

Case Study of the Method of Establishing Continuity Between Relics and the Contemporary Urban Forms

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Abstract: The starting point of this article comes from the author's special interest in a certain type of urban renewal project: how to reconstitute an urban form that has become fragmented by archaeological excavations. This paper compares two cases: the renovation of The Ruins of the Cathedral of São Paulo in Macau with its surrounding neighborhoods, and the renovation of the Carmo Convent in Lisbon, Portugal. In the case of Macau, architect Carrillho Da Graca was commissioned by the government to redesign the site of the Ruins of the Cathedral of São Paulo, which had been discovered by new archaeological discoveries at that time, and transform it into a Catholic Museum of Art. In the Lisbon case, architect Alvaro Siza renovated Ruins of the Carmo Convent and the surrounding Chiado neighborhood for 30 years and designed it as a complex of residential/museum/retail functions. In the two cases, by establishing continuity of complex street elevations around them, architects have refined the integration of complex historical layers. Similar renovation design strategies are used, which may provide possible hints for designers dealing with urban regeneration projects.

1. Introduction

Archaeological relics are no longer just the interest of a few experts and scholars. They are increasingly associated with the public's tourism and leisure activities. Therefore, a new task has emerged: how to present these cultural heritage to the public in an easy-to-understand way. In this case, these relics can no longer be presented on their own, but need more information media to explain. This leads to the contradiction between archaeologists and architects. Archaeologists are conservative, emphasizing that the intervention of future generations should be minimal and reversible. Unnecessary intervention not only pollutes the remnants of ensuciar, but also makes it more difficult to understand. From the perspective of urban form, how to reconstitute an urban form that has become fragmented by archaeological excavations.

When architects begin to design in the historical environment, they often need to deal with the relationship between two groups of "layers". One is the elevation relationship of the site, which is composed of the existing ground surface left by past manual activities, such as street, relic, square, landscaped terrace. The other is the elevation relationship of the building's floor. What is the relationship between the "floors" created by architects and the existing "stratum" in the site history? Is it overlapping or dislocation? Is it occlusion or separation? When the eleva-

tion beneath the site is of some meaning, How can the architect organize the proper circulation in the building to form a continuous experience from the “floor” to the “stratum”?

The two cases selected in this paper have some similarities. Architects are from Portugal, and they all need solutions in the complex and harsh historical environment of the old city. Both of them have to give answers to how to reconstitute an urban form that has become fragmented by archaeological excavations. Both projects are in the vicinity of churches destroyed by fire and are used as critical public spaces in both cities. In this paper, two cases are restored to the specific site and historical background, focusing on how architects infiltrate the thinking of “floor” and elevation into the design process, and a glimpse of the two architects coinciding design methods.

2. Case I: Renconstructon of Chiado ,Lisbon, Alvaro Siza, 1989-2015

2.1. *Background: Rebirth after Two Fires*

The Chiado is the “soul of the city” of Lisbon. It is the traditional shopping and Cultural District of the city, and it has gathered the essence of Lisbon’s old city’s art and culture. Situated between Bairro Alto (uptown) and Baixa Pombalina (Pombaline Lower Town) , Chiado is frankly a transitional zone between the mountains and the downhill, with dramatic variations in street elevation. In urban fabric, this area is also the intersection of grid and irregular structure. This special urban unique was established in the urban reconstruction after the Lisbon Earthquake in 1755, which is one of the most destructive earthquakes in the history of humanity. It not only caused severe damage to Lisbon but also caused considerable controversy between theology and philosophy.

King Joseph I, who was over frightened, wanted to relocate his capital. But looking at the empty national treasury, the Prime Minister, Pombal, pushed out the public opinion and promoted the reconstruction of Lisbon’s original site. He also personally managed its overall urban planning and layout. The abrupt rise of the level of the terrain, dimly minimized by the filling of the Baixa zone realized during the Pombaline reconstruction, was accentuated by an architectonic element: the Convent of the Holy Spirit. Both its dimensions and the place of its implantation made it a clear point of reference, which generated the design of the Pombaline mesh, which also assumes its long nascent façade as a determining element of the orientation of the new mesh.

The 1755 earthquake caused severe damage to the convent and destroyed about 5,000 books. The Carmo convent which had stood in the center of Lisbon since 1389 was intentionally left roofless as a reminder of the disaster. Today, the destroyed Carmo Church is used as an archaeological museum (Museu Arqueológico do Carmo). To prevent the recurrence of the tragedy, Pombal requires all buildings to meet the required standards and styles. All the Pombaline buildings must have a seismically protected wooden frame called “gaiola pombalina” (pombaline cage). The distinctively modern buildings in the Baixa Pombalina area are considered to be some of the first seismically sound constructions in the world.

Wood anti-seismic structure not only prevents earthquake disasters but also buries hidden dangers. In the early morning of August 25, 1988, a fire broke out in the grandella store in Chiado. The fire spread rapidly, and 18 buildings in the vicinity were hit hard, and the internal structure of the building was severely damaged. After the disaster, only the stone façade of the 18 buildings was well preserved – only one face was left. Just as the earthquake of 1755 brought

the Pombaline Plan to reshape the Lisbon city, the fire became a turning point in the fate of the Chiado area. In the period before the fire, the state of Chiado was of relative decadence and obsolescence. The crisis in the department stores, the difficulty of reconverting and updating some commercial establishments and the near disappearance of use as housing, together with competition from large shopping centers in other areas of cyber, have led to a state of progressive impoverishment, to the Lower Pombalina. However, despite the conditions of abandonment and insecurity, the difficulties of traffic and parking, Chiado had lost neither fascination nor evocative power.

In order to retrieve the vitality of this area, the mayor of the city, Nuno Krus Abecasis, made public the invitation addressed to the northern architect Alvaro Siza Vieira, the northern architect, to direct the work necessary for the rebuilding and recovery of Chiado.

2.2. Urban design strategy

After receiving the design task, Siza began research on the site. The actual appearance and urban fabric formed over 230 years are too precious for Alvaro Siza, and the new face after reconstruction should return to the old appearance of the 18th century. Moreover, the skeleton of the building should also be old-fashioned, crowded together side by side with the old neighbors, closely related to the old streets and alleys that people have been walking for more than 200 years, rather than just scratching their heads in the mirror. Going back to the past and respecting history is modernity with confidence. Therefore, the Siza team made the following decision at the beginning: whatever that had been fire should be renovated and rebuilt, after the removal of rubble or parts of buildings that threatened to collapse.

However, in the urban fabric, Siza made a bold change. First, he introduced the opening of a pedestrian path between the rear of the buildings facing Garrett and Carmo streets and the support wall of Veiga Beirão School, establishing a ramp access to the southern gate of the Carmo Church. This passage can also be understood as an inner courtyard, opening two passages to Carmo Street and Garrett Street, respectively. From the sketch, we can see that this is the core concept of Siza's design. He wrote the following sentence in the design instructions: "(It's) A distribution platform. A landing over which everyone must pass and stop, an apparition from which to view the landscape". He emphasized the differentiation of the circulation here and the possibility of adding more crossing and staying. This is in line with the guiding principles laid by the Lisbon City Council for the Chiado reconstruction process: It must meet Chiado's condition as a link between Baixa Pombalina and Bairro Alto hill, whose interconnection must be improved. More importantly, Siza found the possibility of establishing a connection between the southern terrace of Carmo convent and the entire urban landscape. Besides, in block A surrounded by Ivens, Garrett, and Almada streets, Siza modified the shape of the original courtyard by changing the depth of the building to make it easier for people to stay. Another three passages have been opened up on the southern stairs, Ivens and Garrett Streets, allowing the inner courtyard can be accessed directly from the surrounding streets.

The most crucial element in the renewal of Chiado blocks, even in Alvaro Siza's view, is the introduction of Metropolitano's station and its entrance. By improving the accessibility of the neighborhood, the revival and transformation of the block can be achieved. Tunnels are built between Metropolitano Station (designed for the crossing of the streets Garrett and Ivens) and the Street of the Crucifixo. The metro entrance is located on Crucifixo Street, which was integrated into the building. Between the streets of Crucifixo and Nova do Almada, a route was opened up through stairs to connect the elevation difference between the two sides and

to encrypt the road network around the entrance of the metro station. In this regard, Siza said: “it will completely change the atmosphere of Rua do Crucifixo, which is, say, a street serving the Baixa pombalina and that becomes important in that the people come in and out of downtown and that is to change the penchant of commerce, and so on”. In addition, providing for public parking for resident population and activities of the area is one of the basic principles set by Lisbon City Council to solve traffic problems. In this case, the architect’s urban strategy can be simply summed up in three points: 1) A fine-grained street network with better accessibility and connectivity is set up to increase the mobility of people within the block; 2) Developing the inner courtyard in the block and create different personalities. For example, Block A is more suitable for staying, while Block B’s courtyard has access and walking atmosphere; 3) Integration of Urban Infrastructure (Metro, Public Parking) and Architectural Design.

2.3. Integration of Different Elevation: Discovery of 37.4

Located in the intersection zone between Baixa (Lower Town) and Bairro Alto (Upper Town), the elevation difference varies dramatically in this block. The maximum elevation difference between Carmo Street and Calada do Sacramento reaches 23 meters. In the original situation, buildings with different elevations are connected by the gradient of stairs and streets. The most challenging part of the project is how to integrate the complex urban environment around the 23-meter elevation difference. Alvaro Siza gave a brilliant answer in the process of design and implementation over the next 26 years.

One of the earliest sketches of Siza reveals the intention of establishing a path through ramps and stairs to the site of the Carmo Church. As the first phase (until 2000) focused on the reconstruction of Chiado buildings, this path, which is the core of the whole design, was not included. Until the completion of the entire project in 2015, people were able to climb slowly from the backyard of Carmo Street to the foot of Carmo Church. For a long time, people had to take the famous Elevator de Santa Justa across the street to reach the church elevation. From the aerial map after the fire, it is clear to see that the elevator lounge bridge across Carmo Street and the Leonel house were not burned down. Through a lounge bridge, to the roof of Leonel’s house, and a passage keeping a gap from the church, people can reach the main entrance to the church on Calada do Sacramento Street. The elevation of this path is about 41.0. In the 1989 design proposal, it has been found that Siza tried to restore the 37.4 height covered by soil, which corresponds to the elevation of the south gate of the Carmo church. Through this change in elevation, the importance of the covered south gate of the church is reappeared. The small building close to the south of the church was demolished, forming a small piazza in the empty space. Together with the south gate and the flying buttress structure of the church, it constitutes the quality of the public space here. This initially negative side passage space has a positive character in a specific city.

The public space at 37.4 elevations was finally implemented in 2015. As the elevation of the piazza has been reduced to 37.4, it is a difficult task to connect with the Elevator de Santa Justa by crossing the height difference of 3.6 meters between the roof of Leonel house in a relatively restricted space. In the original 1989 plan, a one-step staircase was placed under the flying buttress structure, connecting the height difference between the two sides. In the subsequent detailed plan, stairs and new escalators were integrated into the Leonel house building, which makes the front area of the south door more complete and spacious. However, the eastern side of the church is not within the scope of design, so there is no connection with

the broader urban landscape on the east side, and the piazza is slightly closed. In the final implementation proposal, Siza had the opportunity to further integrate the urban space on the eastern side of the church as the adjacent buildings were also included in the intervention.

2.4. Interaction with Body, History and Urban Landscape

In the 1989 proposal, through the crack between Leonel house and Carmo convent, individual standing in the new public space beside the south side door can see the red tile roof city building built on the hillside of Lisbon and Castelo de Sao Jorge on the distant hill, where the urban landscape of “City of Seven Hills” is displayed. After getting the chance to intervene in the eastern building, Alvaro Siza transformed the old sloping roof into a flat roof, which served as a green terrace. An elevator was also integrated into the structure so that visitors can go directly from Carmo Street to the roof terrace. Moreover, there is a considerable height difference of 9.4 meters between the roof terrace and the piazza at 37.4 elevations. To eliminate the height difference, Siza further subdivides the elevation. First, he restored the floor at a 30.3-meter elevation, which historically was a church garden. The roof terrace is connected by a ramp facing a distant hill view. The height of the garden also connects the outdoor patio of an adjacent restaurant. Three stairs and platforms at four different elevations are situated between the historical garden (30.4 meters elevation), square (37.4 meters elevation) and the roof of Leonel House (41.0 meters elevation), which makes people have to continually complete the body turning and sight line conversion in the narrow gap of 4 meters. Experience the pressure of the church’s foundation structure close to the human body, as well as the openness of the urban landscape, the juxtaposition and contrast of the two feelings form a unique experience.

Also, the three stairs adopt three different design methods but form a consistent and relevant experience. The first steel double-running staircase is placed above the elevator exit, and the whole pieces of marble are used for the step. When walking among them, the temporary feeling brought by the steel structure on the material, coupled with the occasional experience of shaking, gives people a sense of being in the stairway of an archaeological museum or site of a relic. The upper staircase is a repeat of the stairs from the south gate of the Carmo Church to the East Garden in history. Alvaro Siza consciously displayed the remaining staircase ruins, while laying new staircases with marble. On the landing between the two stairs, Siza adopted the typical Lisbon-style plaza paving with 37.4 elevation square and 30.3 meters elevation platform in the back garden, suggesting the urban spatial attributes of view and stay here. The typical Lisbon-style plaza pavement was placed on the landing between the two stairs, which, like the 37.4 elevation square and the 30.3-meter elevation platform in the backyard, implies the urban spatial attributes of staying and enjoying the view.

Moreover, the last staircase integrated into the building makes people feel instantly immersed in Siza’s well-known classical works. Semi-tall marble wainscot, the circular column which highlights the supporting function, overlapping staggered volumes, none of these traditional “Siza elements” is absent. The staircase was paved with marble again, and solid fences blocked the view until people reached the roof of Leonel House, which opened up again to view both the original urban landscape and the bustling crowds overlooking Carmo Street. The stairs were again paved with marble, and solid panels obscured the line of sight until the roof of Leonel house, where an individual can see both the city panorama and the bustling crowd overlooking Carmo Street.

3. Case II: Recovery and Conversion of São Paulo Ruins in a Museum Macau, João Luís Carrilho da Graça, 1995

3.1. *Background*

The ruin of Cathedral São Paulo is undoubtedly the most famous landmark of Macau, a former Portuguese colonial city on the South China Sea. The ruins now consist of the southern stone façade. Cathedral São Paulo is attached initially to São Paulo's College. Founded in 1594 and ended in 1762, the College is the first Western-style University in the Far East. In 1835, the cathedral was razed to the ground, and only the front façade remained. The diocese changed the space behind to a cemetery until the old Western Cemetery outside the city was completed. Since then, the area has been empty.

In the late 1990s, in order to improve the strategy of preservation and maintenance of urban cultural heritage and promote cultural tourism with cultural heritage, the Macau government carried out a series of renovation projects in many places of the city center, among which the archaeological excavation and renovation of St. Paul's Church is the most critical project.

In the early 1990s, the government carried out archaeological investigations and restoration of church ruins and found the foundations behind the church and the burial sites of priests. Portuguese architect João Luís Carrilho da Graça was commissioned by the Macao Government to work with archaeologists, historians, and museologists. After five years of archaeology, exploration, and construction, they finally completed the renovation of the ruin of Cathedral São Paulo and a New Catholic Museum of Art in October 1996.

3.2. *Definition of "Layers": Imagination of History and Reality*

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It is undoubtedly necessary to construct a special relationship between archaeological relics and newly built space by arousing people's imagination of church space in the empty space. In an initial sketch, the architect's outline of these elements can be clearly perceived: a footpath hanging behind the ruins of the church facade, an empty church square, a staircase leading to the newly discovered underground archaeological ruins, and a street to the north of the site. These four elements are the four "layers" first defined by Carrilho for this design, which together constitute the "platform" of experience architecture and its surrounding areas.

Carrilho's intention to build a footpath on the back of the church remains very clear. To this end, he said in his design concept: "A 'passerelle' behind the façade allows one to see the city on one side and the other on the floor of the old church". Through the opening of the second floor of the church facade, Macau's urban landscape can be seen at a glance. More interestingly, it also creates a structure that echoes the vanished Choir terrace in history.

By comparing the process model with the final image, the architect canceled one staircase leading to the footpath and modified the last steel staircase of the other staircase at an angle.

When people climb up this staircase, through the hole in the facade of the church, they look directly at the distant Grand Casino in Portugal, which is another modern landmark of Macau. This new high-level landmark created a connection between the old and the new markers in Macau. On this “floor” of the Church Square, the architect uses square ground skylights to create a visual connection between people and the underground structural relics of the church. The window in the middle implies the position of the original structural pillar of the church, and the construction method of the lattice floor also involves the central space of the church. This layer does not correspond to the “floor” of the real church ground in history but constructs a new imagination space by suspending on it. The architect transformed the archaeological remains of the basement into a chapel and built a small museum with the remaining space. The location of the basement corresponds to the main altar of the old church. The ground of the church square is raised to form the roof of the tomb, and diffuse light sprays into the underground space from the gap in the slant. In this space, the ground is in line with the elevation of the North Street but lower than the remains of the tomb. The ruins are for visitors to see as if they were placed on a booth. None of Carrilho’s newly implanted “layers” corresponds to the elevation of historical relics, but these layers correspond to the height of urban landscape and streets, creating a new “imagination” in the juxtaposition of history and reality. “Juxtaposition” is also found in the streets on the north and east sides. The architects reproduce the space scope of the original main altar and the East Ear Chamber on the ground by laying the floor pattern in the landscape, which makes people “imagine” the interior space as well as the fading space.

3.3. Integration and Isolation: A Psychological Game

In describing design concepts, Carrilho wrote: “refocusing the space of the old church, now affected by the presence around large and uninteresting buildings”. The new design undoubtedly needs to define its interface with the surrounding complex urban buildings and streets. Instead of completely enclosing church squares and relics or exposing them, architects responded in different ways to each of the surrounding interfaces. The East and north sides of the site are street-facing, and the architect uses a right angle to form the architectural posture. Between the site and the eastern street, a pedestal is used to connect, without walls, which makes space more a part of the city streets rather than a separate space. From the upper to the lower ruins and museums, one can always see the residential buildings across the Northern street through the carefully designed openings of the architects. The northwest corner is more difficult to deal with. There are crowded houses and a Naju temple. Carrilho’s design is ingenious in this difficult place. Relic stones are used to form courtyards between buildings and surrounding houses, which is quite similar to Japanese rock garden. The distance between the surrounding houses and the empty space of the church has increased both in sight and in mind, but these dilapidated houses can always be seen in one’s eyes. It conveys a feeling that the church is gently melting into the surrounding houses, leaving only the so-called “archway” (façade of the church) standing there in isolation. During the whole experience of the project from street to site to basement space, one’s eyes are filled with these ordinary scenes. They (buildings and their surroundings, below and above, inside and outside) are stitched together in people’s minds, which greatly weakens the sense of weight and boundary of buildings. This is a psychological game about architectural experience.

4. Conclusion

In the two cases analyzed in this paper, both Portuguese architects have demonstrated a skillful design method that controls the body and sight, coupled with changes in the body's perception of materials, leading to continuous and climax experiences. But more importantly, the spatial experience is related to the site history and the urban landscape in a broader scope. In a seemingly simple way, Alvaro Siza introduced the magnificent view of the Seven Hills City into the one's experience, just as he did in the Galician Center for Contemporary Art. João Luís Carrilho da Graça, on the other hand, constructed historical/realistic montages in one's brain through precise control visually and physically. Historical research is the beginning of their elevation design. On this basis, by restoring or introducing the "new" elevation, the new "layers" is inserted into the fractured urban height, and the continuous urban space or architectural space can be formed. In the "new" elevation, the urban landscape adds new meaning to the memory of the old elevation.

References

- Graça J.L.C. (1995), *Carrilho da Graça*, Gustavo Gili, Lisbon.
- Siza A.(2000), *A Reconstrução do chiado-Lisboa*, Livraria Figueirinhas, Lisbon.
- Siza A.(1995), *Alvaro Siza*, Gustavo Gili, Lisbon, S.A.
- Siza A. (2016), *Av Monographs 186-187: Alvaro Siza 1995-2016*, Arquitectura Viva, Lisbon.



Fig. 1.1. Satellite image after fire.

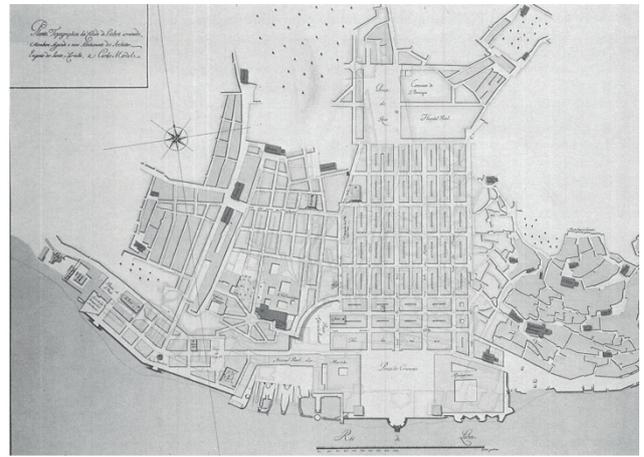


Fig. 1.2. The Pombaline reconstruction plan.



Fig. 1.3. Chiado after the fire.

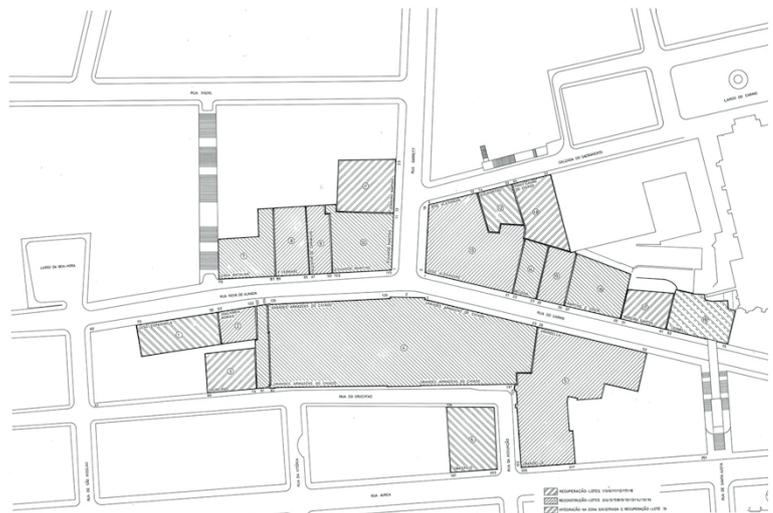


Fig. 1.4. Original plan before the fire.



Fig. 1.6. Chiado street view after renovation.

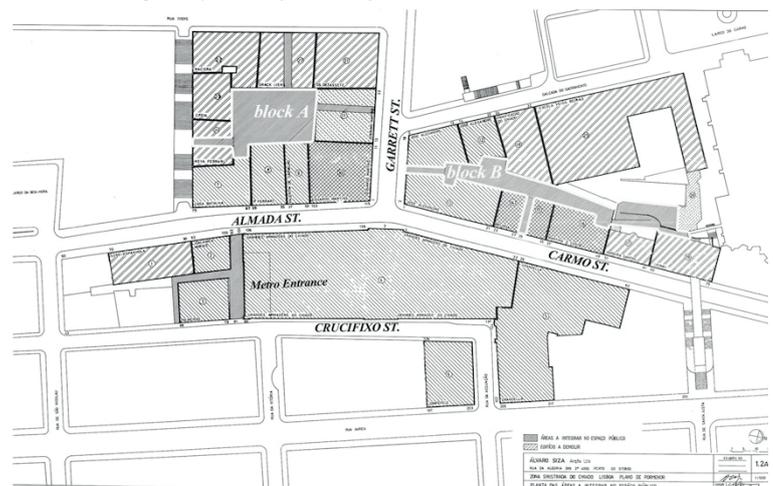


Fig. 1.5. Plan of renovation.

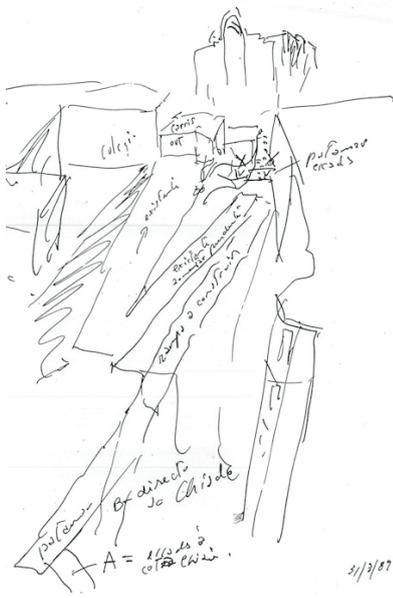


Fig. 2.1. Alvaro Siza's sketch.

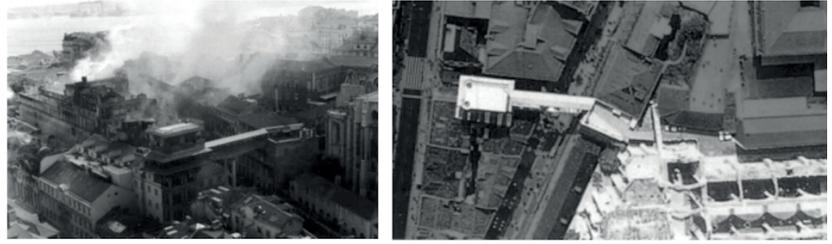


Fig. 2.2. Photo of Elevator de Santa Justa and Chiado in fire (up).

Fig. 2.3. Original plan before the fire (down).

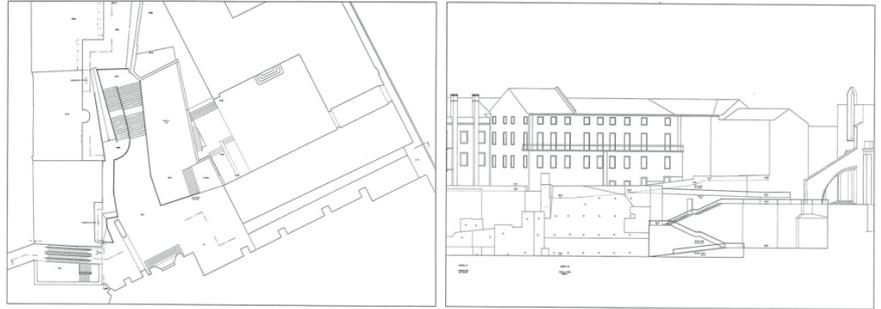


Fig. 2.4. Plan and section of South space of Carmo church.

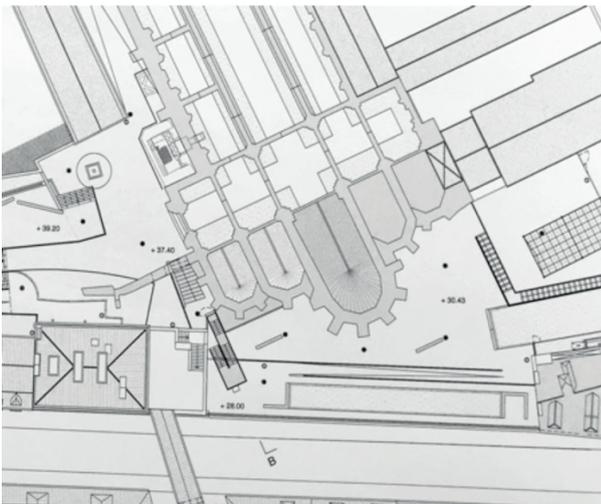


Fig. 2.5. Final plan (2015).

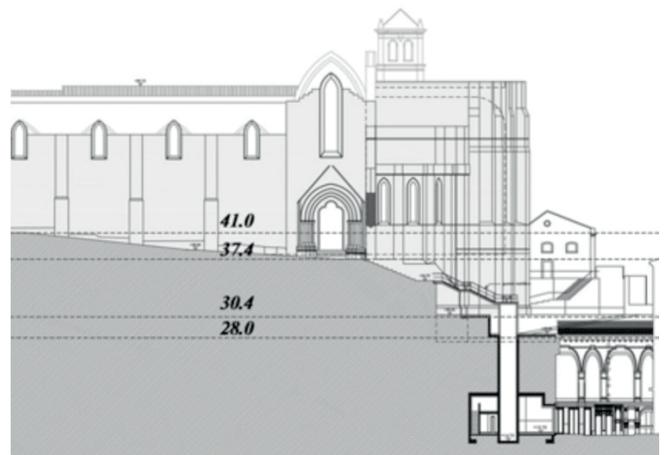


Fig. 2.6. Section with different height levels.

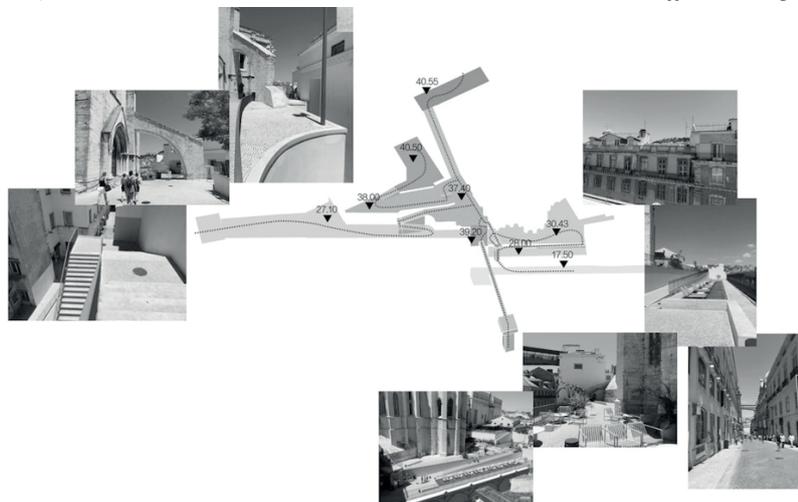


Fig. 2.7. Diagram of the experience through the circulation.



Fig. 3.1. Original plan before the fire (down).

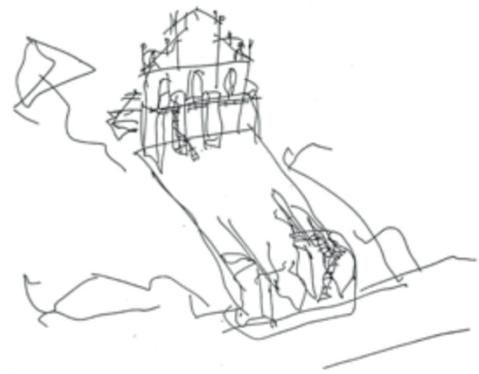


Fig. 3.2. Sketch by João Luis Carrilho da Graça.

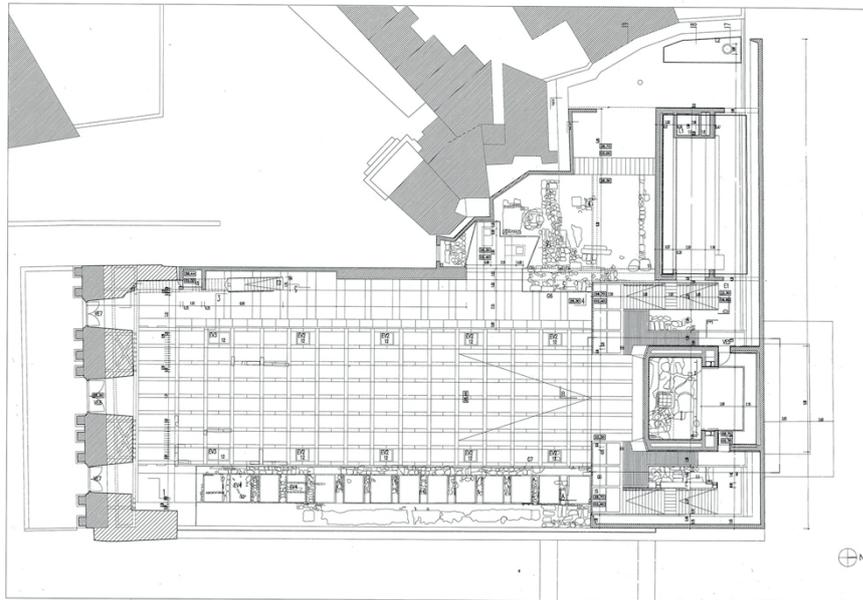


Fig. 3.3. The plan.

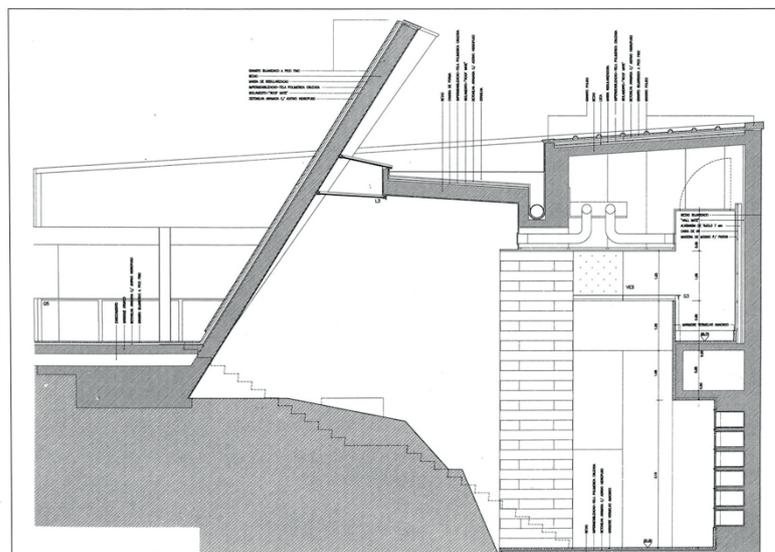


Fig. 3.4. Section of the underground space.

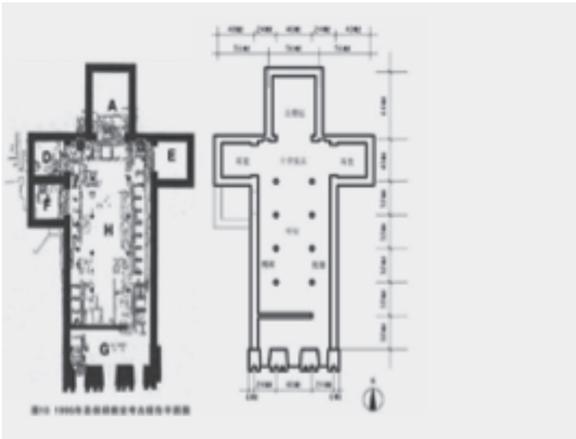


Fig. 4.1. Church original Plane.



Fig. 4.2. "Juxtaposition" and imagination.



Fig. 4.3. "Ordinary scenes".

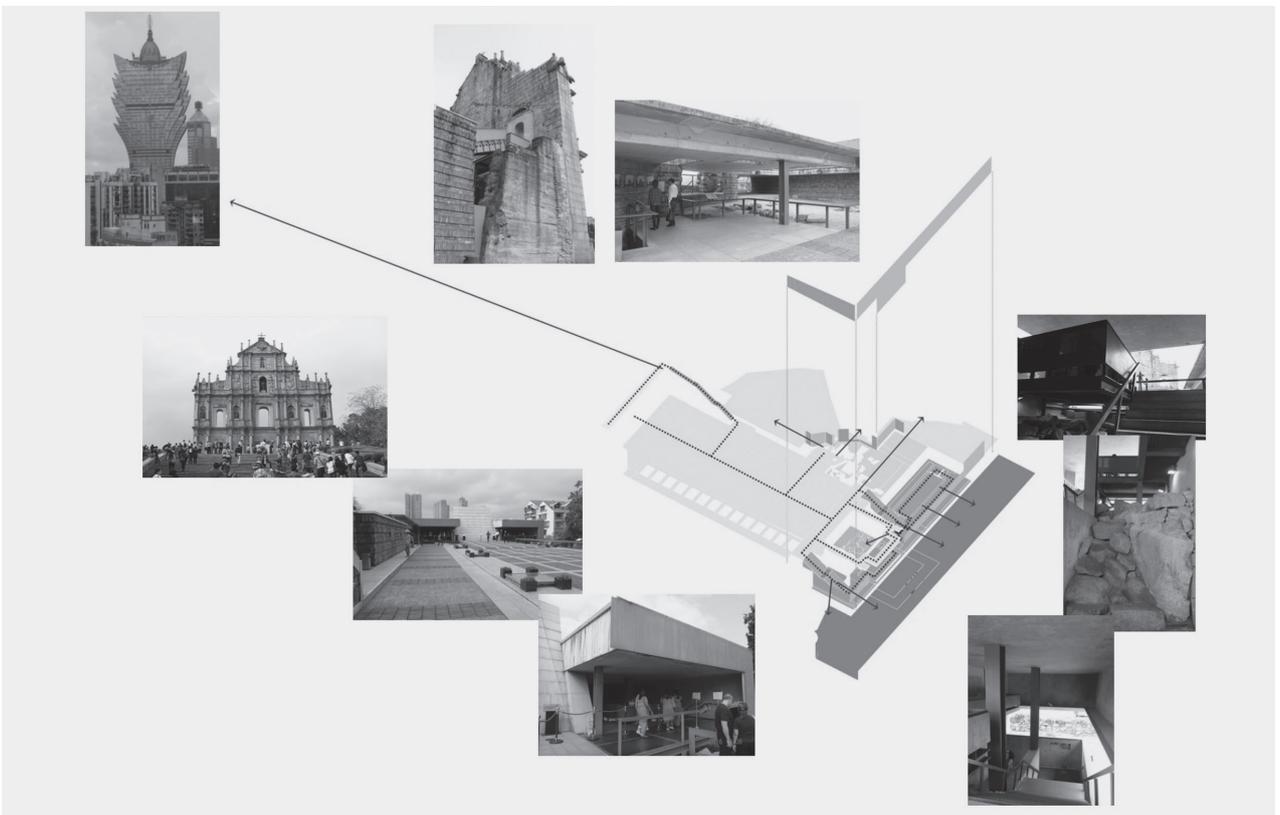


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