that the "back" is interesting because of the presence of the massive scarp wall, a material element of great importance capable of expressing the roots to the ground and the inexpugnable nature of the entire architectural complex.
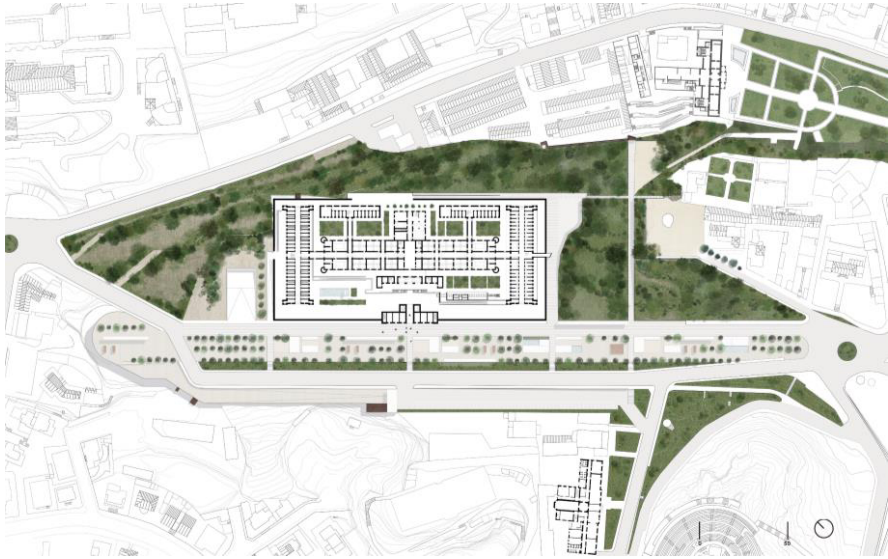
Figure 3. Masterplan. Project of Buoncammino Prison. Design of the author.

3. Results

As experienced with the Buoncammino, there are many forms of inaccessibility in the prison, which a broader approach can reveal and help to overcome, or even emphasize. In this way, the project can work on barriers by taking advantage of the necessary contribution of other perspectives from multidisciplinary dialogue. This experiment also shows that intervening on a pre-existing structure to make it accessible from a physical, perceptive and cognitive point of view does not necessarily mean making strong modifications, but rather understanding how far it is possible to move while maintaining the necessary balance between conservation and use. With this in mind, the design proposal seeks to define solutions of continuity within a fragmented system through punctual and minimally invasive interventions. It also brings out the relativity of barriers, dependent on the relationship between man and place [14] in their changing and dynamic interdependence, which is even more evident in architectures that are congenitally inaccessible, such as the heterotopias of deviation, now abandoned.

4. Conclusions

The study applied to the prison typology shows the complexity of the topic and offers a possible method, certainly improvable and implementable, potentially applicable to many other contexts. It has also shown how extremely necessary and useful it is to involve a wide variety of users in all phases of the design process, which is already necessary for the identification of the different types of barriers related to the architecture and its contexts. The experimentation on the Buoncammino is also revealing of how important it is to consciously select the new uses for the places, since a choice that does not respect the values or is distant from the identity and inner characteristics will result in violent modifications to adapt them to the new needs. Contrary to the conviction that intends accessibility as secondary, additional and disconnected from the issues that govern the project, it is believed that it is capable of directing, suggesting and stimulating an intervention of quality, careful and sensitive "that takes into account the delicate psychological implications of what is proposed" [15].

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[3]   Foucault, M., (2020). Utopie Eterotopie (6a ed.). Napoli, Edizioni Cronopio, p.16.
[4]   Under the leadership of the Chairs of Architectural and Urban Composition and Restoration, the work was based on a dialogue with the disciplines of Urban Road Infrastructure, Botany, Sociology and Economics.
[5]   We refer in particular to the visit made to the former Buoncammino prison on the occasion of the "FAI Autumn Days", 16-17 October 2021, which was attended by a large number of associations of disabled people. This initial exchange of ideas was followed by others which fed the project to reuse and redevelop the area around the prison with further tools.
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