

ADAPTATION OF HISTORICAL BUILDINGS: A COEVOLUTIONARY APPROACH APPLIED TO AN HISTORICAL PALACE IN VIMERCATE

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KEY WORDS:

Palazzo trotti vimercate; Coevolutionary; Adaptation of historic buildings; Elevator; User experience

ABSTRACT:

Architectural reuse has been the topic of an extremely wide debate over the last decades. Also at international level the issue became more and more central as outside Europe the awareness of the cultural and identity values of urban artefacts arose. A huge mass of experiences and studies has therefore been produced searching for methods and decision criteria.

Perspectives surely changed: nowadays reflections are framed into the vision of Circular Economy and a more mature understanding of sustainability. Decision making became then more complex, because the problem is no longer the comparison between the net actual value of the investment in the reuse operation and that of the new construction on the area. Now decision has to take into account also social, cultural and environmental issues on the long run.

Therefore, new issues are introduced in the discussion about conservation and reuse, which has seen also a large and undeserved fortune of the theme as the object of a research by design often devoid of any epistemological foundation.

My thesis is that all the choices in conservation and reuse processes can be seen under a different perspective, after the step from “adaptation” to “conservation of the coevolutionary potential”.

INTRODUCTION:

Historic reuse produced many fascinating buildings, which during their “life” (keeping into the metaphor) faced many changes and were used for different purposes. Sometimes they were just adapted to the new needs, in some cases their strong character was considered and the required changes were adapted to the preexisting structures. We have to look not only at the carried out alterations, but at the evolving significance of these complex buildings: we are referring to the concept of significance, but adding the adjective evolving. Therefore, we are introducing a very important step from an expert-centred to a user-centred perspective. In my thesis, I clarify the definition of Adaptation and Coevolutionary and the relationship between the two concept. Purposing four representative historic buildings to show four ways of adaptation. Make a description of Trotti Palace in Vimercate and raise a proposal for changing the functions of the building from city-hall to cultural center. In order to give tourists have a better experience for visiting , the new vertical connection system set for the palace is necessary. Use modern technology to add new accessibilities into historical buildings should consider more about the coevolutionary. Satisfying historical buildings' modern needs in a coevolutionary approach can promote the value and even more meaningful.

I HISTORICAL BUILDINGS AND TECHNOLOGICAL INNOVATIONS

I.1 Relationship Between Conservation Issue And Coevolution Of Existing Structures

This is actually the discussion of conservation design and how to rule modifications for introducing new services addresses to the improvement of historical buildings. The reuse of existing buildings has been often described as the adaption to an evolving environment and the related needs.

Coevolution is a metaphor coming from biology science, related to Darwinian processes affecting species, which have strong relationships with each other.[1] It helps to understand issues related to time and changes. However, coevolutionary models have been applied outside the biology field, namely in economics, aiming at the development of models for change management. The implementation in cultural anthropology, archaeology and human history to explain trends and changes was quite obvious, as it was a way to enrich the understanding of evolution processes [2]. The definition of cultural landscapes as complex adaptive systems encompasses both the concepts of emergence and coevolution [3]. Implementing the concept of “extended evolution” , Niles and Roth propose to understand traditional agriculture landscapes as “living knowledge systems”, to be preserved not as the relics of a time gone by, but as resources for development through the interaction with new actors and societal processes [4]. Just 20 years ago, at the Bressanone conference on maintenance, a first draft of an epistemological foundation of conservation was proposed, referring to the coevolution concept and to the cognitive step “from being to becoming” It is worthy notice that Coevolution and Coevolutionary Economy have been inspiring for modelling preventive conservation as a system [5], while the concept of historic buildings as living knowledge systems is fundamental to the debate on traditional techniques vs. new technologies, which should not be

a comparison of ideologies, but a positive opportunity for the development of a coevolutionary work. The proposed implementation of a coevolutionary approach enlightens the potential influence that the presence of heritage produces on the environment and the society. The awareness that the presence of an historic building or its features could produce future benefits going far beyond its mere use values, gives more reasons for conservation and modifications that are evaluated on the long terms and not just for the present needs.

I.2 Methodology To Follow For Respecting The Existing Buildings And New Integrations.

To summarize, three most important methodologies has to be followed for respecting the existing buildings and new integrations.

1) Identify Significant Features

The features and attributes of the historic building must be evaluated for their significance. These significant features can then be assigned different levels of importance to give priority to the most important features. A preservation consultant can assist in this effort.

2)The expected change should concern the attitude to choice and the awareness about the reason why something has to be conserved instead of being sacrificed. On the other hand, in this perspective reuse becomes a tool for a richer evolution and changes, which are not necessarily negative for the historic building.

3)We have to look not only at the carried out alterations, but at the evolving significance of these complex buildings: we are referring to the concept of significance, but adding the adjective evolving. Therefore, we are introducing a very important step from an expert-centred to a user-centred perspective.

II THE INVESTIGATED SAMPLES - PRESERVATION VS ADAPTATION

II.1 Definition Of Adaptation Related To Historical Buildings

To apply the coevolutionary metaphor to historic preservation and reuse in the field of the built environment, it is necessary to compare the concept of coevolution with another concept, that is adaptation which means the process of changing to suit different conditions. There are two kinds of evolution processes, differing because of the action an evolving thing produces on the environment: in adaptation the thing has no influence on the environment, in coevolution the environmental evolution is influenced by the presence of the living thing. Put otherwise, if someone tells me that a reuse operation is adaptive, I understand that the performance standards required by the new function are implemented in the existing building without any debate, as the building will be modified in order to suit the new needs. Otherwise, if the new utility is chosen on the basis of the performances the building can provide, minimizing the change and taking into account the recognized values, the word “adaptive” does not fully describe the process, as the building is influencing the process and the change happens both in the building and in the requirements: then the correct metaphor is not adaption, but coevolution. “Adaptive” reuse is advocated as always carried out in the history of architecture. This is true, and we are often happy to see the complexity born by the insertion of new functions in

reused buildings. Nowadays, in the frame of lifecycle thinking and circular economy, these kind of processes could find a new actuality: the choice of reusing could be evaluated because of environmental and economic reasons, calling societal and cultural arguments to strengthen operational strategies, more than to inspire architectural design.

II.2 Four Investigated Samples

The study investigated a sample of buildings, which depending on functions and the degree of historic buildings, have been classified in four categories: New extending architecture for better use; Receive a balance between adaptation and preservation; Better maintenance which need more professional geometrical and technical survey; Respect and only keep the existing structures but use totally modern technology to create a new architecture. Here purpose four representative historic buildings, showing the four ways of conservation, have been analyzed for the present work.

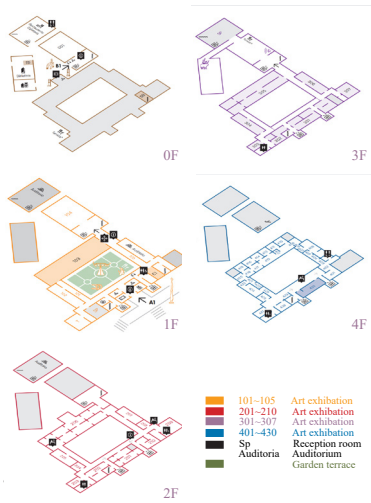
Case 1. Museo Nacional Centro de Arte Reina Sofia

Coevolutionary Approach - New Modern technology "Elevator" for better use. This sample presents a solution for integrating modern technological system-"Elevators".The designer was able to conserve the original building with all its system of values by showing the new technological service, driving the complex to a complete transformation of its use that requires the adoption of new standars and services.



Figure 1. Museo Nacional Centro de Arte Reina Sofia : a) general view of the site; b)Facade with glass towers for elevators; c)One built patio, main facade on Atocha street and surroundings.

Museo Nacional Centro de Arte Reina Sofia is located in the old general hospital of Madrid, Work of Francisco Sabatini. The aesthetic principle is that the beginning project proposed seven patios, a main facade on Atocha Street but only one was built. A palace-hospital-asylum concept with a fusion between Italian baroque and the Escorial tradition. The often alleged necessity to keep the same function in order to maintain the spirit of the place leads into unsolvable problems, because the functions through time tend to increase the requirements. In the huge existing literature, "adaptive" reuse is advocated as always carried out in the history of architecture. This is true, and we are often happy to see the complexity born by the insertion of new functions in reused buildings.



Revolution of the palace and Main functions
 Adaptation-Old hospital reformed at the beginning of the 20th century to the Faculty of Medicine and currently for the Conservatory of Music. In the middle of the 20th century the hospital ceased its functions. Upon being declared a Historic-Artistic Monument, the Ministry of Culture converted it into the Reina Sofia Art Center, eliminating one level, disappearing the existing passage and replacing the terraces with roofs. Later, José Luis Íñiguez de Onzoño and Antonio Vázquez de Castro built the glass towers for the elevators, and remodeled the surroundings. Now the main functions have changed like the first floor mainly for public activities and upper floors mainly for art works museums.

The designer gives a very good example of the coevolution of historical buildings. Use new modern technology and make light crystal volumes for elevators. The 35m high glass vertical circulation towers, using an established and tested system of glass fixing combined with an innovative method of suspension. The two added elevators beside the main entrance organize a very good vertical streamline for visitors and workers. The creator use stainless steel to connect the glass volume to the existing historic building-Arte Reina Sofia. The designer was able to conserve the original building with all its system of values by showing the new technological service, driving the complex to a complete transformation of its use that requires the adoption of new standards and services.

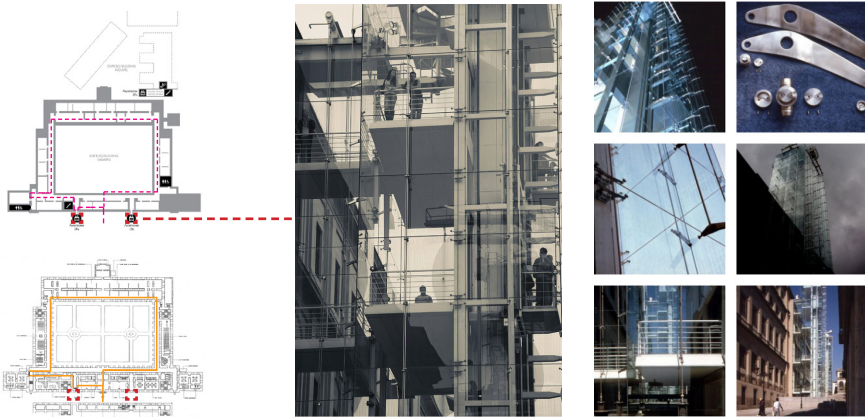


Figure 2. a) Museo floor plan with elevator areas; b) elevation of the glass volume elevator; c) details

Case 2. The convent of the Serviti in Koper (Capodistria)

Coevolutionary Approach - Receive a balance between adaptation and preservation-After the suppression was turned into the maternity hospital of the city. The physical alterations were heavy, but did not erase the Venetian character of the building; nevertheless, the relationship of the building with the local community life became so strong thanks to this function, that the next change of the function will face a difficult alternative in identifying the significant elements to keep and valorise[6]. We are moving the focus from what happened in the past and what happens in the phase of the reuse design, to what happens on the long run, when diverse and evolving communities will be called to inhabit the reused building, change their needs, and ask new adaptations. Shall the reused building bring a message to future users? Will it be able to influence the needs?

Coevolutionary thinking has undoubtedly an effect on the understanding of the past, fuelling a taste for hybrid, complex and layered images, just the ones that traditional restoration tended to simplify choosing the “right” phase. Paradoxically, the experts who decide to simplify the text use to say that such action aims at presenting to the public something ordinary people can understand. It’s the climax of the expert-centred, or top-down approach. Instead, a community-centred approach works on the user’s background to build an experience that could be more intriguing just playing on the richer keyboard constituted by the legacy of a deeply investigated evolution.

But the awareness of the evolving and dynamic character of significance does not only reshape the understanding of the past, it is also a very important reason to implement a responsible attitude toward the future. Once the reuse operation is based on the recognition on several values beyond the use-value, also in the frame of circular economy vision, the principle of responsibility entails an attitude, both in decision making and in designing the interventions.

Case 3. Sun Ke Residence, shanghai

Coevolutionary Approach -Use New materials to fix the facade decay and interiors decoration.The aesthetic principles is that the exquisite decorative cornices show the Spanish style, the changeable window frame forms are characteristics of Italian Renaissance; simple and bright exterior walls have the style of modern American architecture. Also mixed with some Chinese-style courtyard design elements. Sun Ke Residence is located at Fanyu road of Shanghai, Work of Ladislaus Edward Hudec.

Revolution of the palace and Main functions Adaptation-As an important part of Vanke's "Shangshengsuo" urban renewal project, the Sunke Residence will be connected to an area of nearly 50,000 square meters together with the historic buildings in the park-Columbia Country Club buildings and other industrial renovation buildings, be urban public open spaces.The buildings are composed of the main building and the annex. The main building is nearly square, while the annex is rectangular. The two are in a right-angle relationship. The main entrance is located in the north of the building, and the large garden is in the south. In terms of plan layout,the first floor of the main building is the public space such as the hall,

living room, dining room, the second floor is the private space such as bedroom and living room. The third floor is the bedroom, storage room, etc; The first floor of the annex building is the garage, kitchen, and the second floor is the maid's room, toilet.



Figure 2. Sunke Residence : a) general view of the site; b) 1930s Facade appearance; c) 1930s interiors looking of ceiling; d) 2020s Interiors staircase decoration after adaptation; e) Floor plan; f) 2020s Facade appearance; g) 2020s interiors looking; h) 2020s Interiors decoration after adaptation;

There is another interesting part of the historic palace which is the courtyard. The south garden was a large lawn before about 1963, surrounded by green plants, connecting the garden to the car dealership on the north side. Roads are separated; around the 1970s, the garden on the south side was transformed into a cross-axis shape, and a pool was excavated in the southeast corner with the original tree as the center. Historic reuse produced many fascinating buildings, which during their “life” (keeping into the metaphor) faced many changes and were used for different purposes. Sometimes they were just adapted to the new needs, in some cases their strong character was considered and the required changes were adapted to the preexisting structures. Sunke residence use more careful approach to preserve and adapt the historical building. Most of the time, the designer respect the old textures and try to use new materials and technology to recover it to what it used to be like and make it more morden decoration. This coevolutionary approach means to give visitors bestter experience.



Figure 3. The development of the courtyard adaptation from 1930s till now

Case 4. Huawei's largest global flagship store, Shanghai.

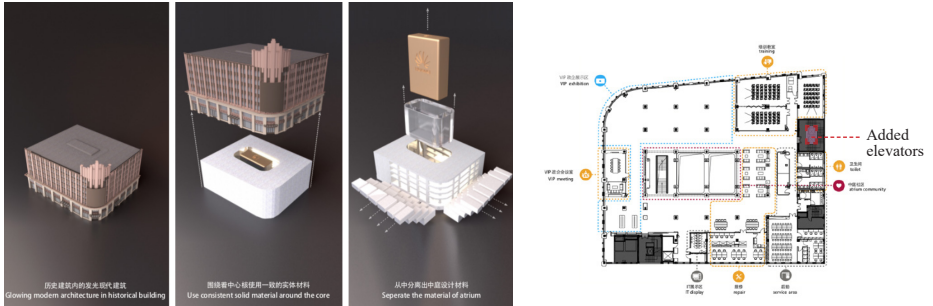


Figure 4. a) concept analysis; b) ground floor plan with added elevator.

Coevolutionary Approach -Respect and only keep the existing structures ,Use totally modern technology to create a new architecture .These kind of processes could find a new actuality: the choice of reusing could be evaluated because of environmental and economic reasons, calling societal and cultural arguments to strengthen operational strategies, more than to inspire architectural design. Located in the historical Nanjing Building on Nanjing Road East, Huawei's largest global flagship store occupies more than 5,000m² in three storeys. The history of Shanghai and this neighborhood has a long tradition of sharing and trading which imprints some of its original character in the layers of interventions, including the current one. Copper, usually used as an expensive decorative material in Shanghai, was selected for the metal covering the atrium surface due to its warmth and character as well as a gesture to its use in the electronic communications industry. Designed for disassembly with self-finished recyclable materials, circular design principles have been implemented throughout the design. The added elevators at the right side of the floor plan solve the problems of disabilities and make the historic building better reuse for visitors.

III TROTTI PALACE IN VIMERCATE

III.1 Description of the context-the historical center of Vimercate

Vimercate (Vimercàa in dialect brianzolo) is an Italian town of 25994 inhabitants in the province of Monza and Brianza . It is at the center of the territory called Vimercatese. It is located in the Padana plain , at the limit of the Brianza hills, north-east of Milan, from which it is 29 km away. It is also: from Monza 8 km, from Bergamo 35 km, from Lecco 31 km. In the eastern part it is crossed by the Molgora stream which flows from the north - coming from the Municipality of Usmate - to the south, towards the neighboring Municipality of Burago Molgora. Vimercate is a city that still preserves part of the original layout of the Roman town in its urban layout; today, what was a small vicus has been incorporated into the historic center. In the Memories of the Wars against the lordship of Venice by Cristoforo da Soldo, XV century memories that we find in the 21st of Muratori, the place is always remembered as Vilmercato; it should therefore derive from Villa

1. Saint Rocco Bridge



3. Vimercate - piazzale marconi



Study building
Trotti Palace



2. MUST Museum Vimercate territory



4. Santuario della Beata Vergine del Rosario

— Path
— Main Road

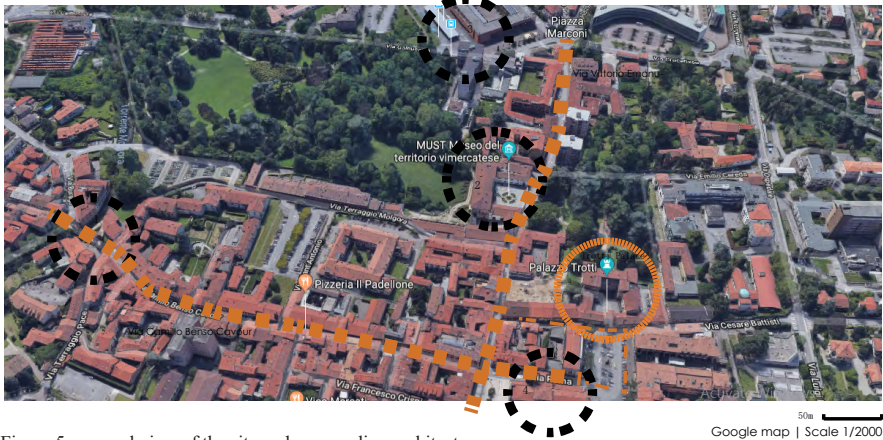


Figure 5. general view of the site and surrounding architectures

mercatus and mean that in ancient times it was the seat of trade, if not perhaps even of an annual rural fair; still hosts a popular weekly retail market. The memories of the Roman Vimercate are now kept in part at the Museo del Territorio Vimercate in part at the civic museum Carlo Verri di Biassono; very little now remains of visible evidence in the modern town: one of these is a fragment of an epigraph set in a wall of a court house in the main avenue of the city, via Vittorio Emanuele II. Along this road the ancient perimeter tract of the Roman vicus is trampled. Palazzo Trotti, an example of a “ villa of delight “ in Brianza , was the residence of the Counts Borella from the XVI century , ancient feudal lords of Vimercate, then passed along with the fief to the Trotti family , from whom it takes its name, and is now the town hall. It presents an anonymous nineteenth-century prospect on Piazza Unità d’Italia, but houses baroque frescoes inside.

III.2 Description of the Trotti Palace



Figure 6. Trotti Palace: a) main courtyard with the incomplete side; b) another interior courtyard elevation; c) The tower and main entrance view

Trotti palace was built in the last years of 17th to widen and update the former residence of the family Secco Borella counts of Vimercate, dating back to 15th century. The construction started from the East side, where the preexisting canteen was extended, proceeding westwards by additions of entire blocks from the ground to the roof, corresponding to the internal partitions .

Palace Trotti is the architectural complex consists of several buildings with the central body facing a closed quadrangular court. The noble volumes stand out in the internal body parallel to the current Piazza Italia and are characterized by the absence of a finished facade that overlooks the Court of Honor. The front facing the park, on the other hand, presents the classic scheme of the villas of Lombard delights or extra-urban buildings, with a U-shaped body with slightly protruding side wings. On the western side, parallel to the current Via Bonsaglio, the rustic part extended, with some volumes and a service court.

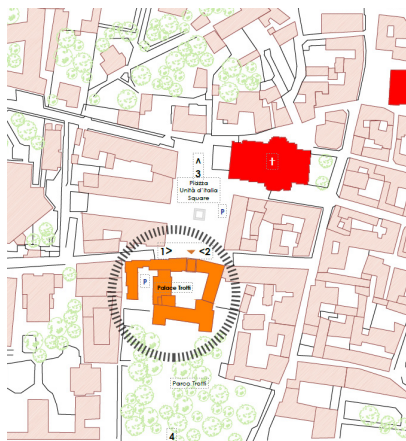


Figure 8. Master plan of the Trotti Palace

The project was never finished, but a large two storey building was completed, with central main halls flanked on the East and West edges by apartments, each composed by three rooms: a private hall with a fireplace, the anteroom and the bedroom (“alcova”). A first certain chronological term is given by the date 1705, which legible in the frescoes of Cleopatra’s stories in the main hall at the ground floor. During the construction of the new building, the old one was progressively dismantled, leaving the minor wings of the internal courtyard. More than the detailed story of the Palace, not perfectly enlightened by the few archival documents, what matters here is that also on the yard recyclable materials were available. Observed from figure 9, there is another garden in front of Trotti’s garden. Several gardens strung together with road separation. The courtyard also response to those gardens.

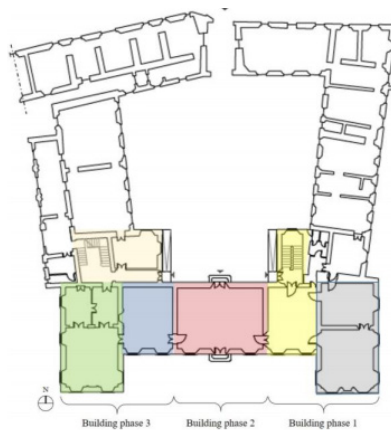


Figure 9. Plan of Trotti Palace complex with a layout of the main constructive phases of the principal 17th century building. (L. Cantini *, M. Previtali, R. Moiola, S. Della Torre-THE MENSIOCHRONOLOGY ANALYSIS SUPPORTED BY NEW ADVANCED SURVEY TECHNIQUES: FIELD TESTS IN MILANESE AREA)

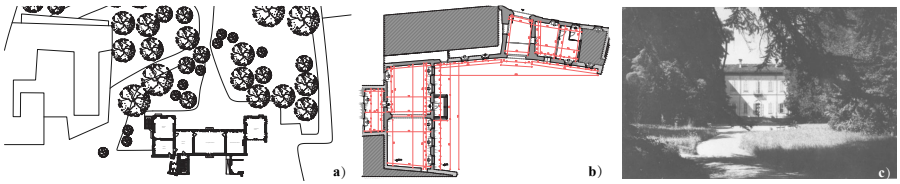


Figure 10. a) masterplan of the building with garden; b) building courtyard and details c) Building from the garden

About the intergration section and main wall sections, considering the Architectural features and elements, some indications can be provided: 1. For some reason the main façade is not completed, but according to the structure, some structures such as openings can be found to facilitate the builder during construction. 2. There are some arched structures, which can be seen as the interior or a door or a window is covered. In the past it has probably been extended to make living space outside the courtyard.

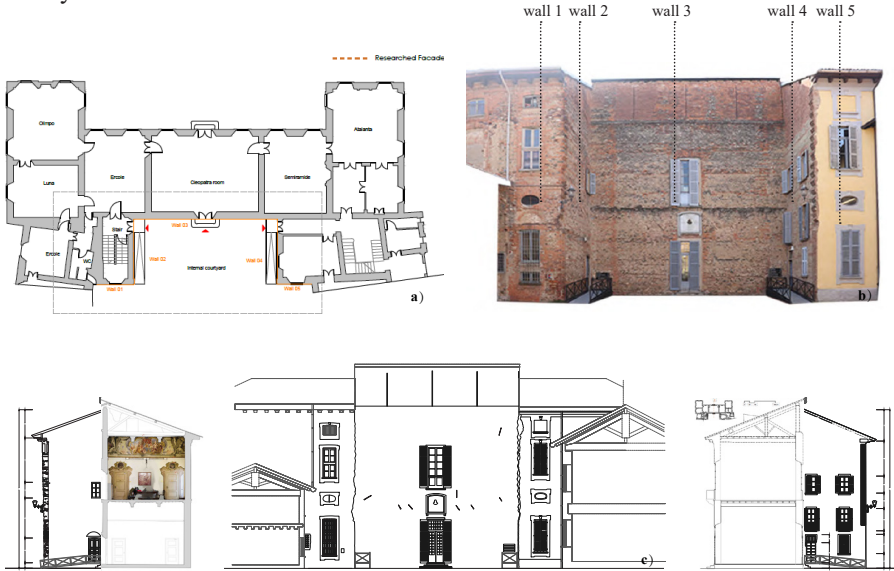


Figure 11. a) Trotti Palace ground floor plan; b) Intergration of main elevation; c) Main wall sections

The foreseen porch with twin columns has never been built, nor the walls have been plastered. The position of the tie rods helps in the reconstruction of the building process. On the yard recyclable materials were available. as it is likely that in the walls both bricks produced at the time of the works, and recycled bricks are to be found, the latter having the dimensions typical of the demolished old buildings.

For the functions, since the main central building of the complex is composed by important public spaces, decorated by frescos on the walls inspired to classic myths and dated back to different periods. A large two storey building with central main halls flanked on the East and West edges by apartments, each composed by three rooms: a private hall with a fireplace, the enterroom and the bedroom (“alcova”).

The construction started from the East side, where the pre-existing canteen was extended, proceeding westwards by additions of entire blocks from the ground to the roof, corresponding to the internal partitions. The process can be clearly detected by means of the stratigraphic relationships, which are visible in the facade

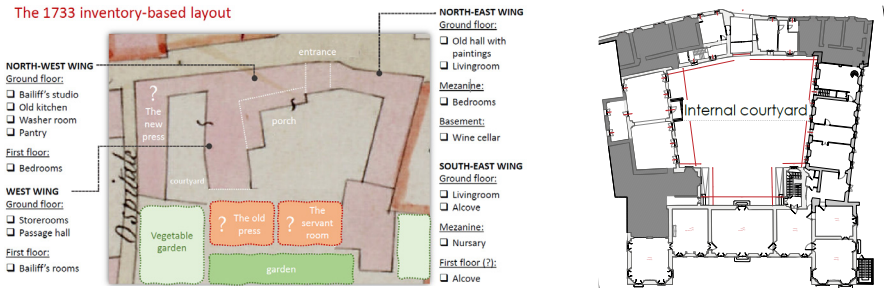


Figure 12 a) 1733s inventory based layout;(L. Cantini *, M. Previtali) b) ground floor plan

There are 6 different rooms on the first floor of the Palazzo which the middle one is Cleopatra room. From the Semiramide room, you can enter into sala Olimpo and to another small sala Luna. On the right would be Semiramide. Some of these salas now are used to be offices for services, some be museums that preserves many precious fresco. When I worked around in this building as a student in 2019, I always walked into the offices accidentally,

seeing many printers and machines for offices. Also washrooms for officers. So I found the problems of now mixing functions and mixing use. It is actually have some problems for visitors and officers to reuse, so the functions need to be changed to make public users feel better. Since Trotti was used to be habitation for a whole family but now for services, so the plan arrangements is mixing. Visitors should pass one room to another.



Figure 13: Plan legend of the Trotti Palace ,testi di R. Bossaglia, et al(1990). p 68

Interior and decoration design was mainly placed in the central architectural volumes of the building, the painted rooms seem to refer to the Lombard decorative tradition of the previous centuries, renewed by new formal intuitions in the seventeenth century.

At the first decorative period of Palazzo Trotti belong the paintings of the main hall on the ground floor, with direct entrances facing the Court and the garden. These represent the stories of Cleopatra, which are followed by scenes painted in the halls of Hercules and Semiramis, on the ground floor, and in the Sala di Minerva, on the upper floor. The paintings here are to be ascribed to a single hand and his workshop, which has a clear "figurist" vocation and uneven quality levels.

Different executive abilities are in fact also found in the Cleopatra Room, in which the best results are expressed by the parietal allegorical figures. The artist who worked in these four rooms, characterized by a unitary figurative approach, concluded the works between 1705 and 1706.

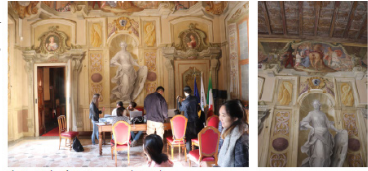


Fig. 13. Interior of Cleopatra room (10.2018)

On the upper floor, on the side of the central room without decorations, there is the Sala di Bacco, which presents frescoes of hand and narrative freshness much higher. According to the usual setting, on the walls there are scenes of the Roman divinity in which the expressive sweetness, the mastery of the chiaroscuro effects and some figurative choices seem to be accomplished by a Lombard master who precedes the times. Master identified by many historians with Carlo Donelli called the Vimercati, who would have painted these scenes between 1710 and 1715.



Fig. 14. Interior of Luna room (10.2018)

To the commission of the Trotti family and to a period not very distant from 1750 would appear the scenes present in the rooms of the smaller wings of the ground floor (rooms of Olympus, Atalanta and Diana) and the first floor (rooms



Fig. 15. Documentary about decoration (source: internet)



Fig. 16. Some decoration in the wall and ceiling (10.2018)

Angelica and Medoro, of Pira-mo and Tisbe and Andromeda). They depict mythological scenes of great lyric impact, for which the attribution to the Ticino painter Giuseppe Antonio Orelli has been proposed, considered one of the most acute personalities of Lombard painting of the mid-eighteenth century.

In addition to the paintings, the Villa houses interesting paintings, wooden ceilings deco-rated with the widespread technique of “pass-below” and some furnishings, such as the typically eighteenth-century fireplace.

III.3 The proposal for changing the functions of the building from city-hall to cultural center

The often alleged necessity to keep the same function in order to maintain the spirit of the place leads into unsolvable problems, because the functions through time tend to increase the requirements. For instance, the microclimate requirements for a dwelling house or an office are today definitely higher than in the past, so that if the same function is kept an upgrade of the building performance is required, which could be devastating for the historical components.

At the moment the Palazzo is operating as a Mayer office therefore despite its prime location near the town’s square, Palazzo Trotti is not a very popular place for people to go. Moreover, the Palazzo’s historical values are still a mystery to all the people. During the last phases of the preservation studio, we would like to propose

Palazzo Trotti to be a place where the people in every generation are welcome to come inside to learn more about the Palazzo and use the space.

So we are thinking to change the function from City-hall to cultural center to let visitors join in this building. Walking further along, that wing you will find a very big space for our fresco atelier where there will be artists making the fresh fresco as an example and a workshop space where there are also workshops that the artists will teach you a step by step how to the original fresco is made and painted. The inner left wing is a location for a wood workshop, where it focuses on how the wooden structure of the palazzo had constructed. People can come to learn about different types of timber structures in architecture and the Lombard truss. At the opposite side, the right wing is an administration office. It is where most of our Palazzo officers will be and if visitors would like to do the workshop, it is compulsory to sign-up inside this office and present their identifications here. The administration office is also a place of advertising, where we will be giving out information about the ongoing events together with future events in three months time. The first thing you will see from after entering from the main gate is the internal courtyard of the Palazzo which at the moment is an empty space with two ramps going to both inner west and east wings of the Palazzo.



Figure 17: Diagram for Palazzo Trotti with proposal

When you are in this courtyard you can simply see the story of the Palazzo, the arrangement of bricks and the components conveys about how the Palazzo was being constructed at its initial construction, how it changed its material throughout the century. We would like people to appreciate more this story-telling walls, therefore, we are creating a platform where disabled people can have larger access

and space to stop or make turns, we will adding seatings where people can gather, use the space freely. We also will cover the stone-made entering stairs of the Palazzo with a glass-floor so people can still observe and see it without having any physical damage to the original pieces. Inside the Palazzo, we would like to turn the rooms within the Palazzo into different ateliers instead of the tense official office. We could move the office to the nun's house nearby the commuting method will remain indifferent. There are 6 different rooms on the first floor of the Palazzo which the middle one is Cleopatra room which will remain as a multi-function hall on the left would be Semiramide, where it will be another common area like a living room for socializing. From the Semiramide room, you can enter into an ornament workshop in Olimpo and to another small fresco workshop in Luna. On the right would be Semiramide, where it will hold a showcase, a small museum specializing on the bricks how they are transported from Milan, their types and ages called brick hall and from the brick hall to the next room is Olimpo, the masonry atelier where people can see the method of how the bricks are made.

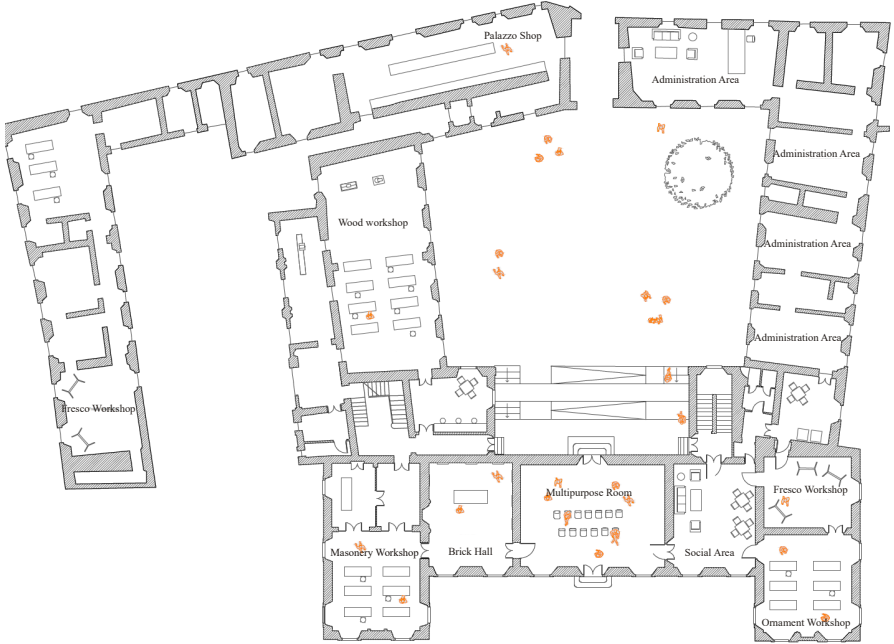


Figure 18 Ground floor of Palace Trotti with proposal.

We are proposing this new valorization of the Palazzo Trotti with the hope of not only to make the space useful for the local people but also to be able to make people recognize the hidden value of the Palazzo, to be able to share how much of the history we can get out of what has been standing here for over the decades and lastly to conserve the traditional elements for the new generations to gain the understanding of how everything has made in the different area.



Figure 19. a) Palazzo Trotti nowday with internal courtyard, ramps and unfinished facade and negative things; b) Palazzo Trotti with proposal, new internal courtyard activities

If coevolution can be guided, or at least influenced, certainly the reuse project has the possibility to orient the possible forms of future co-creation of contents, simply deciding whether some features of the building will be maintained or given up. Therefore, the designer has the responsibility of limiting or widening the freedom of the future coevolution processes. The target should be to respect and not to reduce, but to enhance the complexity of the place, through investigation aimed at multiplying the approaches and the interpretations.

IV PROPOSALS FOR THE NEW VERTICAL CONNECTION SYSTEM SET FOR TROTTI PALACE IN VIMERCATE

IV.1 Proposal 1 - Elevator setting exteriors

There are two kinds of evolution processes, differing because of the action an evolving thing produces on the environment: In coevolution, the environmental evolution is influenced by the presence of the living thing. Put otherwise, if the new utility is chosen on the basis of the performances the building can provide, minimizing the change and taking into account the recognized values, the word “adaptive” does not fully describe the process, as the building is influencing the process and the changes happen both in the building and in the requirements: then the correct metaphor is not adaption, but coevolution. This is true, and we are often happy to see the complexity born by the insertion of new functions in reused buildings. Nowadays, in the frame of lifecycle thinking and circular economy, these kind of processes could find a new actuality: the choice of reusing could be evaluated because of environmental and economic reasons, calling societal and cultural arguments to strengthen operational strategies, more than to inspire architectural design.

Before making proposals, I rethink the methodological principles of coevolution in order to give the design a logical background.

1) Identify Significant Features and Short Introduction of The Technological Characteristics

The features and attributes of the Trotti Palace must be evaluated for the significance. These significant features in Trotti Palace can be divided into three parts. First is the Functions which should be changed now for the modern use, which was never finished, a large two storey building was completed, with central main halls flanked on the East and West edges by apartments, each composed by three rooms: a private hall with a fireplace, the anteroom and the bedroom can then be assigned different levels of importance to give priority to the most important features.

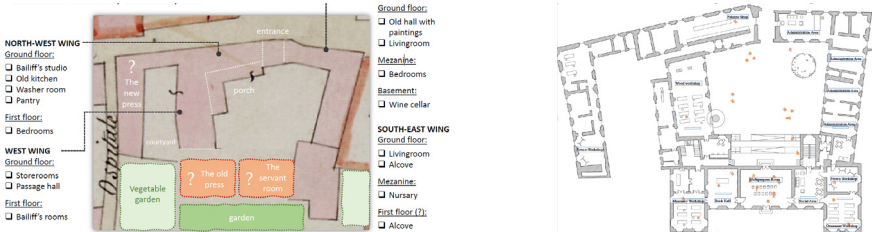


Figure 20 a) inventory based layout;(L. Cantini *, M. Previtali) b) Ground floor function renew proposal. For the modern use now for visitors, the traditional functions is a kind of missing so we make a reange of the functions for better reuse as a cultural center.Later during the deepening design progress I found the need for accessibilities to give a more clearly moving line for tourists.

Secondly , one of the value embodied by Palazzo Trotti is the building technique of the masonry walls, that is fully visible on the incomplete facade of the palace into the courtyard.

Trotti Palace - Vimercate

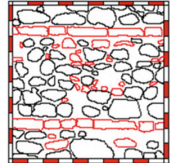


Figure 21 Overview of the main analyzed masonry textures of Trotti Palace

The last one is the presence of the fresco decorations interiors. By the stule of the frescos it was possible to attribute a date to different parts of the building and the decorations represents an added value (artistic value) to the complex. It is necessary to consider it.

2)My proposal is expected change concerning the attitude to choice of coevolution. On the other hand, in this perspective reuse becomes a tool for a richer evolution and changes. In order not to destroy the internal existing constructions ,to preserve the historic masonry value of the facade from the main entrance,with the limitation of the precious interior decorations. I make the proposal of using new modern technology and adding light crystal volumes for elevators connecting to the facade of the interiors courtyard behind the main entrance.

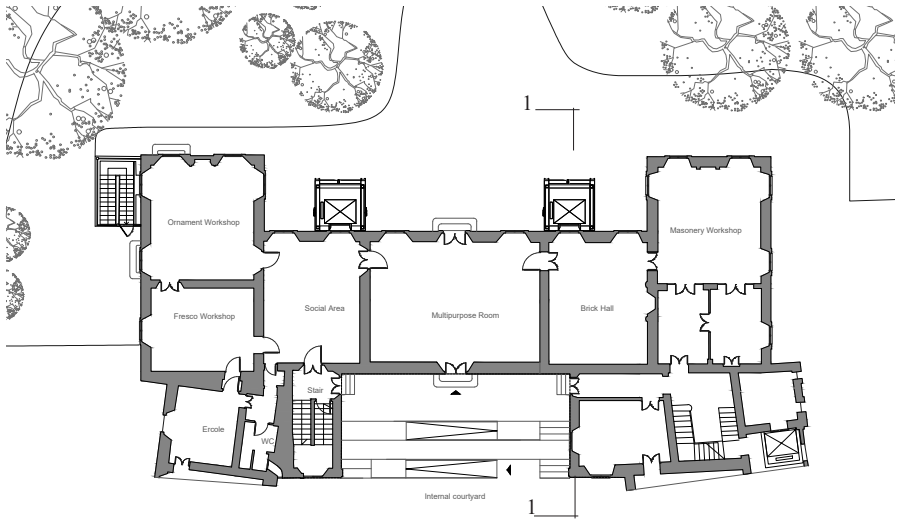


Figure 22. Proposal for the elevators on plan

I first designed two symmetry elevators connecting to the facade and one hidden inside beside the terrace. But after exploring to some professional materias,the number of the visitors is not that much ,only one elevators for workers and tourists is enough.

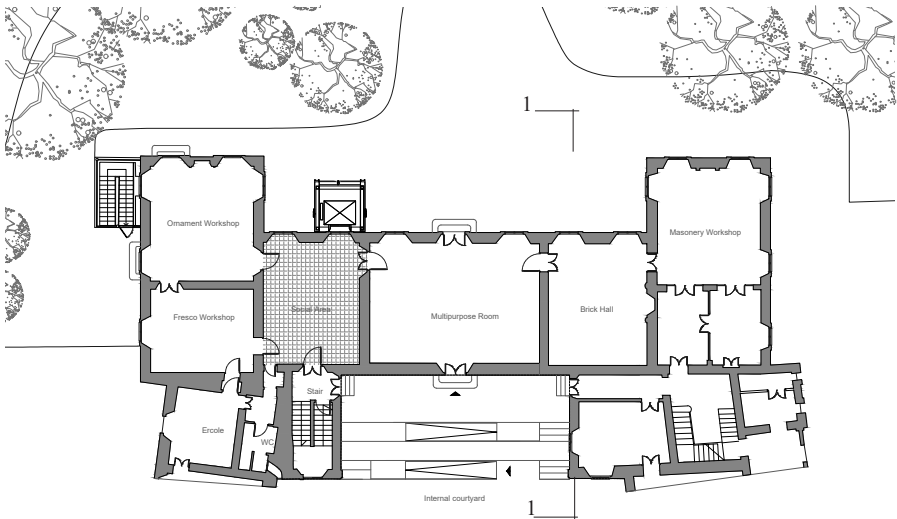


Figure 23. Improving Proposal for the elevators on plan

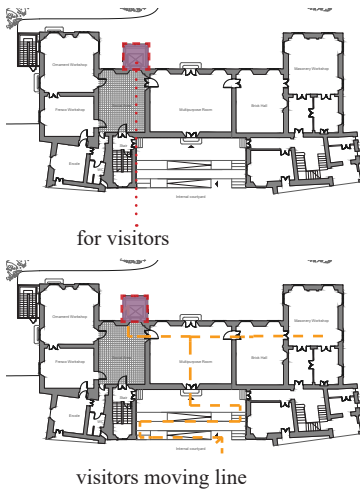


Figure 24. a) elevator design area analysis;
b)tourists moving line analysis;

Why I finally choose the elevator here?

Because it gives a better circulation for the moving line of visitors and workers. Since the elevator putting here more near to the staircase and connected by the social area. Multipurpose room is just in the main hall nearby, where the main entrance in the middle.

The elevator here is also a link for two courtyards. As the crystal transparent material is also a kind of symbol for "disappearing and connection", from not only the facade to the courtyard, but also from the past to the future.

The crystal elevator gives a balance between the functions and the existing materials and structures.

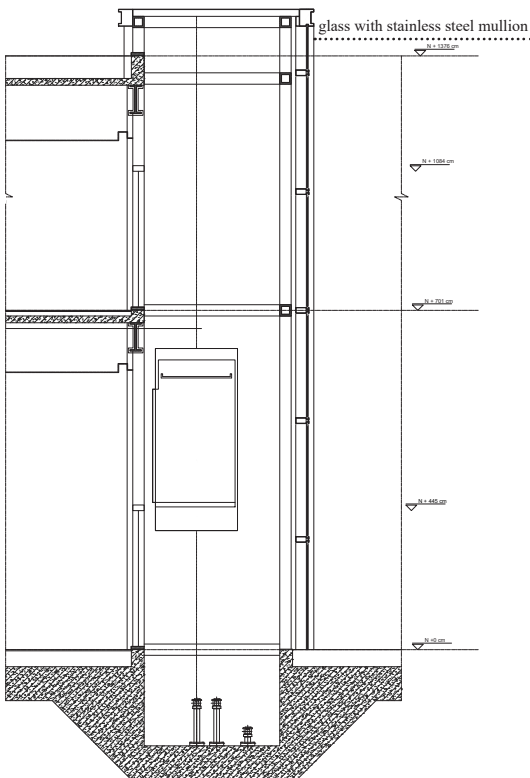


Figure 25. 1-1 sections of the elevators design

Using an established and tested system of glass fixing combined with an innovative method of suspension. The added elevator beside the entrance to the courtyard organizes a very good vertical streamline for visitors and workers. I use stainless steel to connect the glass volume to the existing historic building-Trotti Palace. I was able to conserve the original building with all its system of values by showing the new technological service, driving the complex to a complete transformation of its use that requires the adoption of new standards and services. Coevolutionary Approach - New Modern technology "Elevator" for better use. This sample presents a solution for integrating modern technological system-"Elevator".



Figure 26. Improving Proposal for the elevators on plan



Figure 27. Perspective views of the crystal elevator from the courtyard looking

IV.2 Proposal 2 - Elevator Setting Interiors

Adaptation is the process of changing to suit different conditions. There are two kinds of evolution processes, differing because of the action an evolving thing produces on the environment: in adaptation the thing has no influence on the environment. Put otherwise, if someone tells me that a reuse operation is adaptive, I understand that the performance standards required by the new function are implemented in the existing building without any debate, as the building will be modified in order to suit the new needs. “Adaptive” reuse is advocated as always carried out in the history of architecture.

Before making proposals, I rethink the methodological principles of adaptation in order to give the design a logical background.

1) Identify Significant Features and Short Introduction of The Technological Characteristics

The features and attributes of the Trotti Palace must be evaluated for the significance. These significant features I pay more attention for this proposal is the existing structures. When design for the vertical volumes for the historical building, I respect for the historical textures and try my best not to destroy or change anything of the existings structures.

Secondly , one of the value embodied by Palazzo Trotti is the building technique of the masonry walls, that is fully visible on the incomplete facade of the palace into the courtyard. So I try several ideas to hide the elevators interiors but not make any influence on the historical facade.

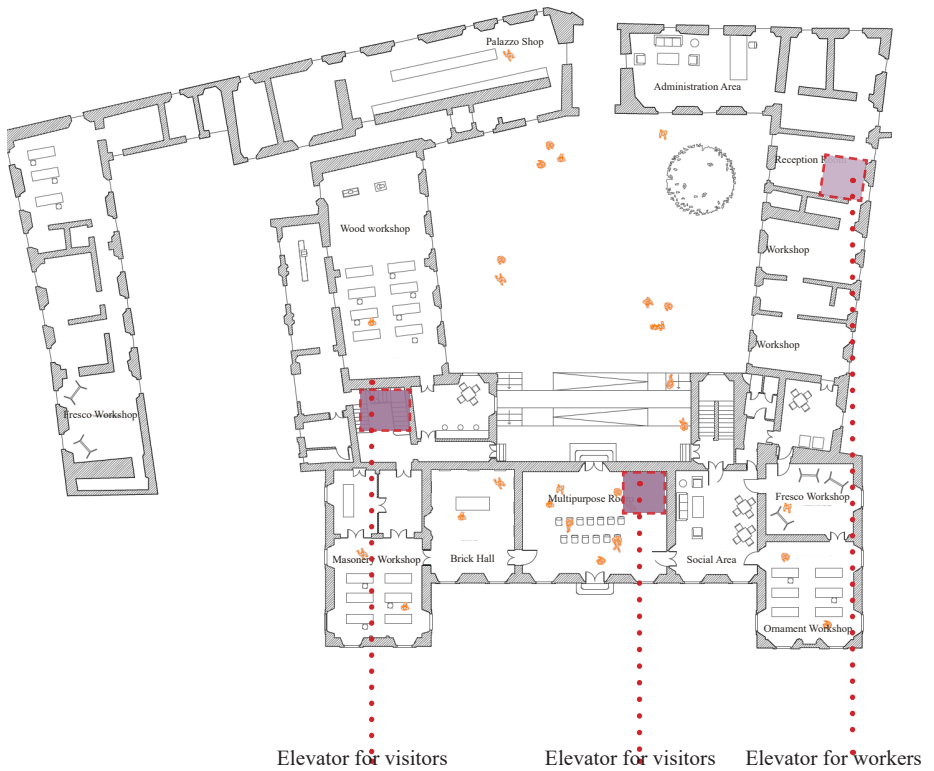
Here below are my sketches for the analysis of the three interior elevators trying.



Figure 28. a) Relationship between Trotti Palace and two courtyards;
b) Three suggestions for the elevators hidden interiors

Trotti palace was built in the last years of 17th to widen and update the former residence of the family Secco Borella counts of Vimercate, dating back to 15th century. The existing structures and the interior decoration are full of historical. So the adaptation will be modified in order to suit the new needs, ignoring destroy the historical part. So this solution raise three hidden new elevators inside the historical building options without influence the structures.

Figure 29. Proposal for the elevators on plan



Finally I decide the option of the previous staircase place, since the position of multiplyroom has the fresco decorations interiors on the wall. It is necessary to consider it and ignoring to detroy it. So elevator there is unsuitable. Another place is to far to the main functions of the main building.



Figure 30. Proposal for the elevators on plan

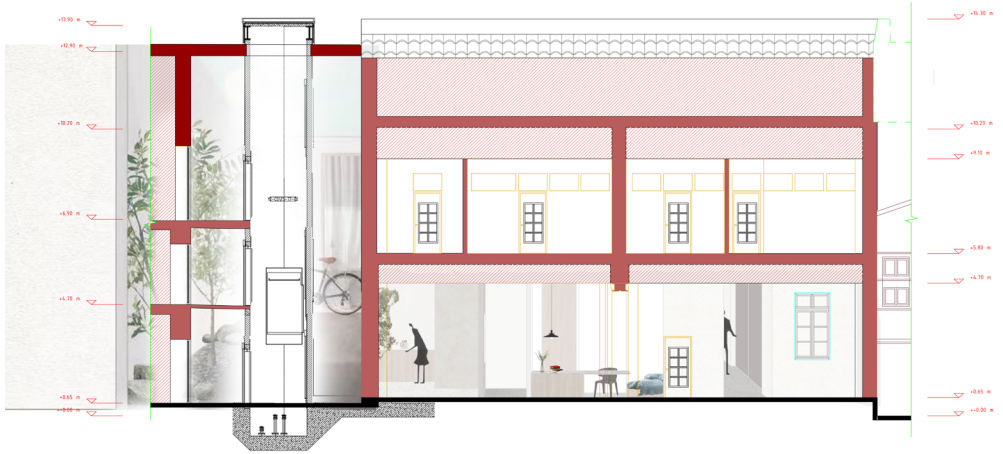


Figure 31. Proposal for the elevators on section

Avoid breaking down the facade and the existing structures, this is a very careful solution that tries to keep what it looks like not been changed for modern reuse. The adaptation way is peace and calm, won't break the historic part and also won't bring something new. A solution solves the basic problems for the new visitors and workers.

V PRINCIPLES FOR ADDRESSING THE DECISION MAKING

The question then moves to the possibility of perceiving the authentic values of an historic building not through the original use, but through a different one, given that architecture is not understood by the sight, but living the spaces. It is not an easy question, as really the number of the publics opens to a diversity of experiences, which cannot be ignored. Lucina Napoleone suggested not to overlook the theme of aesthetics, pointing out that mere conservation risks to turn into a flee from responsibilities, and referring to the interesting concept of “trace” as introduced by Maurizio Ferraris (Napoleone 2008; Napoleone 2016). But which times are required for a correct perception of interiors bearing traces of previous uses? How many users/visitors could be engaged in an experience of the place pivoting not on distraction but on the investigation of the traces? And how tourists perceive a monumental church or a mosque, seen as mass tourism destinations?

The approach to places with values exceeding the availability for use should overtake the expert-centred approach and its authorized heritage discourse, to get aware of the central role of users and their diversity. Significance is not an immutable attribute of things and places, nor can it be defined by a hegemonic statement. Instead, it is continuously re-produced through users' experiences. Cultural significance is emergent, and the designer's responsibility is to keep and enhance the potential of historic buildings for co-creation of meanings in the future. When Lucina Napoleone asks what to conserve, my answer, given twenty years ago, is "the coevolutive potentialities". This means to avoid any reduction, to take care of the imperfection of objects, as in a Darwinian logic diversity and imperfection are the foundation of a new ecology, new ethics, new aesthetics (Bocchi, Ceruti 2004, p. 171), and the lack is a generative condition (Varchetta 2002, pp. 92-93). These epistemological reflections may seem loose from practice:

Documents exploring

Confirmed by the ICOMOS International Charter of Venice, 1964, I want to provide more consistency to the theoretical background on architectural conservation.

The conservation and restoration of monuments must have recourse to all the sciences and techniques which can contribute to the study and safeguarding of the architectural heritage [12]. The conservation of monuments is always facilitated by making use of them for some socially useful purpose. Such use is therefore desirable but it must not change the lay-out or decoration of the building. It is within these limits only that modifications demanded by a change of function should be envisaged and may be permitted [12].

The Nara Document on Authenticity is conceived in the spirit of the Charter of Venice, 1964, and extends it in response to the expanding scope of cultural heritage concerns and interests in our contemporary world.

Depending on the nature of the cultural heritage, its cultural context, and its evolution through time, authenticity judgements may be linked to the worth of a great variety of sources of information. Aspects of the sources may include form and design, materials and substance, use and function, traditions and techniques, location and setting, and spirit and feeling, and other internal and external factors. The use of these sources permits elaboration of the specific artistic, historic, social, and scientific dimensions of the cultural heritage being examined [13].

Decision maken

The external elevators are an idea that had very positive responses for important museums set into historical buildings, like Prado. And I will use crystal materials for the elevator volumes. Ignoring destroy the existing structures and more new technology can be supported. Finally the first option will be chosen which will set the two transparent volumes on the facade and one hidden in the west wing.

Coevolutionary here is was able to conserve the original building with all its system of values by showing the new technological service, driving the complex to a complete transformation of its use that requires the adoption of new standards and services.

And now Trotti Palace will get a more better use by modern people . The proposed implementation of a coevolutionary approach enlightens the potential influence that the presence of heritage produces on the environment and the society. The awareness that the presence of an historic building or its features could produce future benefits going far beyond its mere use values, gives more reasons for conservation and modifications that are evaluated on the long terms and not just for the present needs. We have to look not only at the carried out alterations, but at the evolving significance of these complex buildings: we are referring to the concept of significance, but adding the adjective evolving. Therefore, we are introducing a very important step from an expert-centred to a user-centred perspective. So I choose the exteriors proposal for the final choice.

CONCLUSIONS: COEVOLUTION AND THE LONG-TERM VISION

The expert's (i.e. the architect's) role is definitely new in the perspective of a community-centred or user-centred design of the future use of historic premises. The task is no longer the recognition of those values, which can inspire the project and the culturally correct understanding of the place, but the investigation of the multiple approaches that legitimate the diversity of the possible recognitions. Besides the sustainable compliance with the requirements related to the chosen function, the success of the reuse project will be demonstrated by the richness of the co-creation actions, in which different communities will be keen to be involved. Also in the research on tourism co-creation has been identified as a key factor for the satisfaction of the users, in the logic of the experience economy (Pine and Gilmore 2008). Even if heritage users should not be thought as customers but as citizens, there is something to be learnt from the research on user's experience and satisfaction (e.g. Buonincontri et al. 2017). The suggestion that the experience should mix the four E (Education, Aesthetics, Entertainment, Escapism) could explain why we can find intriguing unusual distance points produced by added floors, which traditional restoration would remove for pure architectural reasons (see the example of the frescoes in the Jesuits' College in Genoa quoted by Musso 2017, p. 219). On the other hand, it is necessary to include in the agenda the availability of digital tools and the opportunities given by performing arts for community engagement, working out the idea that "aesthetic perception and creation of architecture cannot be achieved without the inclusion and application of digital interactive technology"(Pekol 2009). The ante and post intervention management, including both planned conservation and the promotion of smart valorisation activities, is crucial to make these kinds of contamination possible. Thus the reuse operations should be framed into a sound management plan in order to have a complete vision of the intervention on the long run, also in the perspective of opening to a free coevolution in the future (Della Torre 2014)

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