# CONNECTING BY DIFFERENCES: CREATING SPATIAL CONTINUITY FROM DIFFERENT LEVELS OF MEDIATIONS

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# ABSTRAK

The area is located in Città studi, on the edge of the dense complex of Politecnico di Milano and the large green space Giuriati Sports Field: two areas have no spatial continuity. The design intention is to establish a mutual relationship between campus and the urban context. By working on the concept of the threshold space as an opportunity for mediation, we were able to envision public and open spaces that interact with the city. The design of the new complex is based on a principle of balance between horizontality (public sphere) and verticality (private sphere), taking into consideration how, according to the principle of urban mixité, the relationship between public, social, working and private life will take on a new shape. The complex will therefore represent a transition between the urban setting and the rest of the campus. Its interior is based on the use of different threshold and mediation levels: these are configured as a gradual sequence starting from the more urban context of the work space, which is connected to the residence through the underground, to the exhibition and archive centre, which embodies the reciprocal relationship between city and campus, to the more private sphere of the residential complex, envisioned as a mix of domestic and work spaces that is reflected in each individual housing unit as well as the common areas. The dissertation was built upon a research on the formation of the threshold space, paying particular attention to the spatial continuity between indoors and outdoors.

**Keywords**: Threshold space, Internal-external relationship, Spatial continuity, Levels of mediation.

# INTRODUCTION

The area is located in Città studi, on the edge of the dense complex of Politecnico di Milano and the large green space Giuriati Sports Field: these two areas have no spatial continuity. Intervening on Città Studi is a delicate operation that required a study of its birth and evolution. Located on the outskirts of Milan, it looks like a university citadel whose expansion takes place through punctual and localized interventions, without a coordinated design. Within the area, there are currently planned transformation processes that can create different opportunities for intervention. One of the main problems of this area is the discontinuity of the urban fabric. (Figure 1) Instead, the potential lies in the presence of open spaces that are fragmented and in some cases poorly accessible. We can also see how the project area shows the discontinuity between the campus and the open space of the sports field. It, therefore, becomes for us the new centrality on which to reconnect the urban fabric. There are several possibilities: to carry out the necessary interventions to consolidate the university and public function of Città Studi, but also solve other crowding-maintenance problems in other university locations.



Figure 1. Diagram of the project location: Relation between the campus and sports field Giuriati. Road connection creates a discontinuity in the campus.

## Aim of the research and project

It is, therefore, necessary to build an open and participatory process, which renews the relationship between the different actors: inhabitants, users, citizens and relaunches a strategic project for the city. It is possible through a project of progressive transformation, consisting of different phases of redevelopment, reuse, and targeted interventions of new construction dedicated to the public, cultural and research functions. By doing so, it will be possible to promote the possible connections and openings between the city and the University Campus, which, currently, undergoes transformation processes that have invested only peripherally, still configuring it as a traditional campus. By creating a space of mediation between the Politecnico di Milano and the city with various public functions, it is possible to create new social opportunities, not only among students of the university campus but also with visitors and inhabitants.

# **RESEARCH AND METHOD**

To better understand the nature of the place it was made a preliminary reading to interpret the spaces not in terms of functions but of activities and relationships between them, paying particular attention to spaces of mediation capable of creating a relationship between the parties. Through the reading of the sequence of spaces according to the public and private character, it can be expected the use of different levels of threshold and mediation. The relationship with the urban context gives attention to the concept of in-between and threshold. This research was then used to arrange project volumes and establish relationships between the parties. The spaces of mediation will therefore constitute the transition between the urban space of the city and the university of the campus.

#### Preliminary research on urban design theories

The preliminary phase of analysis focuses on various case studies which deal with different project themes, in particular: Mat-building, Threshold space, and Mediation space. **Mat-building :** In 1974 Alison Smithson identified under the expression Mat-building a structure whose order is based on three parameters: interconnection, models partnership linked to the possibility of growth, decrease and change. The Mat term in fact can mean "fabric, grid" but also something thick densely woven. These buildings, of extension horizontal, called by Shadrach Woods "ground scraper", find their own archetype in two projects of the 1963 team Candilis-Josic-Woods: the reconstruction of the Frankfurt city center and the Freie Universit in Berlin. The latter project is based on an essential condition: the reoccupation with a weave of a space, surrounded by a city of architecture and human activities. In this idea of continuous extension, the concept of mat-building was recognizable. It can be said that mat-building personifies the idea of collective; where functions come to enrich the and the individual acquires new freedom to act. Among the works that Alison Smithson considers mat-building are, in addition to the projects and writings of Candilis, Josic and Woods, such as the

aforementioned Freie Universität, the orphanage of Aldo Van Eyck, (1957), the transit of Louis Kahn to Philadelphia (1953-55), the Venice hospital of Le Corbusier (1964). "According to the architect the space must be organized, as in any urban project, by a set of rules that establish a circulation plan, public spaces and areas that can be built, establishing the volume and a possible plan of use."<sup>1</sup>

#### Note:

1. O'Byrne María Cecilia in "El Hospital de Venecia de Le Corbusier: Mucho más que un mat-building".

The Venice hospital (Figure 2) is based on five project levels: level 0, which is the level of the pond; level 1 is the soil level which is the level of the city; level 2 is the level of operation rooms and nurses's residence; level 3 is 5m high and is the medical floor; level 4 is 7.5 m high and is the level of horizontal circulation; the level of the hospitalization is from 5 m to 10 m high. Finally, level 6 is the deck level: there are two double level and one single level. The levels are irrigated on the streets (calli) and squares (campielli), in a single body that brings together different types of public space. These set of spaces merge to create a new unity, which is filled with richness and complexity thanks to which Le Corbusier manages to break down the boundaries between city and architecture. The project mentioned in his book "How to recognize and read mat-building. Mainstream architecture as it has developed towards the mat-building. [Architectural Design, September, 1974] "where Eric Mumford summarizes the influence of Team 10 in his work. Le Corbusier's project is the result of a study developed throughout his career, starting from the square spiral museums. According to Nolli's "Figure and Ground "methodology, public spaces, churches, squares, etc. and also the interior spaces of buildings are marked as ground. The public character is seen two-dimensionally as a relationship between figure - soil.





Figure 2. Piano Nolli, Plan of Hospital of Venice by Le Corbusier and Jullian de la Fuente

#### Figure 3. Giovanni Battista Nolli, New plan of Rome (1748) "Figure and Ground"

Spaces with public character are placed externally with respect to those with private character: the physical threshold between the city and architecture is superimposed on the threshold between public and private. In his map of Rome (Figure 3) Nolli was able to see the fluidity of the public void opened through the continuous and massive private building; even some of the architects of modernity, such as Kahn and Moretti, have investigated the void as an energy field and main device for design. Rem Koolhaas describes it as: *"The first demonstration of the ability of emptiness, of nothingness, to function with greater efficiency, finesse and flexibility than any project in its place. It was a warning: in architecture, absence, when it competes with presence, has the upper hand"<sup>2</sup>* 

Note:

2. Luigi Moretti, Structures and sequences by spaces, in "Spazio" n ° 7, December 1952- April 1953, p. 10.

The city and architecture are arranged in such a way that it cannot be expressed only with the words of figure and ground. The spaces are increasingly condensed and the boundary of architecture is increasingly broadened. The city is placed at the center of attention of contemporary architects, who design the buildings as a city. Architecture and the city are considered in an integrated manner, often represented as a physical structure or mega structure. The relationship between the city and contemporary architecture is increasingly important. The streets of the city, like the outside of the architecture, connect the city that undergoes the public space's role. We can observe the phenomenon of internalization of urban spaces through the private character. On the contrary, private activities are limited to the internal space: the architecture comes out of the private space itself and takes on the character of the outside through the public character. As can be seen from this example, the threshold defines the private and public character; it is often attributed the neutral character in contemporary spaces by varying the levels and the threshold character.

#### Threshold space

"The Threshold is a zone. The ideas of variation, of passage from one state to another, of flux, are contained within the term schwellen and etmology should not neglect them. It is also important to establish the immediate tectonic and ceremonial context that gave this word its meaning." <sup>3</sup>As W. Benjamin says, the threshold is the place where the two areas relate and becomes a hinge between the human space. The threshold is the place that has the ability to

re-unite the space that was previously perceived as divided, because the act of building always and everywhere generates a fragmentation of space, a separation between natural space and artificial space. At the entrance to the Barcelona Pavilion in Mies van der Rohe, the physical threshold doesn't seem to exist. The door does not exist. It is replaced by a large slab of glass, by a transparent wall that edge and at the same time device opening. As Marco Biraghi says, "if there is no door there is not even the problem of going through it or not going through it."<sup>4</sup> *Note:* 

- 3. Walter Benjamin, Passagenwerk, Konvoult, 02 A,1
- 4. "How do you get through this door? If you go through it, then there is; if you don't go through it then how do you get in? Who really knows how to cross it, do it and show me how you do!" Marco Biraghi, Porta multifrons, 1992

A physical barrier must exist, if only to ensure the maintenance of internal microclimatic conditions, even if apparently it doesn't seem to exist, thanks to the transparency glass which, by definition, guarantees total continuity between exterior and interior. Visually and formally, therefore, the Mies threshold has no body. It is an almost imperceptible membrane, a line so thin that it becomes almost abstract, inconsistent. In the architecture of Mies van der Rohe, we see the progressive and obstinate attempt to go beyond the limit given to the threshold space. From the beginning in the monument to Rosa Luxemburg and Karl Liebknetcht of 926, the plastic essence of solid and opaque, up to the two versions of the Skyscraper on Friedrichstraße built in 1921 where the possibility of dematerizing glass tends to cancel the threshold between city and building. In the Neue Nationalgalerie in Berlin (Figure 4-5) of 1962-68, the theme of the threshold receives a further formulation suitable for the museum. As in the project of Barcelona, Mies van der Rohe, the classroom is placed on a base that offers multiple access possibilities that lead to an ideal floor on which a large roof supported by eight columns is placed.



Figure 4 - 5. View of the Neue Nationalgalerie, Berlin Mies van der Rohe, 1968 "[...] The "shadow threshold" makes one feel a significant change of condition upon crossing it: from an all-encompassing open whole that opens to the city and to the relationship that Scharoun's architectures to a covered but open transitional peristyle - the aerial-stylus peristyle - that heralds the grandeur of the looming interior."<sup>5</sup>

Note:

5. Fusco Ludovico Maria, Saitto Viviana, The oikogenic quality of architecture, The threshold space, Italian Scientific Editions 2016, p. 76

#### **Mediation Space**

Carlo Scarpa's project for the Castelvecchio Museum (Figure 6) is an excellent example that shows the importance of the mediation and threshold space. The entrance to the museum is an articulated sequence of signs, fragments and spaces; a succession of passages and pauses, which invite now to movement, now to pause, research and meditation. After crossing the moat that separates the castle from the city, stepping on the ancient wooden drawbridge, you enter the heavy and humid atmosphere of the entrance tower. The sensation is instantaneous and very short. You are outside, in the open, and you are walking on fine gravel. Right in front of the two hedges they run parallel along the longitudinal axis of the courtyard and absorb the slight slope of the ground from east to west, generating, at the level of the human eye, a horizontal line that leads the eye to the right and left.



*Figure 6.* The four thresholds: the portal arched of the gallery of sculptures, the shaped door of the niche, the stone staircase of the gallery of paintings, steps leading to the library.

What is the meaning of entering the Castelvecchio Museum? What does it mean or represent? Scarpa's threshold should be read in spatial terms as a succession of 'environments' that connect inside and out, and join the world of nature and that of artistic work. The door

that marks the final access to the building does not represent what separates, but what unites the two worlds, does not sever them but connects them. The path that marks its achievement develops in stages and produces a sense of involvement. Scarpa uses the threshold points as expedients for detailed insights and research on the meaning of the relationships between architectural spaces. In the Castelvecchio threshold there are many of these expedients: partitions that 'pierce' walls and cross passages, volumes that are placed halfway between the line of being-inside and being-outside, separations of gestures (entering and exiting) and unification of spaces (entrance door and exit door), sequence of events, cyclicality of movement, to and fro, times to walk and times to stop. The threshold is therefore a hinge, a gesture and a ceremony. The point where the drama of the rite is manifested and the tension of the place that welcomes the change of state. Given the importance and meaning attributed to the gesture of passing, each passage in Scarpa is therefore a remarkable place that he underlines and highlights; every passage, narrowing or bottleneck, turns into a magic point.

## Design strategy: creating continuity by different levels of mediation spaces

The new design of the museum complex allows to connect two different parts and to assume a catalytic role in which are present the spaces that interact with the city and the open spaces. The open space requires increasing flexibility in which the coexistence of the public and private dimensions becomes crucial. Through different levels of urbanity, it is possible to characterize indoor and outdoor space more private, neutral, or public character of the activity and they define the level of urban and indoor comfort. To maximize urban comfort the project is developed in a way that the sequence of space changes gradually, from public outdoor spaces to private indoor spaces. (Figure 7)

LEGENDA:



Figure 7. Indoor and external mediation spaces

The open spaces (Figure 8) are arranged in a gradual sequence comb that manages to penetrate the interior spaces. The relationship between the various parts of the complex has been regulated through different levels of mediation. The latter has been designed in some cases, as courts that connect to the hypogeum, in others as internal spaces in double-height or cables that allow visual connection between the parts. The vocation of these spaces is to allow new social opportunities, not only among campus users but also with visitors and residents of the neighborhood.



*Figure 8. Planimetric of the project: different levels of mediation between interior and exterior* The interior spaces of the complex thought of as containers of various activities meet with the outside in the intermediate spaces, which - as Georges Teyssot says - have the power to become symbols and exchanges of meetings. The study of the threshold space conceived as mediation between internal and external defining the continuous relationship between the two parties. At the end of the preliminary research phase in which the compositional and thematic aspects of the project have been deepened, it has been possible to draft the project objectives: the intention is to establish a reciprocal relationship between the existing campus and Città Studi. Mediation is the tool capable of reactivating spaces, creating the necessary interaction between collective spaces and the most intimate space. This space is configured on different levels within the entire complex which will provide for the coexistence of multiple activities. (Figure 9)





The goal is to interpret spaces not in terms of functions but of activities and the relationships between them; this therefore implies a particular attention to the relationship between internal and external space. Each of these spaces (Figure 11) will have a public/private character and a different degree of opening/closing: in this way a gradual sequence will be created, from the urban space to that of a domestic character, identifying in them 'neutral' spaces that can accommodate different activities.



Figure 11. Functional diagram

The complex (Figure 12) is based on the principle of vertical and horizontal intertwining (as studied in the case of the mat-building) which are nothing more than the spatial configuration of the private and public spaces respectively.



Figure 12. Planivolumetric of the project

Only two of the three buildings represent the horizontal element (Figure 13), thanks to the large roof that allows the ground floor to freely enter the various public functions; the vertical exception is the residence, which is grafted between the two and represents the more private sphere. The large roof was conceived as generated by a square module that connects the external and internal space. Made up of a neutral element, the roof helps to mediate the character of the spaces.



Figure 13. Concept diagram of the equilibrium of verticality/horizontality, the large permeable roof is capable to unify different elements. relation with nature

From the compositional point of view, the vertical structural elements of the pillars and partitions were also designed which, thanks to their shaped shape, direct towards the external spaces. As access to the project area, therefore to the entire complex, an introductory pavilion has been designed with a more urban vocation as the place where it is located. It hosts work activities related to the residential complex, as the latter was designed to accommodate students and professors. All the buildings are connected to the underground floor where common and co-working spaces have been designed. (Figure 14 and Figure 15)



## Figure 14. Longitudinal section of the complex

The residence has been set up so that there is a graduation between public and private. As for the floors, the graduation changes in the differentiation of the height of the floor, having public functions on the ground floor. As for the housing unit, it has different threshold levels that go from the adaptable mediation space between the gallery/corridor and the private space of the house. The mediation space has been designed with a neutral character to give a better quality of life and greater comfort, without defining a functional constraint for the inhabitants: in this way there is the opportunity and the choice of being able to assign different activities to these spaces adaptable neutrals (SoHo, study space, relaxation space, meeting space). A gradual sequence was created: from public-semi-public-neutral-private space to shared-private. (Figure 15)



Figure 15. Relation between interior and exterior

The exhibition complex is grafted into the ground on different levels: connected to the underground level by an exhibition space, which in turn connects to the spaces of the residential complex and is designed for the materials of the Politecnico di Milano. Various activities are developed under the large roof, including archival spaces (with a sequence of exhibition spaces studied in depth in the preliminary study phase), study and teaching spaces in close relation to the activities of the campus, but which guarantee a relationship with the spaces of the city. The internal spaces seek a connection with the external ones through various elements (Figure 16), including the skylights of the large roof, the cavities and internal courtyards, and the vertical structural elements of the shaped pillars which accentuate the visual relationship towards the park and adjacent spaces.



*Figure 16. Interior view of from the entrance of exhibition space, spatial continuity created by genital lights* 

The external space introduced inside (the internal courtyards and the cavediums) have been conceived as mediating elements that are able to relate the whole complex. The use of different levels has allowed the conformation of different internal spaces; in the archive of Architect Bottoni (Figure 17), for example, a visual connection with the park has been conceived, accentuated by the shaped form of the vertical elements and the roof beams.



*Figure 17. Interior view of the exhibition space, spatial continuity expanded to the green open space by horizontal and vertical structural elements.* 

The underground level is directly connected to the park by a large central void which the archive spaces have the character of a more intimate community and seek a relationship with the outside, not only through the cavity which also allows light to enter the underground spaces, but also through the system of open walls which give directionality. This central voi becomes an internal garden (Figure 18) and unites the various parts made up of systems of open walls arranged to organize each exhibition area in a different way; one is designed for the Polytechnic museum while the other is for study and consultation spaces for archival materials. In order to provide better lighting and thus greater spatial quality, skylights on the

roof were also considered (Figure 18). The entire structural system was designed in exposed concrete and all the roof beams were shaped in a V-shape creating a 60° angle oriented towards east and north. This interlacing system thus allows natural light to filter through.



Figure 18. Transversal section of Exhibition space, relation between interior and exterior

From this view (Figure 19) we can see how the horizontality of the interlacing of the roof seeks a direct connection with the verticality of the residence. Thanks to its conformation, capable of assuming both directions, it becomes the neutral matrix that holds together individual elements and creates a continuous relationship with the exterior, also thanks to the presence of the vertical elements of the chamfered pillars that direct towards the open spaces.



Figure 19. Verticality and Horizontality. View of the complex's rooftop and the residence

# CONCLUSION

In conclusion, the relationships between the differences of the public and domestic spheres, considered as values, have made it possible to establish a series of useful characteristics to control the balance and identity of the place. In this way, the residence and the whole complex can become a link between these two areas and create interaction between the city and the campus.

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