STUDY ON THE RESTORATION OF THE HERMOUPOLIS QUARANTINE BUILDING

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Abstract

Topic of this research is the ex- Lazzaretto of Hermoupolis (Quarantine Building), situated in the island of Syros (Cyclades), in Greece. In this subject is reflected a large part of the Greek historical - architectonic truth, of the second half of the 19th century. This complex is part of a series of buildings, belonging to the post-revolutionary period of Greece, that testify, on the one hand, the needs of the period in point and, on the other hand the dominant architectonic style of that time.

Given that we are dealing with a topic of great interest. From the conservative point of view, the building lacks any type of restoration or consolidation.

The first part of the research is dedicated to inquiries relating to the history and the past of the complex, in order to study the eventual evolutions and changes that it has gone through during the course of time and, consequently, to find out whether this evolution has altered the original picture of the complex. The second part will treat the survey on the problematic of the structural part of the building and proposals concerning its consolidation and conservation. The last part is dedicated to the architectural proposal concerning the reuse of the Quarantine building as a center of mild forms of therapy such as thalassotherapy – hydrotherapy – aerotherapy – phototherapy.

Key words

Restoration, reuse, wellness and spa, architectural heritage, Lazzaretto

Introduction

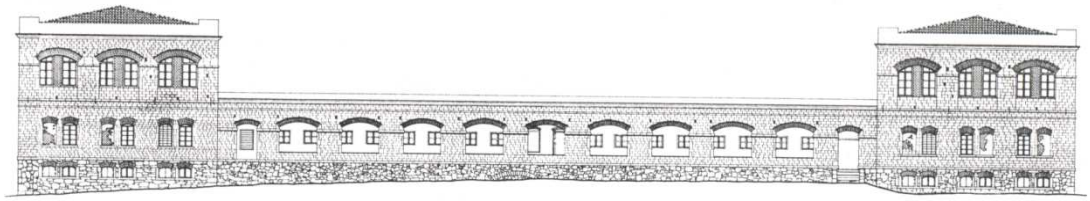
This study had been originally conducted as part of my final-year dissertation titled **"The old Quarantine Building of Hermoupolis – a study on restoration and consolidation"**, in the University of Florence, faculty of Architecture, during the academic year 2003-2004.
[**L'ex Lazzaretto di Hemoupolis – Ipotesi di Restauro e Consolidamento**, Laureando: Michail Provelengios, Relatore: Prof. Arch. Silvio Van Riel, Correlatore: Ing. Luca Lardani, Tesi di Laurea in Consolidamento degli Edifici Storici - Dipartimento di Restauro e Conservazione dei Beni Architettonici].

The first part of this study investigates the historical context and the social and political circumstances in Hermoupolis and the whole of Greece, in the period right after the Greek Revolution of 1821, which is when the Quarantine Building was built.

Also, the architectural structure of the building complex is described as well as the several alterations and changes that have occurred through the ages in its morphology and function.

The materials and structuring are analyzed; the static load carrier of building is surveyed. In addition the building's pathology is investigated and the appropriate restoration methods are proposed.

The more recent part of this study, conducted during 2011-2012, builds upon the findings of the earlier research and investigates the issues of use and development, and is presented here for the first time. The study of use and development has been conducted in collaboration with Eugenia Manta (architect). Ioanna Chalatsi (architect) participated in the presentation and illustration throughout.



Pic. 1 Main Facade of the Quarantine Building

The significance of the Quarantine Building

During the times when the transportation of people and commerce was conducted almost exclusively through the sea **quarantine buildings (Λαζαρέτο - Lazzaretto),** were usually built near the coast or in some cases on some adjacent small island. There, newly arrived travelers and commercial goods would spend a period of time in order to prevent transferring and spreading new viral diseases.

There are two possible etymologies regarding the term Λαζαρέτο (Lazzaretto): The first one is associated with Lazarus, the leper that appears in the biblical parable, who is also the patron saint and protector of lepers. The second is associated with Santa Maria di Nazareth in Venice, which was the original Lazzaretto, the name of which was subjected to a series of verbal distortions [Nazareth>Nazaretto>**Lazzaretto**].

During the first years of the Greek Revolution, cholera and other contagious diseases take the form of epidemics in Greece. The areas with the higher infestation risk were the ports and harbors as well as the islands, mainly because a large number of refugees that took refuge there. In this fashion refugee from Asia Minor, Chios, Psarra as well as several other islands emigrated to Hermoupolis. At the same time Hermoupolis becomes center of commerce and transit between the east and the west.

After the cholera epidemic of 1824 in Athens and of 1828 in Peloponnese, Greek authorities were forced to implement preventive health measures as defense against infectious diseases. These measures consist mainly in the construction of buildings that place travelers, crews, merchandise and even entire ships in quarantine. It should be noted that in the rest of Europe such facilities quarantine buildings operate already for centuries.

Originally the purification process took place in the small island of Agios Nikolaos which is near the east side of the harbor. Later, temporary facilities were set up near the current location of the Neorion shipyard (Chios Archive, Vlahogiannnis). In 1834, architect J. Erlacher undertakes the task of designing the quarantine building, with a budget of 150.000 drachmas. But the project does not advance. The project is then assigned to Wilhelm von Weiler, a captain of the engineer

corps, with a budget of 120.000 drachmas (General State Archives). Pidali bay, a few kilometers from the city center and at a safe distance that ensures the protection of the island, is the site designated for the building of the Quarantine Building.

Anyone arriving from Turkey, Egypt or other regions that had suffered cholera epidemics or are high risk areas, were obliged to stay at the Quarantine Building and undergo the purification process.

During the first half of the 19th century the facility appears to be very active but soon seizes to function as a quarantine building and becomes the site of many different activities. It is quite telling that as early as mid-19th century we come across testimonies of the building's abandonment and the need for repair. During the Cretan Revolution (1866-68) the building provides shelter to Cretan refugees (Patris, ς, n285). In 1881 there is a proposal for the building to be converted into an archeological museum that will host the findings from Delos (Patris, ις, n791), but in 1886 it actually functions as army barracks (Hermoupolis Municipal Archive). Towards the end of 19th century it changes function again. A wall across the central yard splits the building complex in half. The southern part is then used as a prison (Elios, ΙΘ, n479) while the northern part becomes a psychiatric ward.

These were the last actual functions that the building complex in the area of Lazareta served. Nowadays the evidence of abandonment and looting are ever-present throughout the whole of the structure.

Analysis of Architecture - functionality

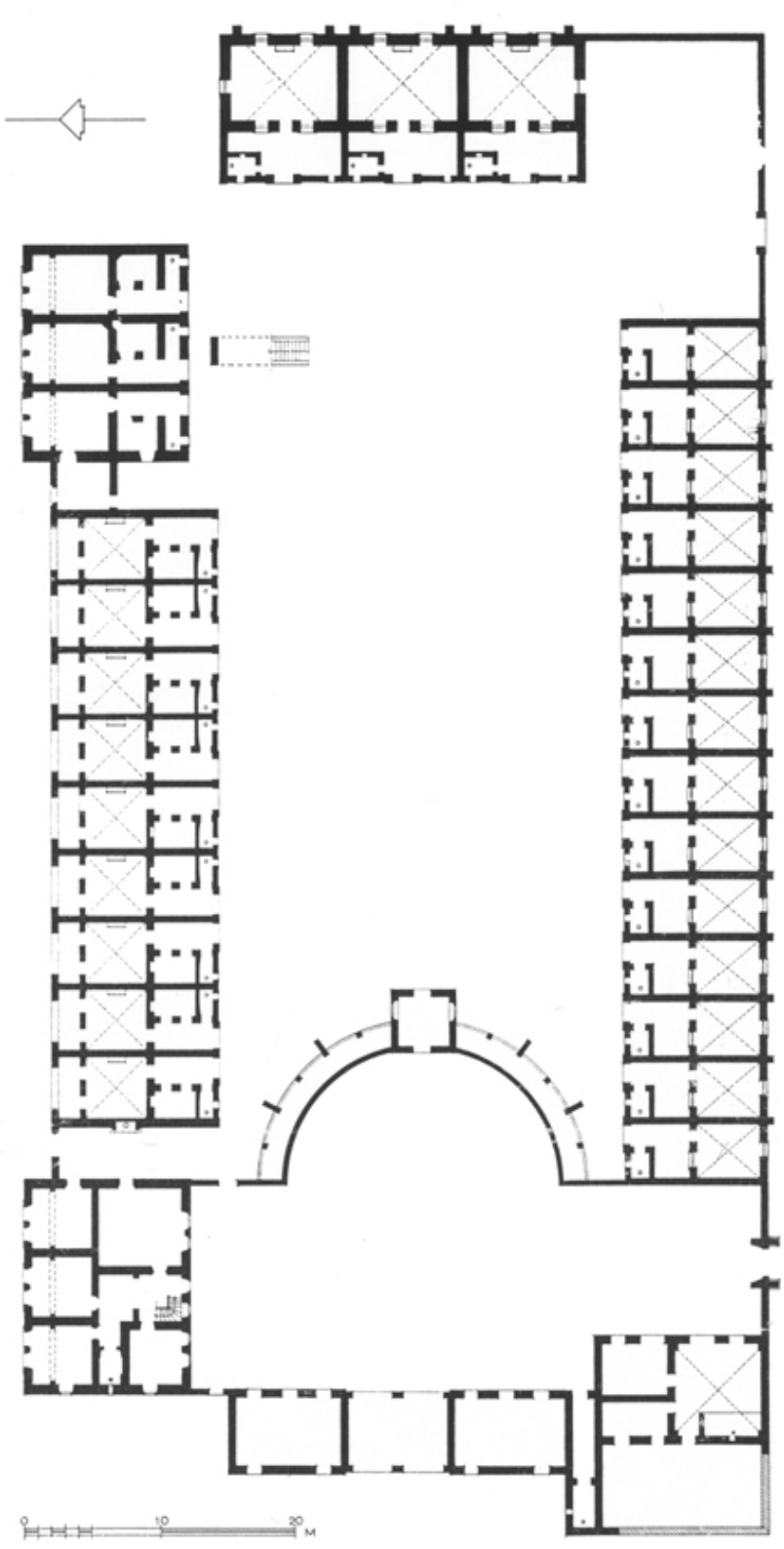
The original form of the Quarantine Building can be seen in the 1838 plan that follows and it helps us fill in several morphological elements that have since been destroyed. The building complex is arranged around a rectangular courtyard with approximate external dimensions 110x55 m. There were multiple gates, each serving a different function. The facility's employees used the entrance on the west side of the southern face. The northern gate is used by the travelers to directly access the quarantine area. There is also another auxiliary gate on the same side as well as a third gate on the eastern side of the southern face which most likely functioned as the exit from quarantine. Finally, an opening on the western side with two arches provided access to and from the pier. On the southwestern and the northeastern corner there were two large fence walls. In that areas there were two more buildings, only one of which is still standing today and is known as the “telegraph office” (Travlos 1980).

Inside the courtyard a semicircular building functioned as filter between the purification space and the administrative facilities. On the western side we find offices, the janitor's residence, the kitchen etc. The eastern side was used exclusively as the quarantine area. The semicircular building has vanished after the more recent interventions (Travlos 1980).

The buildings of the complex take up the four sides of the large rectangular courtyard. The northern side, the one overlooking the sea, is made up of two two-storey buildings on the corners and one longitudinal single-storey wing in the middle. The remaining three sides that make up the rectangular shape are also single-storey structures. A section of the apartments on the southern side has been destroyed.

The rooms, 32 in total, are structured in a particular fashion. They are separate from one another and autonomous. Each one contains a bedroom area, a kitchen and a restroom. Each was also equipped with a fireplace for the winter months. The rooms on the northern wing are almost square-shaped with each side having an approximate length of 4.60m. Each also has a covered porch overlooking the sea. On the southern side the rooms are slightly smaller (4.00x4.60m) and the three rooms found on the eastern side significantly larger (5.50x8.00m).

The building complex is also equipped with a complete sewer system and vertical clay pipes installed inside the walls that gather rain water and reach a large tank underneath the northern wing.



Pic 2 Original form of the Quarantine Building (1838)

Design & Structure

The exterior of the Quarantine Building makes a very strong impression. The northern face is undoubtedly the most imposing and important one as it is the one visible from the city of Hermoupolis and overlooks the ships as they sail in the port. It is in fact the main face of the complex. The single-storey section of the building is built with stones finely crafted into rectangular shape with approximate height 20cm and width 35-40cm. nine arches made of red bricks with pilasters made of stone decorate the porches. There is also a smaller arched passageway which served as the entrance gate exclusively for the arriving travelers. Stripes made of blue and grey marble are used at the base, the crest as well as the edges of the arches on the northern face. The cornice beam is made of bricks and stone plates from Tinos using the corbelling technique and is covered with mortar. Its base is made from rough stones.

The two-storey buildings sport three double arches on the ground floor and three larger single arches on the first floor. The face has suffered severe alterations with the passage of time and the various uses of the building.

The internal face of the northern wing presents special interest. Four double arches and a single arch lead to the nine rooms of the wing. These arches are constructed with plinths and rest on stone pillars. The rest of the wall is made of rough stones in the familiar fashion and has been almost completely stripped of mortar. Small arched openings on the wall serve the purposes of ventilation and illumination of the latrines while red plinths trace the outline of these openings. The other internal faces of the complex are similar to this one and all present various degrees of alteration, degradation and looting.

The staircase that goes up to the first floor of the eastern tower presents special interest. It is external and offer open access to all three floors of the first floor. It is made of stone and rest in quadrant arches. The steps are made of marble. This structure emphasizes the monumental aspect of the building.

2. Masonry

The support structure on the external walls of the buildings is made of stonework that is ninety centimeters wide at the basement level, seventy-five at the ground-floor and sixty at the first floor. The internal bearing elements are also made of stone and vary between fifty and sixty five centimeters wide.

The walls' thickness diminishes gradually from one floor to the next proportionately in relation to the lessening of the load.

In the internal spaces arches that support the structure are employed in order to achieve the desired spatial arrangement wherever such support is required.

Arches that function as openings in the internal as well as the external walls of the support structure are employed throughout the whole complex. These arches are constructed with either stone or bricks, depending on the position of the opening and the architectural style.

The northern face is built with rectangular stones which are visible. The other faces are built with irregular stones which are bound with mortar, and used to be covered with mortar as well.

At the corners of the walls quoins are used that strengthen the whole structure. The arches made of stone were also covered with mortar, while the ones made of plinths were not and were visible. All the internal spaces were covered with mortar.

3. Ceilings – Floors

The structure of the ceiling and floor surfaces we see in the single-floor buildings is also of special interest.

The ceiling in the bedrooms is covered with a row of cross domes while the ceiling of the kitchen and restroom was a single dome-like structure. Domes also cover the porches found on the northern face. These are constructed entirely of stones and are supported by the external support structure. From the exterior the cross domes appear as a single rectangular surface and are covered with cement mortar. The structure of the domes on the other hand is clearly visible and they also function as terraces. On the inside, the domes and cross domes are covered with mortar. The floors of the internal rooms are covered with cement-tiles and have a chessboard pattern. Similar cross domes have also been used to cover the water tank underneath the single-storey wing of the northern face.

The floors and roofs found in the two two-storey buildings are much more structurally conventional. They have wooden floors that consist of the main crossbeam, with rectangular section of 16x14 cm, and between them axial distance which ranges between 45 and 65 cm. The top layers of the floor, planks 2-3 cm thick, are attached with nails vertically on the main crossbeam. At the low shoulder, laths are placed close (almost adjacent) to one another, creating a unified horizontal surface to be covered with a mortar layer. The entire floor structure is supported by the surrounding footings created by the difference in the thickness of the walls between floors. The diaphragmatic function of the floor is reinforced with tractors on the floor level.

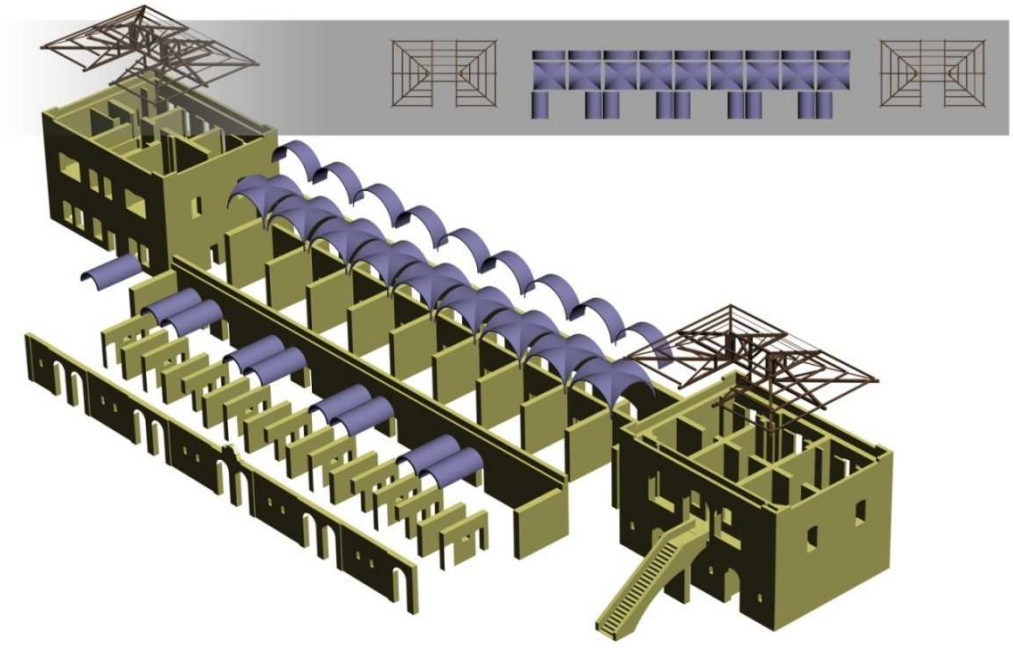
4. Roof

Two hip roofs, which cover a 16x12 rectangle, are found at the top of the two small towers. Wooden trusses form the supporting structure of the roof by transferring the loads to the supporting structure of the outer building structure. The trusses are connected to one another with purlins (14x14 cm cross section, 100 – 125 cm axial distance). The purlins support the windshields (with rectangular cross section 5x5 cm) , separated with a distance of 40 cm between one another and the windshields support a covering 2-3 cm thick. Finally the coating consists of byzantine-style tiles. We should also mention that on the side of the internal yard a “window” exists for lighting and ventilation of the roof.

- Walls with wooden frame

We should also mention the mixed wooden constructions of the building, also known as “tsatmades”. These constructions have wooden frames and the stanchions are interconnected with a web of horizontal wooden planks. This web is filled up with small stones, plinths, and mortar. The outer surface is covered a mortar coating. These walls are used in our around the closed balconies at the first floor of the eastern small tower. (Provelengios 2004)

Pic. 3 Digital representation of the Quarantine Building



Pic. 4 Structural analysis of the main building

Morphological and Typological degradation

Throughout the years the complex had to be re-adjusted in order to serve different functions. These changes significantly distorted the original character of the whole complex. Specifically, the semi-circular building, originally in the center of the yard , which separated the cleansing area from the administrative buildings has disappeared completely and has been replaced by a wall that was built to split the complex in half. Doors now function as windows and many

openings have been sealed. Also many (but fortunately small) auxiliary buildings have also been built in order to serve different purposes during later times. The wooden frames have almost been completely destroyed and only very few door-frames survive. Finally the arches on the first floor of the northern face have been split in half with bricks and additional frames have been added to them turning this way the sheltered balconies into rooms. As part of all the changes we should also mention that a temple has been constructed on the south-eastern side of the structure, which takes up three of the southern bedrooms as well as the entire section housed the kitchen and restrooms, thus leaving only the main room of the southern side unharmed. (Provelengios 2004)

Pic. 5 Digital representation of the Quarantine Building Originally

Pic. 6 Digital representation of the Current state

Pathology and damage analysis

The whole study was initially based on the geometrical survey of the entire complex and a study of its floor plans. This survey was then expanded to include the faces of the complex, documenting this way the most important section of the complex, the one at the northern side. In addition there was extensive photographic documentation that gave us the ability to recreate the four faces of the complex, with the methods of photometry and digital processing, recreating the buildings' materials, statics and pathology. This photographic documentation of the complex was then used as the basis for the detection, documentation and evaluation of the building's pathology

and its treatment. Also the static instability mechanisms of the building were documented and analyzed. In order to thoroughly analyze and restore the latter we also conducted a detailed survey of the static load carrier, walls, floors and roofs of the building, calculating its static capability. Finally the (quantitative and qualitative) extent of the damage was documented with attention to detail with the aid of digital means (photographs on dimensioned grid).

The overall survey of the building's exterior, that took place between 2002 and 2004, is a significant document in its own right and can be used as a point of comparison with the current condition of the building in order to identify and remedy the most critical elements in the structure of the building.

- Pathology

The overall condition of the building can be characterized as being between poor and very poor, with serious damages and alterations. The factors that contributed to the current condition of the Quarantine Building can be distinguished between natural – aging and disintegration of the structural materials – and human – destructive interventions on the original structure.

One of the elements that significantly burdened the building is the increased humidity due to its position next to sea. The northern face, which is more exposed to the sea and the wind and is not covered with mortar, presents obvious marks of erosion. We can observe deposits being formed underneath the decorative frame and on the edges of the small mass, which have led in some cases to limited flaking of the walls. The erosion of the mortar has also led to the localized collapse of stones and plinths in the frames and arches. The iron entrance gate is completely oxidized.

Human intervention is also added to the natural aging process. This mostly consists of failed repair attempts with the careless application of cement, the arbitrary filling up of cavities with stones and plinths but also instances of vandalism with spray paint, removal of stones and looting of the decorative elements of the building..

The interior of the building is also equally distorted by natural factors. The coating has disintegrated and become detached in most areas to such a degree that the surface appears almost entirely uncoated. In these areas where the coating has been removed, the stones have eroded and the mortar has disintegrated. We observe increased collapses of stones and plinths on the pillars and arches. We also observe is a small development of flora and microorganisms.

Human interventions are also visible in this area as well.

The two small sides of the building present a similar image, with eroded stones, disintegrated mortar and collapsed sections. Again human intervention is also observed.

- Damages and mechanisms of the support structure

The extensive aging of the building's structural and building materials, the changing weather conditions (wind – rain) combined with the complete abandonment, looting and invasion on many of its sections, which are still happening today, have accelerated many of the instability mechanisms which in turn have led to the formation of cracks, skids, deviations, crushings and finally collapses of wall sections, wooden floors and decorative elements.

The most salient mechanisms operate in the following fashion: At the south-eastern corner of the building, where the decorative frame is found, a diagonal cracks is visible that begins at the base of the truss and reaches a point at the wall where a stone has collapsed. This crack has occurred due to the horizontal force that the corner truss of the support structure exerts on the wall.

A similar mechanism has been activated along the facade of the north-western tower over the openings of the first floor. Here again the trusses of the roof have created excessive loadings. It is still at an early stage and manifests itself with dense vertical and diagonal cracks. If left untreated it may bring about deviation from the vertical and collapse of the stone structure.

The corners where the walls are connected are also critical points. Especially in this case where walls of different materials are connected. A collapse of relatively small scale (80x140 cm) that occurred because of the disintegration of the mortar was left untreated. With the aid of extreme weather conditions such as strong winds and heavy rain, it led to the collapse of a large section of the wall creating a gap of 300x500 cm. It also affected part of the main facade of the building with a deviation of the vertical.

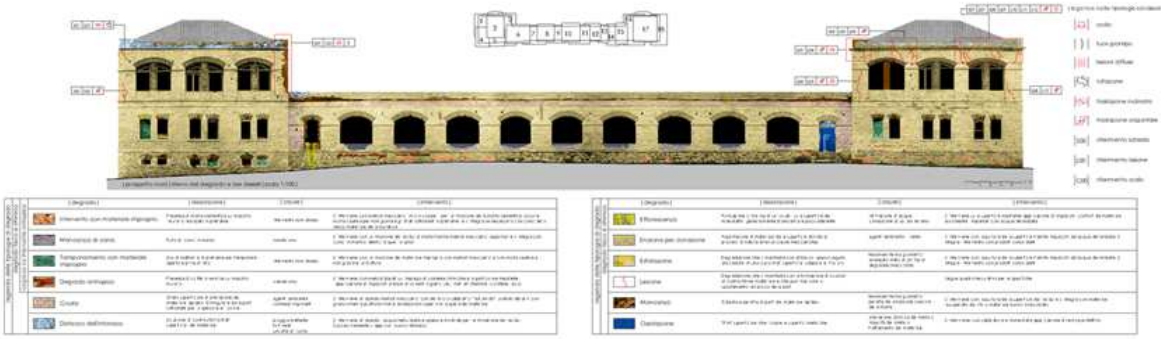
In similar cases of failure of masonry corner connections, each of the walls seems to react autonomously in relation to the charges it receives, resulting in vertical cracks, horizontal sliding and deviation from the vertical point of the quoins.

Also on the north face near the tractors at the bottom of the first floor we can observe vertical cracks directed upwards. The high loading of these post-tensioned elements in combination with the small cross section of the anchor pin, led to the insertion of the tractor inside the wall and to the creation of the cracks.

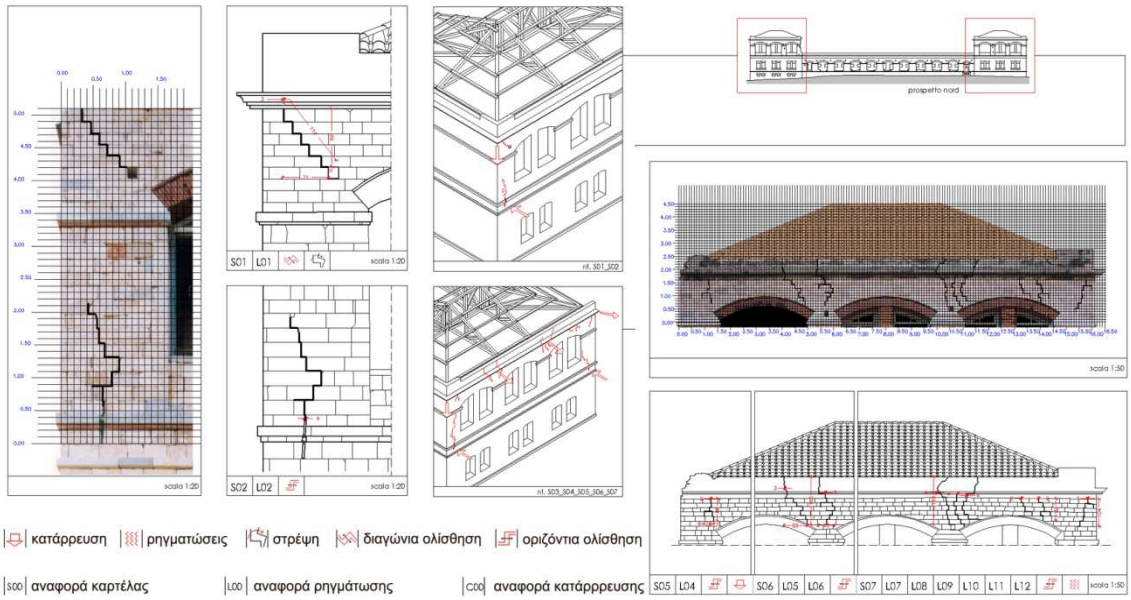
Another factor that contributed to the distortion of wall sections are the clay downspouts that are incorporated inside the wall. Due to this some sections of the wall are thinner and therefore weaker. In these sections we observe cracks, gradual deterioration and, eventually, total collapse.

Finally in the interior of the building we observe several problems at the wooden floors of the mezzanines and the roof, which are apparent not only at the mounting area with the surrounding walls but also on the entire surface. The incoming rain and humidity has caused the advanced disintegration of the wooden surfaces and many of them have collapsed entirely, diminishing this way their diaphragmatic function.

All these mechanisms are interconnected and can cause a chain-reaction and require immediate attention with appropriate restoration methods. If this planning and action is not realized immediately there might be a domino effect that may possibly lead to the collapse of entire buildings and to irreversible damage at the core structure of the building. (Provelengios 2004)



Pic. 7 North facade, pathology and damage analysis



Pic. 8 Damage analysis

Proposal for the Conservation - Restoration and Reuse

This phase is distinguished into two discrete processes that will occur in tandem to create the new face of the Quarantine Building and will transform it into a place of healing and well-being that will become a center of mild forms of therapy (thalassotherapy – hydrotherapy – aerotherapy – phototherapy

The first phase has to do with the conservation and restoration of the original buildings of the complex. The collection, study and evaluation of the data in our research have led us to a clear and specific methodology in order to deal with the pathology and static inefficiencies of the building.

These interventions aim at conserving the historical identity of the building and will restore the original morphological and typological characteristics.

Briefly the following actions are proposed: Removal of all the annexes sheds and huts as well as every addition that was made after the original plan of Weiler in order to serve the several different functions the building served throughout the years. Restoration of the northern wing to its original form and rebuilding of the wall sections that have either collapsed or been removed. Restoration of the plinth arches, stone pillars and decorative frame wherever that is necessary. Cleaning of the faces where there is deposit and salt build-up and signs of erosion.

Removal of the highly weathered mortar and of all the additions made in the rough restoration attempts of the past which will be replaced with the appropriate mortar that is compatible with the preexisting material and which will be administered in depth. Application of new coating.

Restoration and re-opening of all the windows, doors wherever these have been altered or covered up and installation of new steel frames. In addition, after thorough study and detailed calculations, taking into account the degradation of the materials throughout the years as well as the new demands and standards that the building will need to comply with, we propose methods that will allow the replacement and/or restoration (where replacement is not possible) of the support structure of the floor and roof.

The general state of the floors is quite poor and they cannot support any new loads. For this reason we propose reinforcement with double covering (supported with spiles) or the use of metallic elements H – HEA 220 – to create mixed flooring with both wood and metal. This option offers the advantage that the metallic elements will help cover the large holes and relieve the wooden planks. A third option is to remove the floor completely on the ground-floor of the north-eastern tower where lumber can be used to support the load and the openings.

The roofs of both towers are in a similar condition. The trusses are either reinforced or replaced. The purlins and horizontal supports that are inadequate are also replaced with new ones. Finally we also propose the replacement of the tractors with new ones and the installation of metal foils at the connection point in the corners.

The floor's diaphragmatic function is also further reinforced with the installation of steel rods that are connected to the walls.

These are all non-invasive, completely reversible interventions aimed at restoring the original morphology static integrity of the building. (Provelengios 2004)

The second phase has to do with the reuse of the complex as a whole. The image of the old Quarantine Building today is anything but flattering.

With the ambition to reinstate the complex to its past glory, the whole restoration process acquires the air of an architectural composition that will promote the reuse of the complex but also the renovation of the entire Lazareta area.

The very structure of the complex, with the repetition of its facilities-cells, stimulated our desire to revive the original function and update it into a modern, interactive version of it. A place of healing and well-being.

The aim of the architectural proposal is based on a clear distinction between the original structures and the new architectural elements; in order to avoid imitating the architectural style of the building's past as such a project would run the risk of transforming Lazaretto into a place of museum-like revival. Our intention however is to bring it into the world of today, while retaining the elements that made it famous, while combining elements of the historical past with modern architectural approaches. The new architectural interventions are characterized by the employment of modern materials – corten, black metal, cement and glass – which however carry a patina and would in no way downgrade the existing buildings. The new materials and the proposed arrangement of the spaces are in a constant dialogue with the preexisting structure and the retained architectural elements. The alternation and contrast between empty and full characterizes most of these interventions. The vacuum is achieved with the transparency of glass, while the full – sometimes stonework – with the use of oxidized metal surfaces.

The courtyard, after removal of the more recent modifications, walls and other auxiliary buildings, becomes again a shared space which incorporates the element of water. The south wing, already distorted by previous modifications, serves as a gallery of successive vaults offering shade to the bathers. In the former area of the administrative facilities, a new structure is created, that will house the reception and catering facilities, while the premises of the north-western tower will house the administrative facilities of the complex. The remaining ground-level buildings will function as bedrooms.

An extra addition in height will be made at the southern ground-level mass designed in such a way as to host the new bedroom wing, while the terrace on the western side will function as a open-air dining area.

Inside the courtyard, the outline of the missing semi-circular Weiler building is revived in an abstract fashion, providing access to the underground spaces of the Healing center. By opening

up the underground spaces underneath the courtyard we gain access to the underground water tank which s located under the single-storey wing of the northern face. The presence of water becomes redefined and the tank area can house healing facilities.

Finally we should mention the addition of new apartments on the northern side of the complex with orientation towards the sea and the center of Hermoupolis in a way that will not affect the monumental facade of the complex.

Pic. 9 Digital representation of the architectural proposal

Conclusion

The old Quarantine Building in Hermoupolis constitutes a characteristic example of the wealth of our cultural and architectural heritage. A building that was designed and built to serve a specific purpose and to have a specific use and which, through the years, and with all the socio-political changes served different needs. Each of those different uses has left its indelible mark on the building. The most dramatic effects though are caused by the current lack of use and neglect.

The systematic analysis of the complex, the documentation of its peculiar historical, typological, and morphological characteristics, the thorough analysis of its pathology and static problems that we have conducted and the methodology we propose for the refurbishment and reuse of the building constitute a significant effort to document the building's condition at the specific moment in time and to create the impetus to refurbish it, but also an important step towards rescuing and highlighting this unique monument.

The restoration of the old Quarantine Building, if combined with the restructuring of the whole Lazareta area and of the new marina near the complex may become a significant force of

development on the island of Syros which will open the possibilities for a new kind of tourism that will be active throughout the year.

Pic. 10 Digital representation of the architectural proposal

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