Heliopolis as a Heritage area, The Revitalization case study

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Abstract:

Heliopolis or Masr – Elgedida, is the same name of the small city which was established by **Édouard Louis Joseph, Baron Empain** (20 September 1852–22 July 1929). In 1906, **Empain** established a company Commenced in the same year to proceed with the building of the new town of **Heliopolis**, in the desert ten kilometers from the center of Cairo. It was designed as a ***"city of luxury and leisure",*** with broad avenues and equipped with all necessary conveniences and infrastructure; water, drains, electricity, hotel facilities, such as the Heliopolis Palace Hotel (formerly the presidential palace now) and Heliopolis House.

The recreational amenities included a golf course, racetrack and park. In addition, there was housing for rent, offered in a range of innovative design types targeting specific social classes with detached and terraced villas, apartment buildings, tenement blocks with balcony access and workers' bungalows. Recently, the Cairo Governorate officially launched many projects within the same period; mainly focusing on refurbishing squares and streets, restoration of facades.

However, having accepted and acknowledged the governmental intentions of the regeneration projects a question poses itself as to 'How the community perceives and cherishes those initiatives?'

More important questions are raised regarding the regeneration of Al-Korba, the case study that addresses the governmental attempt in Heliopolis recently.

It brings to light the dynamics enacted between different stakeholders. During work, we tried to set the urban regeneration principles in a discussion aiming at assessing the stakeholders' involvement versus their goals and measuring their satisfaction with the outcome of the project, while still posing the question of the meaning of urban regeneration to the local community and to alternative scenarios that could yield more successful outcomes.

The research methodology relied on several axes, the first axis is the axis of community communication with the population and convince them of the importance of the development process for residential buildings in particular and ***EL-Korba*** area in general, the second axis is the cooperation of government stakeholders concerned with preserving the area of ***EL-Korba*** such as Heliopolis district and the National Organization for Urban Harmony, the third axis is the focus on the intervention process to preserve and choose the best ways to preserve heritage buildings according to the laws of National Organization of Urban Harmony (NOUH), which was founded in 2004 in response to two recent laws: law no. 144 of 2006, which monitors

demolitions and promotes heritage building conservation, and law no. 119 of 2008, which prohibits the violation of heritage buildings and areas.
The most important results of the research are that community communication has an important role in strengthening relations between residents and stakeholders and facilitating interventions in the various stages of restoration, as well as the use of modern technology such as graphic programs to design an imaginary shape of buildings after their restoration, which had a major role in convincing residents of the importance of the restoration process. .

Key words:
Heritage, restoration, Preventive conservation, community communication

ملخص:
هيليوبوليس أو مصر الجديدة ، هو نفس اسم للمدينة الصغيرة التي أنشأها إدوارد لويس جوزيف، البارون إمبان (٢٠ سبتمبر ١٨٥٢ - ٢٢ يوليو ١٩٢٩). في عام ١٩٠٦، أنشأ البارون إمبان شركة بدأت في نفس العام في بناء مدينة هليوبوليس الجديدة، في الصحراء على بعد عشرة كيلومترات من وسط القاهرة. تم تصميمها لتكون "مدينة الرفاهية والترفيه"، مع شوارع واسعة ومجهزة بجميع وسائل الراحة والبنية التحتية اللازمة؛ المياه والمصارف والكهرباء والمرافق الفندقية مثل فندق هليوبوليس بالاس (القصر الرئاسي الآن) وهليوبوليس هاوس.
تشتمل المرافق الترفيهية على ملعب جولف ومضمار سباق وحديقة. بالإضافة إلى ذلك كانت هناك مساكن للإيجار، تم عرضها في مجموعة من التصميمات المبتكرة التي تستهدف فئات اجتماعية محددة مع فيلات منفصلة ومتدرجة، ومباني سكنية، ومجمعات سكنية ذات بلكونات، ومسكن للعمال. أطلقت محافظة القاهرة رسميًا مؤخرًا العديد من المشاريع في نفس الوقت، مع التركيز بشكل أساسي على تجديد الميادين والشوارع وترميم الواجهات.
ومع ذلك، و بعد القبول والاعتراف بالنوايا الحكومية لمشاريع إعادة الإحياء، هناك سؤال يطرح نفسه حول "كيف يدرك المجتمع هذه المبادرات ويقدرها؟"
تثار أسئلة أكثر أهمية فيما يتعلق بإعادة إحياء الكوربة، حالة الدراسة التي تتناولها المحاولة الحكومية في مصر الجديدة مؤخرًا.
هذه المحاولات تسلط الضوء على التعاون الذى يتم تفعيله بين مختلف الجهات المعنية بذلك.
أثناء العمل، حاولنا وضع مبادئ التجديد الحضري في مناقشة تهدف إلى تقييم مشاركة الجهات المعنية مقابل أهدافهم وقياس مدى رضاهم عن نتائج المشروع، مع الاستمرار في طرح سؤال حول معنى التجديد الحضري للمجتمع المحلي والسيناريوهات البديلة التي يمكن أن تسفر عن نتائج أكثر نجاحًا.
منهجية البحث اعتمدت على عدة محاور، المحور الأول هو محور التواصل المجتمعى مع السكان واقناعهم بأهمية عملية التطوير للعمارات السكنية بصفة خاصة والكوربة بصفة عامة، المحور الثانى وهو محور تعاون الجهات حكومية المعنية بالحفظ على منطقة الكوربة مثل حى مصر الجديدة و الجهاز القومى للتنسيق الحضارى، المحور الثالث هو محور التدخل للحفاظ واختيار افضل الطرق للحفاظ على المبانى التراثية وفقًا لقوانين الجهاز القومى للتنسيق الحضري (NOUH)، الذى تأسس عام ٢٠٠٤ وصدر عنه قانونين حديثين: القانون رقم ١٤٤ لسنة ٢٠٠٦، الذي يراقب عمليات الهدم ويعزز الحفاظ على المباني التراثية، والقانون رقم ١١٩ لسنة ٢٠٠٨ الذي يحظر التعدي على المباني والمناطق التراثية.

وأهم النتائج الذى توصل لها البحث أن التواصل المجتمعى له دور مهم فى تعزيز العلاقات بين السكان والجهات المعنية ويسهل عمليات التدخل فى مراحل الترميم المختلفة، كذلك استخدام التكنولوجيا الحديثة مثل برامج الجرافيك لرسم شكل تخيلي للمبانى بعد ترميمها كان له دور كبير فى اقناع السكان بأهمية عملية الترميم.

كلمات مفتاحية:
تراث، ترميم، صيانة دورية, تواصل مجتمعى

Historical Background:

Egypt is a treasure trove of irreplaceable history and inestimable heritage of various historical layers displaying the lingering old attributes that may be observed as a vivid value in some areas even now. The continuing Egyptian suburbs of the 19th and early 20th centuries are testimonies to the value of realistic and lifelike contemporary legacy. It may be found in this typical suburbia in a variety of Egyptian cities. These model suburbs may also be seen in a number of locations around Egypt, including Cairo and a few coastal cities.

Most of the suburbs that were designed to cater to the bourgeoisie and rich of society have evolved into more diverse neighborhoods that now contain people from all walks of life. This is also subject to change as affluent people continue to flee the congested old suburbs for new suburbs where they want a large amount of space to escape the crowded streets and lively lives (Sims, 2010).

On the other hand, a vast number of unauthorized constructions, known as "red blocks," have sprang up all over the vacant area between and surrounding the newer suburbs. As a result, it is approaching and developing. This places extra demand on existing historic suburbs, necessitating a well-thought-out plan for long-term preservation.

Heritage structures and urban fabrics may be found in these suburbs, which have accumulated value through time. Despite their 'foreign' origins and influence, they become an integral part of contemporary Egyptian tradition and identity. Modern historical suburbs are worth preserving in a clever and inventive way, providing them with a sustainable conservation area without sacrificing their real traits and the uniqueness that identifies them entirely without ignoring the needs of their society.

The suburbs were introduced a few years later, in Ebenezer Howard's book Garden towns of Tomorrow, published in 1898. The city was built in the same manner as many other prominent and well-known garden cities. In the early twentieth century, western and oriental philosophies shared a unified vision in the suburbs of Heliopolis. Heliopolis Oases Company, abbreviated as HOC, and Cairo Electric Railways were first established in the suburb of Heliopolis, which was developed on the desert near Egypt's capital city, Cairo, as a garden city model.

Heliopolis Suburb phases:

The idea that passes through major alterations at various levels for Heliopolis suburb and its early growth may be comprehended.

Phase I: 1906-1914

During this phase, public amenities such as a racetrack, places of worship, marketplaces and shopping centers, the Hotel Heliopolis palace, industries for making bricks and other raw materials, road networking, and various types of housing such as villas are constructed.

Fig (1) Heliopolis Palace Hotel-from www.presidency.eg

Phase II: 1915-1925

During this phase, public amenities such as a racetrack, places of worship, marketplaces and shopping centers, the Hotel Heliopolis palace, industries for making bricks and other raw materials, road networking, and various types of housing such as villas are constructed.

Fig (2) Race track-from internet, www.egy.com

Phase III: 1926-1937

The Heliopolis northeast of the ancient center was developed in the years that followed. The buildings featured in this were Art-Deco in style and were extremely lavish, particularly the palaces and other decorative and residential structures. Growth and development took happened in the northeast direction from the historic center.

Fig (3) Heliopolis Oases Company, from internet: www.egy.com

The Heritage Buildings Registration:

In Egypt, two government authorities are responsible for overseeing Egyptian heritage. According to statute no. 117 of 1983, the first authority is the Supreme Council of Archaeology, which is responsible for the legacy of Ancient Egtptian, Coptic, and Islamic architecture. Buildings from the 19th and 20th centuries are not considered historic structures under this regulation. The second authority is the National Organization of Urban Harmony (NOUH), which was founded in 2004 in response to two recent laws: law no. 144 of 2006, which monitors demolitions and promotes heritage building conservation, and law no. 119 of 2008, which prohibits the violation of heritage buildings and areas. These two regulations are mostly concerned with Egypt's contemporary heritage suburbs from the 19th and early 20th centuries. The following Fig. shows the listed Heritage areas, and it's level of listing.

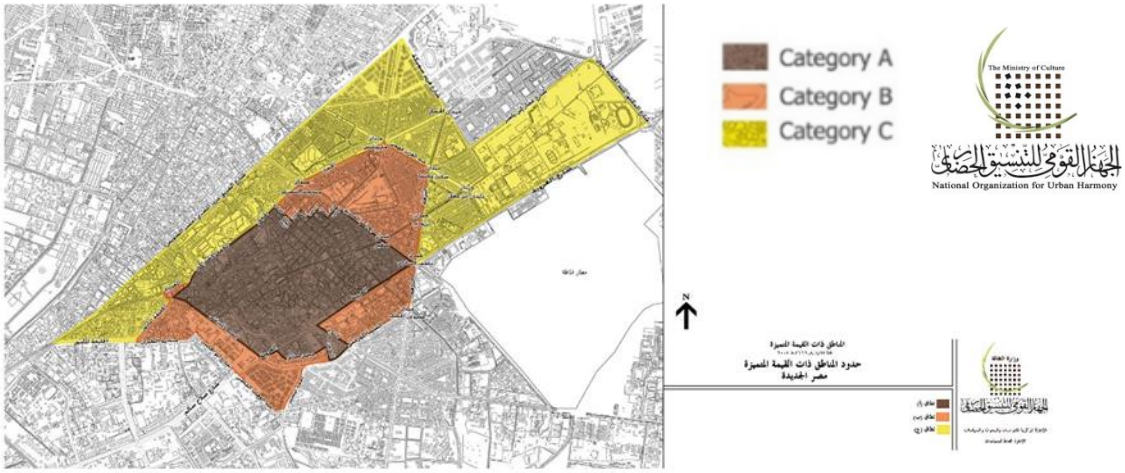

Fig (4) The boundaries of regions of outstanding value, from National Organization of Urban Harmony (NOUH) maps

The NOUH also suggested a list of most of the Egyptian cities with distinctive buildings. According to NOUH the listed distinctive buildings are classified with their respective values

A, B or C. These values represent the significance of these buildings and their value, also it measures the possibility of intervention. (NOUH, 2010).

- Distinctive Value (A): it is considered as a maximum protection zone and distinctive buildings highest number which resembles the area's heart or the older core. Without any external or internal modifications, the restoration of a building is likely.
- Distinctive Value (B): these include the buildings which are lesser district as compared to A category and resemble the expansion and growth of suburb. In internal modifications, a certain degree of flexibility is permitted and at the same time, external modifications of such buildings are not permitted.
- Distinctive Value (C): it is considered as a zone of transition between the areas of maximum and minimum protection and zones which are ordinary with maximum changing flexibility which include renovation or either replacement. To reach demolition more flexibility is allowed during the retaining of buildings face and their structures. The complete and thorough internal rehabilitation of buildings is allowed

The case study of this paper is one of the Heritage listed buildings in Heliopolis.

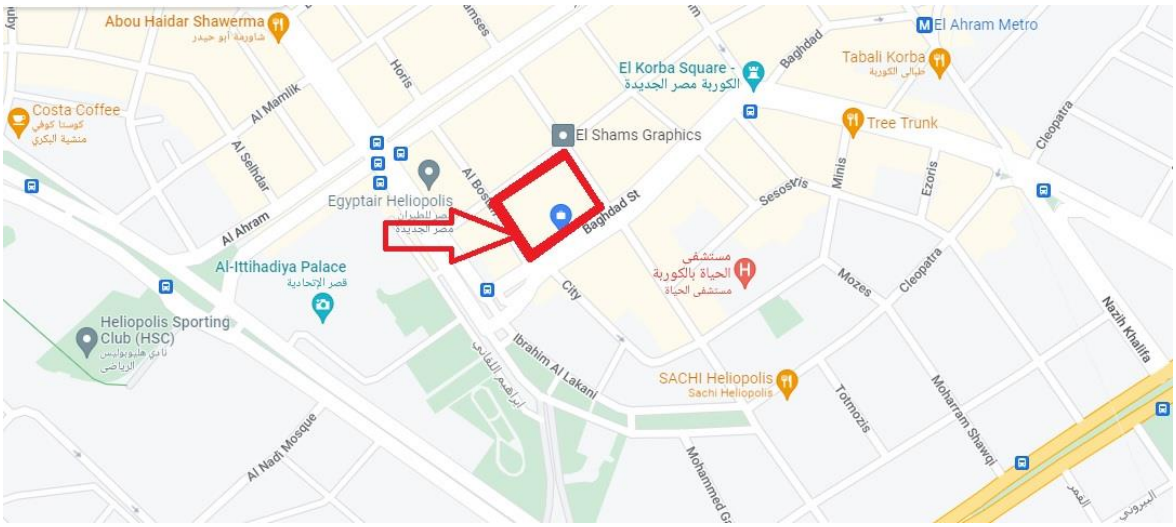

Fig (5) the location of the case study, at Baghdad Street, El-Korba

Problems:

The main problem of ***El-korba*** buildings is that people left them and moved to new cities out of Cairo, and because of the very low cost of rent, they kept it closed instead to leave them to other people, and because of that, there are no maintenance for the closed apartments which caused different damages to the buildings, also the people who is still living there closed the balconies to have more internal spaces, even one of them built a swimming pool in the balcony without isolating the floors which resulted in huge damages to the concrete floor, adding to that putting the air conditions on the facades which resulted damages to the decoration and plasters because of water that coming out from air conditions, also there were more than 24 families living in the workers rooms on the roof of the building, and they al using only one bathroom, throwing their rubbish on the roof of these rooms. Another problem

was the over paintings, because the buildings are in front of the presidential palace, so they were painted every while with different colors to look cleaned. Also the residents of the buildings did not care about making gutters to drain rain water and didn't care about Sewer pipes which led to damage to the decorations and plaster.

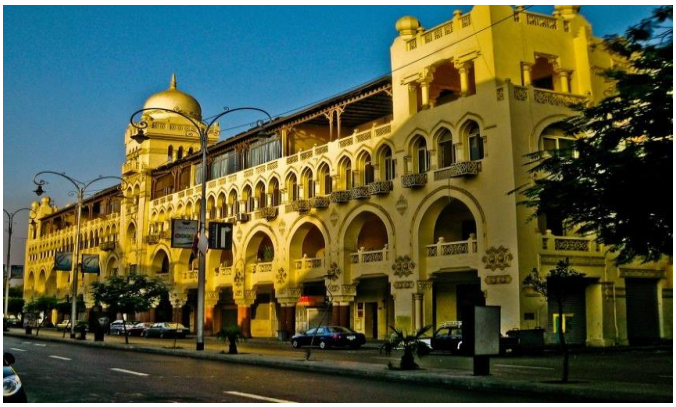

Fig (6) a façade in Heliopolis covered by air conditions, wires and advertisements also closed balconies by residents.

Fig (7) deteriorated stucco by water comes out from air conditions

Fig (8) destroyed concrete ceiling because of transferring the balcony to swimming pool without isolating the floors

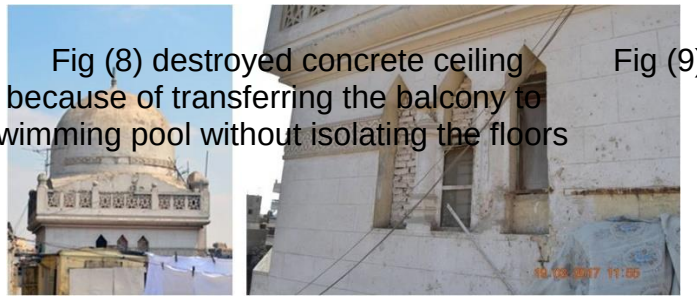

Fig (9) Closed windows in the dome by bricks


Fig (10) the buildings' roof covered by rubbish

Fig (11) the overprinting's layers


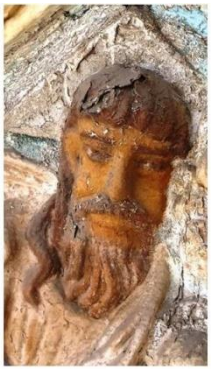


Fig (12) overprinting's layers by oil colors at Maronite Church


Fig (13) Black hard crust on a face of statue at Maronite Church

Restoration plan:

The restoration plan aims to restore the facades of the heritage building to its origins as possible as we can, maintaining the same spirit of the architect who designed the building according to the laws of National Organization of Urban Harmony (NOUH), which was founded in 2004 in response to two recent laws: law no. 144 of 2006, which monitors demolitions and promotes heritage building conservation, and law no. 119 of 2008, which prohibits the violation of heritage buildings and areas.

First step:

The first step was the most difficult one, as it was how to convince the residents of the buildings to remove the added parts and to remove the air-conditions that distort the facades

of the buildings, some of them agreed immediately when they saw the 3D design to the buildings after restoration, the others agreed one by one when they saw the result after the beginning of work.

Removing the added parts and air-conditions from the exterior facades:

It was the first step in the work site, we removed all the added buildings to the original buildings, air-conditions satellite dishes, advertising banners and wires were removed from the exterior facades, also we removed all the wood and metal that were closing the balconies

Fig (14) 3D proposal for the building after restoration, AutoCAD 2016.

Fig (15) Removing the added parts to the original building

Steam Cleaning:

Perhaps the most accessible and most widely used is steam cleaning system. Steam cleaners have been in use since the early part of the 20th century. Shaffer refers to the use of steam cleaners to clean a 'blackened frontage' and goes on to say ' …the steam process is unlikely to cause any more damage than washing with water or scrubbing with stiff brushes'. In truth, it is now recognized that steam cleaners cause much less damage than those methods.

There are, however, many different types of steam cleaner available and they should be distinguished from hot water washers. Hot water has a lower surface tension than cold and thus is more likely to clean more deeply and quickly.

This principle is at the heart of hot water washers which have diesel fueled boilers and a pump that delivers water at temperatures up to 90°C through a restrictive nozzle which increases the velocity of the water. This results in pressures of between 60 and 150 bar and water-use of between 5 and 20 liters per minute. These can be used in conjunction with detergents or other chemicals but in reality, this is rare for historic buildings. More often than not, hot water

washers are the method of choice for rinsing after chemical cleaning and for removing algae and other materials from paving

Some of the machines used in hot water washing can result in quite aggressive cleaning because of the high water pressure and volume they can deliver. Apart from these, other parameters which can provide some control include the design of the nozzle, the angle of spray to the surface being treated, distance of the spray to the surface and the duration of contact. All of these can be manipulated by the operator so it is possible to carry out careful cleaning using lower pressures, keeping the nozzle at a greater distance from the substrate and ensuring the nozzle spray angle is above

Steam cleaners can broadly be divided into small industrial/domestic units and the larger machines (such as Doff and ThermaTech) that are commonly encountered in building conservation. Steam cleaning system was used for cleaning the façade, one of the best benefits of steam cleaning is that it eliminates these nasty elements from facades, and when steam penetrates surface pores, it removes dirt, debris, bacteria, and other tiny elements with hot vapor molecules, adding that steam remove the layers of over paintings easily.

The Steam cleaning system is non-obtrusive and non-damaging to surfaces and substrates. It can clean rapidly and leaves the surface looking restored and fresh.

As the buildings' location is in front of the presidential palace, so they were painted every while to be shown clean to the visitors of the presidential palace, so the steamer was useful to remove all over paintings without any damage to the original plasters and decorations.

Fig (16) cleaning by steamer to remove the over paintings.

Mechanical cleaning:

After steam cleaning, some solid dust and cement on the surface couldn’t be removed by steam, so metal tools were used to remove them by mechanical cleaning without any liquids.

Fig (17) Mechanical Cleaning by using metal tools to clean the solid dirty that steamer couldn't remove it

Integration injection and consolidation:

X-ray diffraction analysis (XRD) was done to different parts of the original plasters, and from these analysis found the composition of the mortar was sand, gypsum and calcite.

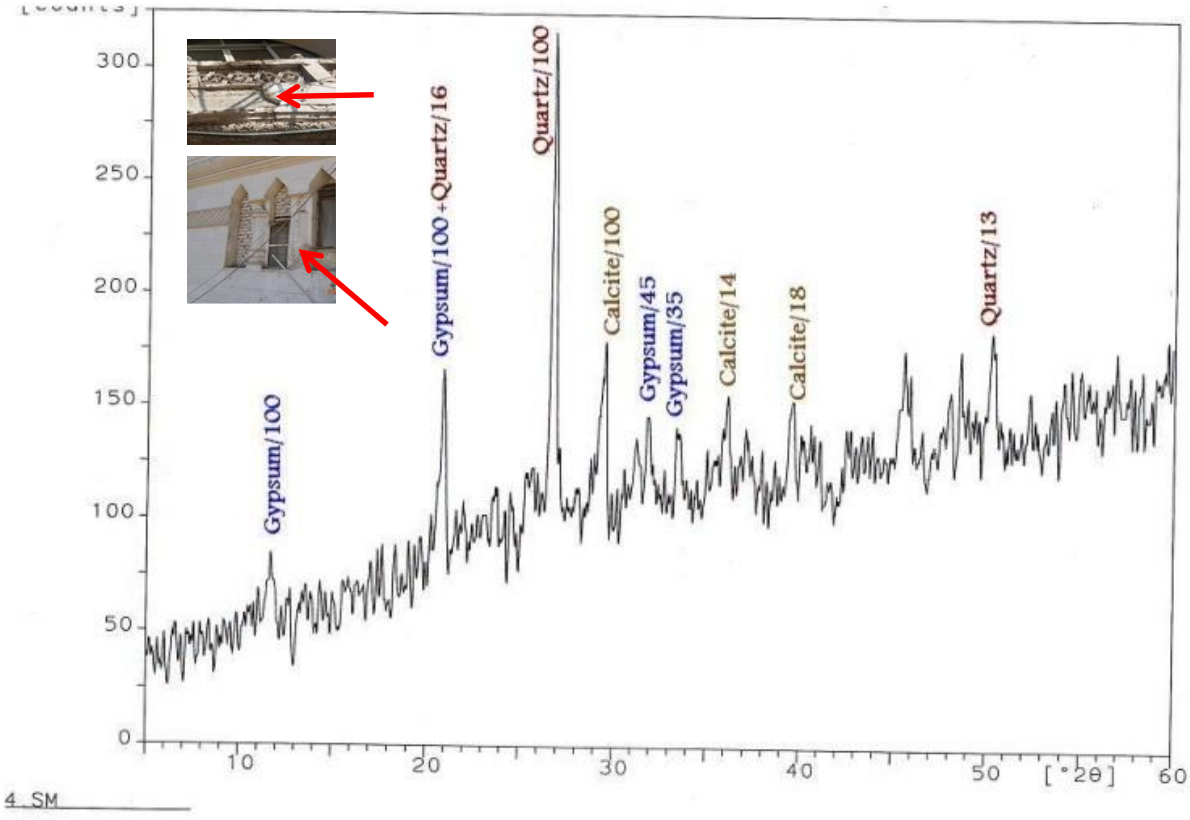

Fig (18) result of XRD to a sample of plaster mortar

N	Scientific Name	Chemical Composition	Chemical Formula	Reference Pattern	Percentage %
1	Quartz	Silicon Oxide	SiO_2	46-1045	76
2	Calcite	Calcium Carbonate	$CaCO_3$	05-0586	16
3	Gypsum	Calcium Sulfate Hydrate	$CaSO_4.2H_2O$	33-0311	12

Another ***X-ray diffraction analysis*** was done to different parts of the original mortar that covers the plasters, and from these analysis found the composition of the mortar was, gypsum and salt.

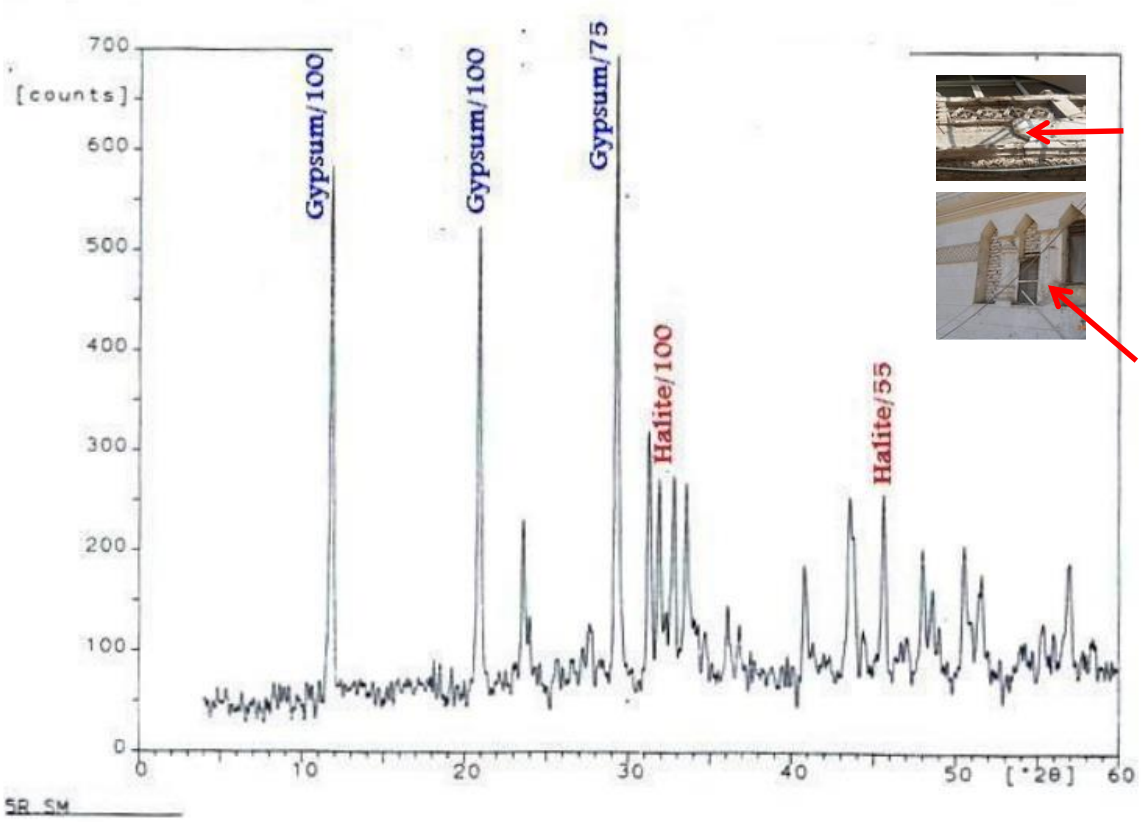

Fig (19) result of XRD to a sample of the mortar that covers the plaster

N	Scientific Name	Chemical Composition	Chemical Formula	Reference Pattern	Percentage %
1	Gypsum	Calcium Sulfate Hydrate	$CaSO_4.2H_2O$	33-0311	69
2	Halite	Sodium Chloride	NaCl	05-0628	31

The cornices, stucco decorations and plasters were highly damaged, and many parts were missed, so the missed parts were integrated by a mortar contains:

1 white cement : 3 gypsum : 10% Addibond 65 from CMB, and before putting the mortars, the walls were cleaned so well by water to eliminate any dust, after that were painted by a solution of 10% Addibond 65 to improve the connection between the new mortars and old mortars.

The big cracks in plasters were injected by a mortar consisting of white cement 1 : lime 1: 20% acrylic Acril 33 for the Italian company CTS, and this was after injection with water and alcohol to clean the dust inside the cracks.

The small cracks were injected by Acril 33 20%.

Also the voids behind the stucco decorations were injected by the same composition.

The cracks were injected by Acril 33 20%.

After that all the plasters and stucco cornices were painted by a solution 20% of Acril 33 for consolidation.

Fig (20) Integration of the missed parts of stucco decorations

Molds:

Different types of molds were made to have copies of the different lost decorations, as polyester molds for the different sizes of BABAWAT, silicon molds were used where there more decorations, which it has more details.

After that we had new copies from these molds by mortar contains of: 1 white cement, 3 gypsum, 10 percent Acril 33.

Fig (21) Polyester casting molds were made to parts that haven't fine decorations

Fig (22) Silicon casting molds were made to parts that have fine decorations

Final paintings:

After steam cleaning, we could get the original colors of the painting, and after many trails we could arrive to the colors degrees.

Fig (23) the front facade after restoration

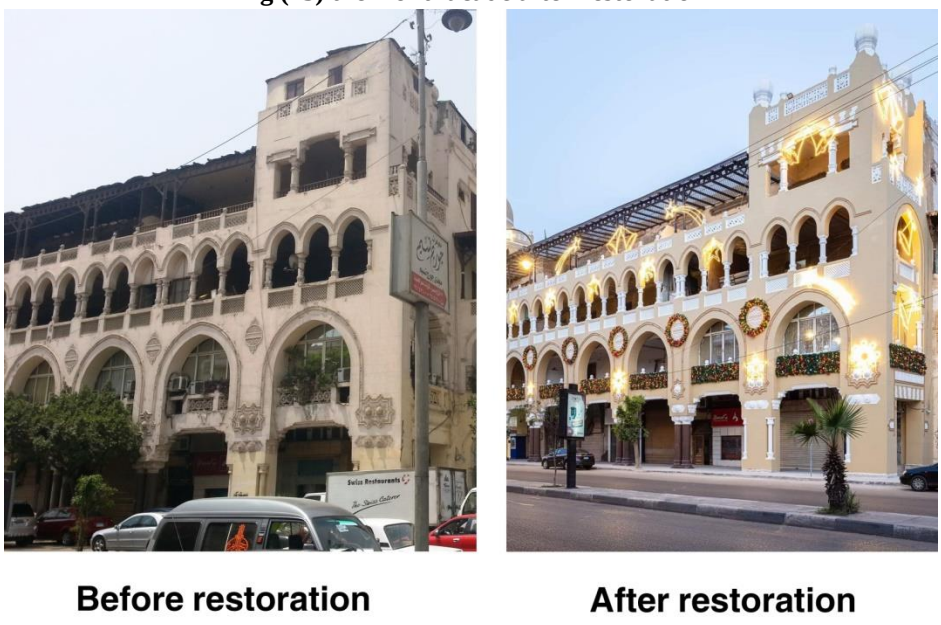

Fig (24) the front facade restoration

Fig (25) the corridor After restoration

Fig (26) The dome after restoration

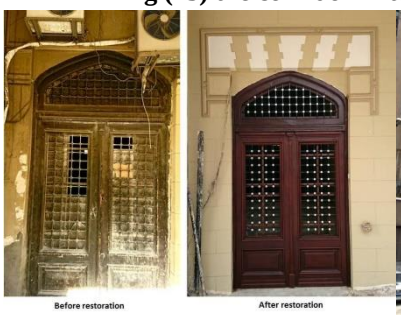

Fig (27) the door after restoration

Fig (28) the back facade after restoration

Before restoration

After restoration

Fig (24) the main façade after restoration

Fig (25) the side facade after restoration

The Conclusion:

The Heritage building must be restored and maintained continuously to avoid the irreversible damages that could be happen. The main problem here, were by people who are living on the roof, they arrived to 120 small rooms, every room had a family, and ignorance of the value of the buildings, they didn't care even about cleaning the roof, then the air pollution had effected the surface of the facades.

Communication with Community helped a lot firstly to spread awareness of interest in heritage buildings among the population, This, in turn, made the residents help by themselves in removing the encroachments and distortion from the facade of the building.

This is the first case study in ***El-Korba***, and from this case study Heliopolis district and NOUH took the steps and the color degree to be followed in restoration projects in Heliopolis in general.

Also it was the first time the steam cleaning system was used for cleaning the facades in Heliopolis, and it gave a great result for cleaning of the facades also for removing the over paintings easily without making any bad effect on the surfaces.

The materials, composition of mortars and the paintings gave a good result, as since 2017 the color didn't change, and the mortars sill in a good condition even there was bad weather with heavy rain sometimes.

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