
**Coexisting of the Islamic heritage with contemporary technological vision, while
preserving aesthetic values, architecturally and decoratively**

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Abstract

Coexistence is life and integration. And the heritage is a collection of legacies that have been passed on from one generation to the next.

As for the cultural heritage, it is the reform that we have reached the ongoing government service on these cultural legacies that are undergoing change in light of the urban development and modernity that the world is witnessing in the latest news.

We look at human history, through readings, artworks and archaeological visits with longing and reverence for its authenticity, then we feel like living through these historical eras, then we wander inside our imagination, and breathe its fragrant that full with secrets.

Who among us has not had this dream? The dream of coexistence surrounded by this beauty mixed with the fragrance of history.

How do you show us to live in these houses? Which are human legacies, and we should preserving it well, it is not for living, but they are models for analysis, study and sightseeing only.

Hence the idea of simulating it came out with its architectural plastic forms, and transform the idea of watching to the idea of the modern province with similar models of the ancient Egyptian Islamic houses that already exist, through the experience of designing a heritage residential and tourist complex with a contemporary technological vision, and with modern techniques architecturally and decoratively.

Residential Compound this residential complex consists of several communities, each of them contains several houses under the name of one of the well-known ancient houses, with the addition of the heritage commercial market part derived from the idea of the agency, with the addition of religious, entertainment and commercial places inspired by the heritage.

Hence the research question:

Is it possible to live the heritage with a contemporary technological vision, architecturally and decoratively?

Research objectives and importance:

1. Achieving the dream of coexistence with the Islamic heritage.
2. The use of modern technologies while preserving the aesthetic values, architecturally and decoratively, in designing and constructing a residential, heritage, tourism complex commensurate with the requirements of modern times.
3. Investing this residential complex for local and international tourism.
4. Reviving the traditional crafts that are about to disappear.
5. Providing various job opportunities.
6. Spreading cultural awareness of the Egyptian Islamic architectural and decorative heritage locally and internationally.
7. Presenting this Egyptian experience as a pioneering and internationally inspiring idea.

Limitations of the search experience: -

- 1- Design a layout for a heritage tourist compound with its various architectural elements.
- 2- Study the layout for one of the internal group which exists in the residential compound, we chose (Zainab Khatoun) as a model.
- 3- A review of how to use the technology of the age, on some architectural elements.

Key words - :experience- Islamic heritage- Contemporary Technology-esthetic values-Architecturally-decoratively

Introduction:

Civilization is a group of unique achievements that helped in better development of human life and inspired what came after it to maintain and then develop it. We Egyptians carry within us a civilization of 7,000 year even more. Architecture is not the summit of human civilization and urbanization, but also it is one of its most important manifestations, and it is one of the manifestations of civilization where most other sciences meet and promotion such as chemistry, sculpture, mathematics and physics. Therefore, architecture is a manifestation of civilization and it is a direct result of all human sciences such as philosophy, aesthetics, sociology, and logic as well as other applied sciences such as mathematics, physics, chemistry and trigonometry. Architecture is the most

prominent of these sciences because it is clearly visible and the first thing on which the eye falls, because the art of architecture and its merging with the rest of the sciences is what led to the development, prosperity and advancement of architecture.

We have to ask. What would we benefit from having it inside us if we did not know why the Egyptian engineer planned this line? Why his line is straight and not broken? Why refracted and not bent? (Straight is the line of duty, the curve is the line of beauty)

If we learn a lot from the unwritten building philosophy, which will play its role in inspiring us with better architecture derived from the old and extending in gradient to the modern. As architecture is group of straight, broken and curved lines that intertwine and coordinate in order to make between them a valuable space for service of man and his needs. It is sculpture in nature and must be in harmony with it.

lines in architecture is character for the architectural design to succeed, we must finally obtain from it useful sentence, verse or poem in form of lines, levels and figures that contain the aesthetic values of rhythmic kinetic harmonies with balance, unity and coherence with diversity, maintaining proportion and proportionality.

Architecture is not the walls, but the space between them (Hassan Fathy).

It is also the functions that this emptiness and architecture perform in its meaning, which is the adaptation of nature to serve humanity, and from here stems its sophistication, as it takes on the character of man and he is imbued with it. The spirit and entity of this inner emptiness affects and influenced by the human soul, so that soul shines with happiness, joy, tranquility, and serenity, and radiates an inner energy full of positivity. However, architecture remains in constant conflict with nature all the time with gravity, the direction of the sun, wind, light and sound, layers of the earth, earthquakes, friction, erosion, and others.

An architectural building is a living being, it is not inanimate object, as we think, and it is affected by sound, light, heat and humidity. The building is born, grows, ages, breathes, feels, suffers, gets sick and heals. It can also be embalmed and retained with its main features as it is in the restoration of monuments, creativity in architectural and decorative design is one of the characteristics of Islamic arts, which has always been characterized by aesthetic values stemming from the

philosophy of the Islamic faith. The more prosperous architecture, the more this indicates the flourishing of civilization in this era. There is a steady relationship between the progress, sophistication, and the flourishing of the architecture arts. That is why the monuments of Islamic architecture in Egypt were among the most important and prominent arts emanating from this great civilization that dominated the world with light, knowledge.

These unique architectural monuments are the focus of this research, but let's take a different path. Preserving, recording and restoring monuments is no longer sufficient to cover the depths of history. They are just mummification processes for viewing and studying. The question is no longer (how did we build the pyramids?), and no matter how much (why were they built?), because causality is the way to know the philosophy of architecture. Philosophy will definitely guide us how. So, let us search for the causation that will illuminate the path of knowledge. If we want to conceal any effect, we must first ask about (causality), for it is the guide who will make us learn the logic behind all this creativity. Let us ask why all this accuracy, craftsmanship, and the nice proportions and balance! Can you impress us? Is all this creativity just created to dazzle? If we think like that, we have reduced the effort and thought of the ancient creators.

Architecture is sculpture in the three-dimensional space that contains life. If the philosophy of the sculpture is to remove the appendages from the stone block, so that the statue appears as it already exists inside the block, and we remove the appendages. Architecture too, but in another sculptural form. We assume that the void already exists within it the architectural structure and we only highlight and define it.

We also look at this human history rich in aesthetic values through readings, works of art, and archaeological visits with nostalgia and reverence for its originality, and we feel a desire to live these historical eras and wander with our imagination within them to indulge in its mysterious fragrance.

Who among us did not have this dream? A dream of coexistence surrounded by this beauty and secrets mixed with the scents of history. How can we live inside these houses?

From here comes the question of this research: -

How can the Islamic heritage be experienced with a contemporary technological vision while preserving the aesthetic values, architecturally and decoratively?

Research Hypotheses: -

- There is a positive relationship between the use of modern technologies in the design and construction of a heritage residential complex and the achievement of the requirements of the times with a contemporary technological vision while preserving the Islamic aesthetic values, architecturally and decoratively.

Research objectives and importance:

1. Realizing the dream of coexistence with the Islamic heritage.
2. The use of modern technologies while preserving the aesthetic values, architecturally and decoratively, in designing and constructing a residential, heritage, tourism complex commensurate with the requirements of the times.
3. Investing this residential complex for local and international tourism.
4. Reviving the traditional crafts that are about to disappear.
5. Providing various job opportunities for graduates of intermediate and upper intermediate technical diplomas in their various specializations.
6. Spreading cultural awareness of the Egyptian Islamic architectural and decorative heritage locally and internationally.
7. Presenting this Egyptian experience as a pioneering and internationally inspiring idea.

Limitations of the search experience: -

- 1- Sketch design for a heritage tourist compound with its various architectural elements.
- 2- A review of how to use the technology of the age, with aesthetic values, architecturally and decoratively, on some architectural elements of the Zeinab Khatoun house as an example of applying this technology.

• Experience the Islamic heritage through a heritage touristic residential complex

The idea of simulating the existence of the Islamic heritage begins through the creation of semi-similar models of the ancient Egyptian Islamic houses that already exist, and through the experience of designing an integrated heritage tourism residential complex with a contemporary technological vision and modern techniques, architecturally and ornamented, which we will review in detail in this research. The compound starting from choosing its location, design and various architectural elements with a review of the use of modern technology in these elements

The compound: - The idea of the compound is based on several axes: -

Location - general design - components with the use of modern technology

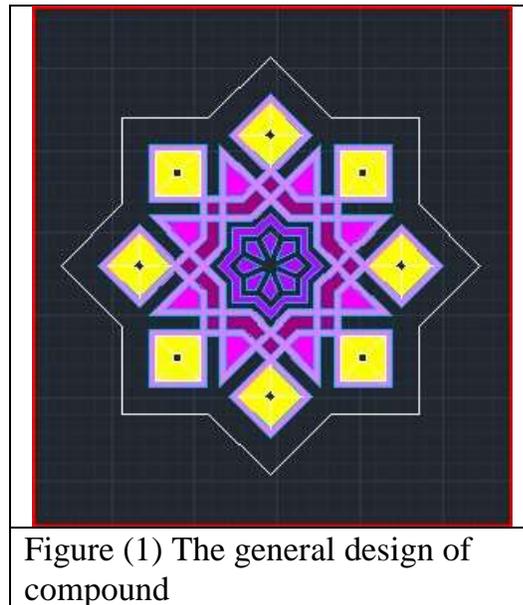
First: the location:

The location of this compound was chosen on the outskirts of the New Administrative Capital and within its borders. As considering it the new capital - in a country like Egypt with its rich history of various human civilizations - makes us look to Cairo, which speaks for itself with all power through its Pharaonic monuments, museums, obelisks, Jewish and Christian monuments and finally Islamic As in the Museum of Civilizations and the Religions Complex in ancient Egypt.

There is no doubt that the new capital must follow Cairo by affirming the same identity, especially as it is a gathering center for the far and near from around the globe, and even from all parts of the Arab and foreign countries. From here we must confirm the features of this identity through an archaeological model that combines originality and contemporary. Through model that confirms that our history is rooted in our roots wherever we set foot. With continuous architectural system that will continue to dazzle the world, and we must assure the visitor of the new capital that its modern architecture did not come from nowhere or transfer without an architectural reference, but rather it is the result of the succession of civilizations that accumulated and gave birth to this continuous and limitless creativity.

Second: The general Design:

Whereas we chose the Islamic heritage in this research as a chosen period due to its unique architectural richness, we decided inevitably the general design of the compound to be an Islamic heritage orphan (the eight star plate). A theme that expresses what is inside it, as it has already been used as an aesthetic decorative element in the Islamic ages. The various forms and designs are different. It remains an Islamic icon that combines the different ages.



Why was the eight star plate chosen as the layout of the compound?

The eight-pointed star has a history older than the history of all the monotheistic religions and has its connotations since ancient times. It is a symbol of the planet Venus in astrology and astronomy (the morning star) or the star (morning and evening), due to its brightness. It is the brightest at night, and it is the only one among the celestial bodies that can be seen shining during the day. These eight heads are, in fact, indications to all the geographic sides of the universe, original and sub-original directions, as they express inclusion and aim to confirm that God is present in every place of the universe. The octagonal shape consists of two rectangular, one of them refers to the water, fire, air, and earth. The second one refers to the four directions, and their overlapping mean that the powers of God are above all the forces of nature.

Because the Islamic art has been characterized throughout history by creativity and research in the depths of beauty, as it is rich in symbolic features that confirm

the Islamic identity and privacy with its balance of decoration and symmetry. Through the blending of form and content, and the confirmation of the spiritual symbol with the fulfillment of causality and function in architecture with aesthetic values, the whole becomes integrated.

Accordingly, Muslim artists excelled. They took nature as an imitation of their identity and the source of their inspiration. When we look to the sky on a clear night, we see a vast, dark space scattered in it by thousands of bright stars. And because the stars have their geometric shape, they achieved aesthetic values in this Islamic architecture by repeating the Islamic stars starting from their different sides that express in their content the number of prayer times, redundant prayers, or continuous praises in this infinite universe to their infinite repetitions.

These geometric decoratives, whose shapes, forms and techniques are magnificent, had a symbolic and aesthetically pleasing effect on Islamic architecture, and this is evident from the Kaaba, with its square sector, which forms a symbol of Islamic art in its completeness, balance and moderation. These are the basis of the eight star, as mentioned earlier, as it originates from "two squares equal in size and position in a certain way, we formed eight right angles so that the two axes of the square based on the string of the diagonal square fit. However, and the eight corners of the star can be ascertained by drawing a circle whose center emanates eight strings that converge with the circumference of the circle to give the heads of this star. With the content and the radiative picture in which we see the universe revolving in a single sphere, the origin of God is the one and only and that God is the center of the universe

The eight-pointed star is considered one of the most important Islamic symbols associated with greatness and tenderness. The eight-pointed star was also used as a distinct geometric formation in terms of convergence, symmetry and balance in the composition of windows, especially in Islamic times since the Umayyad era. The purpose of using is to reduce the light dazzling of the sun inside the courtyard or room. It also goes beyond the social aspect, as it hides women and what is going on inside the yard of the house or room from the eyes of passers-by when they are installed in places overlooking the roads, especially the ground floors.

The artistic vision of the Muslim is represented by the connection between heaven and earth, and these philosophical meanings appeared by the merging of two forms that represent heaven and earth, meaning that they were formed between matter and spirit, and between human thought and divine approach. Based on this,

some saw that the eight star plate expresses the concept of the universe and the creator of the universe in Islamic thought, and adopts the idea of linking the appraiser to the verse that speaks about the throne of the Most Merciful “and holds the throne of your Lord above them at the same time eight.” (17) Surah (el haqa) until the eight star plate became an icon for the literature expressing Islamic civilization.

Third: Compound components: In general, Islamic architecture can be divided, each according to his function, into:

(Religious architecture (represented in mosques) - war building (represented in walls) - a civil building divided into service buildings and residential buildings).

This compound consists of several axes, like any other in any other modern compound. However, we took care of it because it is a heritage residential complex that combines originality and contemporary and draws its main lines from the Egyptian Islamic architectural styles, with the use of modern technologies in its construction the use of models that already exist in Old Cairo. After making internal architectural modifications to suit the uses of man in the modern era - as we will mention later - in Zainab Khatoun's house as an example, with the selection of elements for the proposed interior furniture suitable for the modern use of contemporary man and that fits this style to achieve the temporal dimension of what is needed for a coexistence experience.

1: The compound main entrances, the outer wall, and the inner streets:

- As mentioned before, we will choose model inspired by the walls and gates of old Cairo, such as the wall of Gawhar El-Sikali which considering the first wall foundations for Cairo. After making some necessary adjustments to fit a wall surrounding a contemporary heritage residential complex and not surrounding a military castle as it wraps and surrounds the entire compound, and opens. It has a gate inspired by the (Al Foutuh Gate) established by Gawhar El-Sikali as the main entrance, and model (Zewailah Gate) as the main exit, and they are clad with artificial stone material.

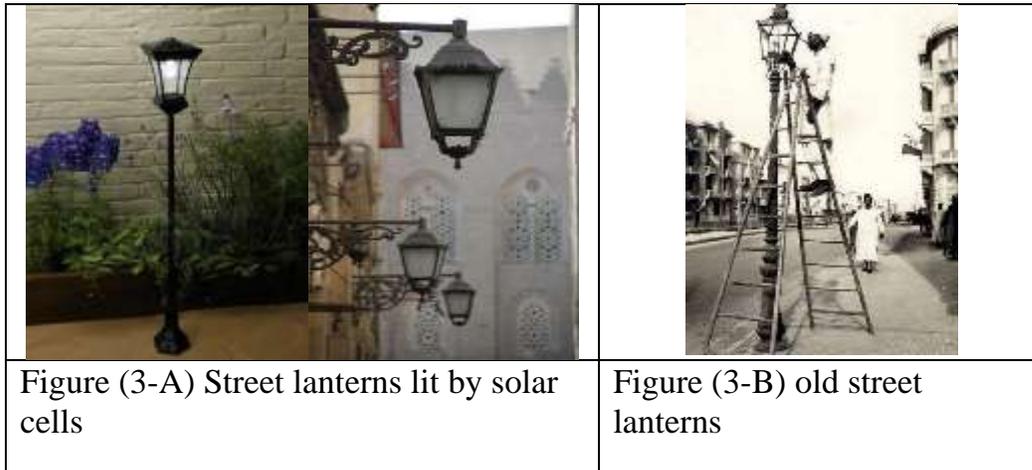


Figure (2) Gates of Fatimid Cairo

- As for the internal streets, they are divided into main streets and secondary lanes as found on Al-Muizz Street. Their floors are covered with (basalt tiles) or (black Aswan granite tiles) as an alternative to the stones used in the past, and horse-drawn carts are also used in the inner streets as kind of simulation life of this era in its details.

- The lanterns hung on metal cables and installed on the walls - with the same designs of lanterns that were used in the past - are used to illuminate the inner lanes of the compound, and likewise they are installed on poles to light the streets and main corridors,

- The facades of the walls of the houses are lit by lanterns fixed in the ground (up lights) directed to the walls of the houses with similar designs - inspired by the heritage -. All are provided with solar cells as a source of energy, and as a basic method of using modern energy-saving technology, as an alternative to oil-based lighting used in this era.



- Light (cylindrical red) granite blocks are used as curbstones for sidewalks. The floors of these pavements are covered (cladding) with granite tiles of the same type, except that they are prepared to form cloudy tiles without polishing.

- Wooden seats are distributed on the roads - in order to be used for comfort - and are made of (Beach pine) wood painted in a dark brown color with a dye (Al-Astor). These terraces are decorated with faience and mosaics, with designs and decorations inspired by the same style.

2: The center of the compound is in the middle of the Great Mosque inspired by the Fatimid style. We chose (Al-Aqmar Mosque) as one of the best examples of Fatimid architecture, with its unique façade decorations and its well-known architectural proportions and its distinction as it used architectural and decorative elements for the first time and was a pioneer, The existence of this mosque in the center of the complex refers that the Mosque was and still the source of religious and cultural radiation in the Islamic world.



Figure (4) Al-Aqmar Mosque

3: A medical center in a suitable area is attached to the Mosque in the form of **(the bimaristan)** as it was known by this name at that time, and one of the most famous of them is in the Al-Mansour Kalawun group on Al-Muizz Street.

4: The mosque is surrounded by **fountain** star shape, which is luminous underground water equipped with technology to work with digital technologies that control the movement of water with accompanying oriental music, provided its design with decorative aesthetic details inspired by the fountains that were in the middle of the courtyards of the houses in that time, a small bridge is made on each side to cross this fountain to reach the mosque square and the medical center.

Following the aforementioned fountain, on the outside, are shaded places for rest. Group of carts selling snacks with a design that matches this style surrounds it.

5: It surrounds the traditional commercial mall, which was known in the past by the name (Agency). Its shape is inspired by one the well-known agencies at that time, such as Al-Ghoury Agency. It provided that this agency includes shops and restaurants from the inside, a cinema, entertainment venues, and (shops) from the outside to display and sell gifts and heritage souvenirs with a live demonstration of how to manufacture them by hand to encourage the revival of traditional crafts. (A detailed presentation of this form will be provided by the agency) hereafter.

6: As for the housing complexes of this compound, they are equal areas located on the outskirts of the compound forming the eight star, so the number of these

compounds is (eight). Each cluster contains a repeating pattern from one of the pre-selected archaeological houses, the most famous of which are:

(Zainab Khatoun - Sitt Wassila - Al-Shabashiri - Al-Suhaimi - Al-Dhahabi - Al-Sinnari - Al-Hawari - Al-Karatliya). So that each wall of each of these eight groupings of Islamic homes is inspired by the architectural and decorative style that characterizes each home.

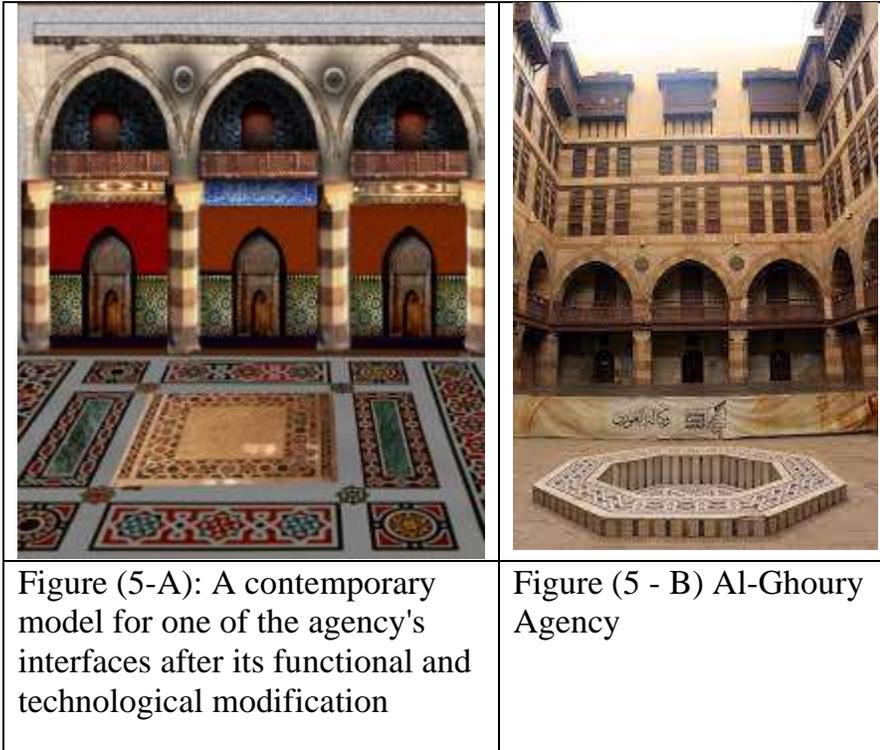
The house of (Zainab Khatoun) was chosen as a detailed example of one of these groupings, to be presented in detail later.

Forth: The agency (the mall): -

Agency is the type of service buildings -that have been referred to before - the agency in the commercial term in the Islamic world. They are major commercial stores which were owned by one merchant or one family and are known by the name of their owner. The agencies were established in the Fatimid, Ayoubid and Mamluk eras, and their numbers increased during the Othman era.

We find that the agencies in the Ottoman era - in general - consisted of a rectangular or square-shaped middle courtyard surrounded on the ground floor by a group of vaulted ceilings and shops, and the entrance of the agency is characterized by geometric stone decorations. Then (gendarmes) that are usually roofed with two intersecting vaults. It made the internal crops for storing goods and (stores) and displaying goods, while the upper floors made housing for the public. A fountain or cistern is attached to the agency that supplies the residents with the necessary water.

Al-Ghoury Agency was chosen for its simulation of the compound as a model from which the architectural elements of the agency are inspired, as follows:



The architectural elements of the archaeological agency and its counterpart in the compound: The shops: shop usually consists of a rectangular space and has a ceiling with a basement. It is covered with tiles. There are shops in each agency to display the goods in it and usually open to the main street that people take in order to attract them to buy the goods.

- It is the same principle that the agency will build on inside the compound, with shops opening outside to sell gifts and heritage souvenirs. Live demonstration of how to manufacture handicraft heritage products in order to preserve the revival of these crafts by training new workers from graduates of middle schools and technical institutes, and training new cadres to work in the manufacture of these heritage products.

1- The middle courtyard: All agencies shared the existence of the middle courtyard, and it was in a rectangular shape, and there were religious buildings in the middle for performing religious rituals.

- With the same principle that the mosque is built on in the center of the compound and surrounded by the agency, but in the octagonal shape inside the star plate.

2- Crops Stores: The ground floor in the agency consists of several stores, and the store consists of a rectangular area usually covered by a semi-cylindrical vault. The doors open to the courtyard in the middle of the agency.

- It is the same principle on which the crops stores are built, but they are used as spaces that open inside and have restaurants and cafes instead of storing goods in the past.

3- The lobbies: The lobby usually consists of two opposite (Iwans), between them being a central hall and windows and openings overlooking the main façade or the courtyard. The lobbies are usually located above the crops stores in the upper floors, as in the Al-Ghoury Agency, which has corridors for the purpose of housing the merchants who come to the country in commercial caravans to sell their goods. And then they store their goods in the crop stores and they live in the upper floors.

- It is the same principle on which the lobbies will be built, but used as an entertainment area, cinemas, gyms, beauty centers, and spa, inspired by the designs of the Mamluk public baths similar to the (Inal bath house) on Al-Muizz Street.



Figure (6) Inal bath house at Al-Muizz Street

Fifth: Residential compounds

The most important internal, external and decorative architectural design features in the residential architecture of this era:

1: plans: -

The general features characteristic of plans of these houses are distinguished in terms of composition, planning, distribution of elements and their relationships with each other. The features that fall under the following headings: -

Total architectural spaces - distribution of spaces inside the house - diversity of levels - openness to the interior.

2: The main entrances: -

They used the entrance known as (the broken entrance) in homes of this era. It is the type that forms broken lines so that it does not lead directly to the courtyard so that the passer-by will not be able to see what is inside the house.

3: Courtyard: -

The courtyard is an ideal solution that fulfills the principle of comfort from a climate and social point of view. The existence of the courtyard had a special importance in directing life inside and achieving the privacy necessary to secure the residents' freedom to practice their family life without compromising the sanctity of the home from the inside and achieving the necessary ventilation for it.

4: crops stores and stables: -

Crops stores are usually wrapped around the yard on the ground floor, and the numbers and areas of the crops and stables vary from house to house depending on the needs of its inhabitants. And what allows the home space commensurate with the spaces of other elements and their distribution.

5: the seat: -

Usually the seat is located on the first floor of the house, and it consists of a rectangular area on the southern side of the house and it opens to the entire

courtyard with an opening that rises two stories high from the north side to receive the gentle winds coming from the north, so we consider it a summer seat.

6: Halls: -

Among the most important features of the halls are the following:

Planning - its location from the four directions - the diversity of levels - the two openings of the two (Iwans) on the floor hall - the wall entries in the halls.

7: the openings: -

A- Arches:

Creating the shapes of the openings for these houses in the form of Arches, and the forms of these Arches varied, for example to:

- Pointed (Makhmous) – Pointed (in the form of a horse's shoe) - half a circle - a triangle – (Madaeny) and (Stringed)

B- Door openings:

- Crop stores and stables door openings: simple and not characterized by a specific shape.
- Halls door openings: all of them end with a straight threshold.
- Additional room door openings: the same shape and dimensions as the hall doors.

C- Window openings:

- **Lunar arches:** they are semicircular arches, including those that take a round shape (round lunar).
- **Al-Kandaloun arches:** This name is given to two openings for two adjacent windows or three windows, each of them has a circular arch or arch in the form of a horseshoe. The space between them is topped by a circular window opening.
- **Openings for lathed wood and (mashrabiyya) windows:** This type of window took a rectangular shape, and its sizes differed according to their locations. The spacing also differed between the turned wood for the windows.

8: Columns: -

Columns were not used as mainstays in these houses but were used to hold some arches.

However, some smaller columns have been used as an ornamentation element.

9: internal walls: -

The Egyptian Muslim architect did not separate the construction side from the architectural side, as he made walls of high heights thick bearing walls and needed to be strengthened with prominent shoulders. Then he worked to integrate them into the design of his interior architecture by making the spaces between these shoulders places for seating and built in cupboards inside the walls.

It was noted in the walls that there are frequent presence of certain elements such as:

Wood wrapper - Salsabil - wall cupboards - scrap marble tape - Sofa - al-shazuran.

10: The ceilings: -

Various shapes of roofs appeared in ancient houses, including: panel roof and covering floor - a wooden ceiling with sunken octagonal shapes - wooden ceiling with strips - a roof with a cross vault - a silk ceiling - a ceiling with intersecting wooden beams - a ceiling with hollow wood shapes (arquette) - Roof with a semi-cylindrical vault - ceiling with geometric fillings - stucco vaulted ceiling - flap ceiling (fenders) - roof with a (Shokhshekha).

11: Floors: -

One of the most distinctive features of flooring is the multiplicity of levels even in one room. Especially in the hall, where the architect was keen to make different levels of the flooring of the hall, the Iwans, and the inputs so that the hall becomes like an amphitheater that allows all the seated to see each other.

12: Raw materials used in different surfaces: -

The use of natural materials, each expresses its properties quite frankly. This led to the emergence of uniformity and complementarity in appearance and color as a result of the processor unit, which helped to create a coherent visual image.

13: Features of architectural decorative design in dwellings of this era: -

"Design in general is the art of functional form, for every design has a function and every utilitarian design has science, origins, roots, branches, and scientific and technological secrets. Therefore, design is not an art only, but an art and science, and if art and science are combined in one subject, it becomes a culture, and then design is a culture." A basic humanist and one of the artistic foundations, which is a process of creation, creativity and innovation. This is done by using structural visual elements such as point, line, color and texture, defining them and linking them to design foundations such as unity, repetition and proportionality to achieve an artistic work characterized by a utilitarian function as well as aesthetic and functional values.

If the straight line is the line of duty, then the curved line is the line of beauty, and beauty always stems from the inside, so the flower opens from inside the plant and not from outside.

The decorations stem from the spirit and philosophy of architecture, which is a feature of Islamic architecture, so each complements the other, with the harmony of music.

The ornamentation in Islamic architecture has its own aesthetic philosophy, which it narrates through Islamic architectural elements. It is a novel that tells the details of a Muslim's life in an abstract way.

The art of decoration includes a set of rules derived mainly from the elements of nature and its goal is to give architecture aesthetics and creative connotations that dazzle the viewer and create a visual appeal. As the environment surrounding man affects him from a physiological and psychological point of view, especially for the group of connoisseurs of the beauty of Islamic architecture. This art was used in Islamic architecture, and the Muslims were creative in it to the point where it was said that Islamic art is a decorative art. The viewer of Islamic architecture notes that it is not without decoration and inscription. (Henri Fucion) was very expressive when he said: "I do not mind anything that can strip life of its apparent garment and transfer us to its hidden content, such as the geometric formations of Islamic motifs. These formations are nothing but the fruit of a thinking based on

accurate calculation that may turn into a kind of diagrams of philosophical ideas and spiritual meanings. ”

It is an art very rich in symbols, from which what is universal is inherited from previous and neighboring civilizations. Some of them are local and related to the essence of the Islamic faith, Islamic jurisprudence and the philosophy of Islam. The Muslim artist has excelled in loading the decorative elements of their



Figure (7 - a) architectural analysis for Geometric motifs

botanical, written and geometric types with the contents related to his faith and



Figure (7-b) Examples of the distinctive decorations of Islamic homes

philosophy. However, the geometric motifs in particular played a major role in carrying the contents related to belief and jurisprudence. The Muslims were able to extract geometric shapes and were creative in that and invested them in design and aesthetics through the requirements and data of each era.

1-Geometric motifs: -

From here, we start with the geometric motifs, as the Muslims were able to extract geometric shapes and were creative in that, where decoration has become one of the basic elements complementing the architectural style in Islamic art. The

Muslim artist dealt with geometric shapes and the science of numbers as a mathematical expression that reminds us of the ancient models that appear during the world of symbols, and for this, mathematics is the language of the mind. It is method of spiritual interpretation through which the individual can move from concrete into sensible, the secret of the continuity of this art is the abstraction governed by the mathematical rhythm laws synonymous with musical rhythms and the symbol denoted by every geometric decorative unit. This geometric pattern was based on the genius of the artist in the Islamic era through those variations based on geometric logic with the diversity of fixed proportional scales. Therefore, they invented various engineering units, one of the most important features of housing architecture, repeating on the walls the fact that God is the One. He is the center of the universe, and the growth and repetition of decorative elements that swim in the kingdom to infinity on the walls of ceramic tiles, either limited within the pools or wall panels. Above the doors of marble or plaster, or extended over the floors of houses in the hall or the hall next to the faience. They also continued to use the (Moshakkaf), which is the marble mosaic, as well as the stone engraving with geometric motifs based on geometric lattices, whether the square lattice - the triangular lattice - the hexagonal lattice, above doors or wooden ceilings that depend on the Islamic star and from which the eight-pointed star and the ten-sided or twelve are common. It was distinguished by the radiative structural system, the use of square, circles, rectangles, and trapezoids at the intersection of diagonals and specific angles for each type of Islamic star to form each star with its own proportions Figure (7-A). And it was also used in plaster hollow windows - Figure (7 - b)



Figure (8-a) Examples of the most famous botanical decorative units that were characteristic of Islamic homes of that era

2- Plant motifs: The Ottoman style was distinguished by the use of plant elements that influenced their buildings and art through the faience tiles that extended in the hall and the (Dourakaa) a third of the wall height from the bottom or the top. They discovered aesthetic in those elements of the two or three-lobed plant branches and leaves and different flowers or the leaves that known as the arabesque. the Arabesque was characterized by continuous movement extending to infinity, and the plants in them are dealt with by alteration and abstraction, preserving the bends, branches, turns, and the intertwining of the branches and their overlapping, not losing their identity. He abstracted and popped and added floral elements for which he was famous, such as (Lala), carnations, tulips, sunflowers and acanthus leaves, achieving aesthetic values.

He also developed a new type of (Ablak), which was called false ablak, because it arose from dictating the decorations engraved within the stone with a different-colored material instead of using a stone of another color, as was the case during the Mamluk era, and its widespread use in decorating the facades and interior walls of large houses and palaces.

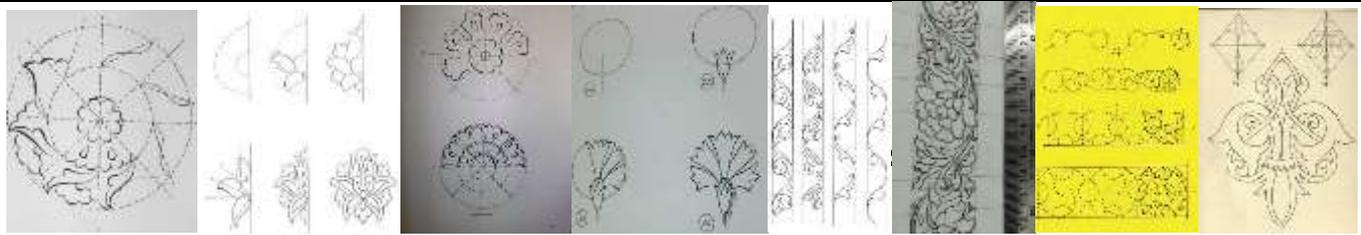


Figure (8-b) Geometric analysis of floral and vegetal motifs showing the proportions and movement of the construction of these units.

The decoration was spread in blue and green faience with plant veins and flowers covering the walls in some halls, we find most of these decorations decorate the wooden ceilings of Islamic homes and stucco windows stained with colored glass. We also find it in the wooden frame that wraps around the walls of the halls, and we notice the use of this type of decoration engraved on stone in the outer facades overlooking the courtyard at the entrance to the door seat, above the relief arch and the top of the straight lintel. Figure (8- A). The plant motifs depended on the symmetry between the two halves of the unit, such as the flower called (Lala) or the radial structural system in the composition of the unit, such as the flower of the pomegranate and the clove, and the plant branches achieved a simple wavy movement path or braided with alternating repetitions Figure (8-b)

3- Ornaments of birds and animals: - The Islamic art of modification and abstraction reached the creation of bird and animal shapes mixed with plant branches, or with their intertwining lines and folios. It was famous for this Fatimid style, in which this type of decoration was common, as it was found in some wooden bowls as a relief carving, and on ceramic dishes. It also appeared decorated with the metal door leaf. These shapes were based on simplicity and abstraction with background of plant branches (arabesque), and evolved into the phase of modification. the most famous of which is the refined horse shape, with a symmetrical, symmetrical position at the end of the motifs (arabesques) and plant folios, and the head of the dove and the snake emerging in intertwining branches extending symmetrically on the door knocker as a symbol For that stage. Figure (9)



Fig. (9) Examples of stylized and abstract decoration inspired by birds and animals for which the Fatimid style was famous

4-Writings: Arabic calligraphy is considered an essential element of decoration in Islamic art. It is mainly found in Islamic homes, especially inside cross panels above the main doors in the various halls inside the house and with the Mamluk (Sulth) calligraphy in wood. They used also (Kufy) calligraphy in different forms such as square, flowered, leafy script, or animal figures. He also used to write some Qur’an verses or “There is no god but God and Muhammad is the Messenger of God” in stained stucco with colored glass, or the name of the house owner by (Tughraa) style in Ottoman era or the word of “majesty” in the Mashrabiyya. Figure (10)



Figure (10) examples of writings, which are considered one of the most prominent features of architectural design



Figure (11) the house of
Zainab Khatoun

After this quick review of the most important features of interior, exterior and decorative architectural design in the residential architecture of this era. We move to show how to make architectural and construction adjustments using modern technological methods, through one model of these houses as we mentioned before, we chose the house of (Zainab Khatoun) as an example of the study and analysis that will apply to the rest of the other houses in the compound. It is a relatively medium-sized house in order to display some of these architectural, structural and decorative modifications in line with the techniques of the modern era with the benefit of some technologies on which the impact was built, which proved its superiority over its modern counterpart, and we had to re-use it to achieve comfort and human health with its distinction in its inception in The Mamluk era down to the Ottoman era to include the most important architectural and decorative features of the two styles.

Coexistence method after making architectural and construction adjustments by using modern technological methods

1. Almost identical models are made where the architectural and decorative features of the houses are preserved, while making an architectural and decorative modification to suit the requirements and functions of this era.
2. This modification can be designed to have large houses such as Al-Suhaimi and Al-Hawari. They are divided into hotel suites and are furnished with elements of the same style as the place while retaining the same designs, colors and materials for the living items already in place. Such as: (wall cupboard - adjective - doors - mashrabiyya - decorations - glass - marble ... etc.) and it represents a replica of the house itself.
3. The spaces will be modified architecturally and decorate according to the proposed function that is appropriate for the current era.

4. Building and construction adjustments are made using modern technology
5. The blanks are furnished according to the requirements of the current era and the style of the era of the relic.

A- This gathering is designed and implemented to benefit from it locally and internationally by renting to those who wish to coexist in the heritage of the history of this era and to everyone who had dreams of human, historical and residential coexistence in these homes upon their visit. We will review later how to benefit from this complex economically and culturally.

From the aforementioned architectural modifications, we move on to the structural modifications.

These structural modifications are based on the following points:

First: the structural system:

1- The methods used in the ancient antiquities:

- Natural and local building materials available for the construction of this house were used in the manner of (bearing walls), so the use of stone was an example of the use of local building materials and bricks were used on the upper floors.
- Thick walls were erected in both of them to provide thermal insulation, with the use of (Kosrmel) to connect the stones. As for wood, it was used as a material to cover the roofs of the rooms and Iwans, as well as the (Dourakaa), which was covered in the shape of a lantern.

2- Modern technological treatment:

- (Structural construction) is adopted so that concrete is the main component of building the structure of the building because the structural construction is more durable and faster implementation in addition to the presence of materials, qualified labor and modern construction machinery. And through the structural construction, the architectural elements are executed faster and more precisely by means of (ornics), which are the wooden molds that pour concrete inside them, such as arches of all kinds.
- The structural construction ensures the speed of implementation at a much higher rate than its counterpart in the old era, where a medium-sized mosque used to be

built in a period ranging from seven to ten years in the past, which could be built with contemporary technology within a year at the latest.

- Red bricks are used in the construction of sandwich walls, which are two walls, each of them with a thickness of (half a brick) and between them a heat-insulating material such as (foam) of high density. Cement mortar is used to connect between the bricks, as this method of construction achieves what the building achieves with the method of bearing walls, but faster, with higher insulation ratios, and more precisely. Cement bricks are used in the construction of the lower part of the walls of bathrooms and toilets, as it is a good insulator of water and moisture.

Second: Architectural Design:

1- The methods used in the ancient antiquities:

The internal architectural spaces were used to serve activities and purposes suitable for this ancient era.

2- Modern technological treatment:

- Interior architectural adjustments are being made to suit modern activities.
- Changing the thickness of the walls for the internal partitions to (half a brick).
- The main attribute of the walls, the external openings and the openings on the courtyard shall be approved for the house as a whole.
- All external broken walls are rectified into prepared walls, and the added internal architectural space is exploited.

As we will mention in Figure No. (12), the horizontal plan drawings of the ground floor (for example) are reviewed for Zainab Khatoun House (as it is) without modification, with the functions of all the architectural spaces displayed. With it, we review the works of architectural modifications through drawings that illustrate the created functions. Then comes the role of the decorative design of the modified architectural elements and the addition of decorative elements that suit the new functions and proportions and are inspired by the style of the house itself.

- **Suggested modifications to the ground floor:** Figure No. (12)

1-**The broking entrance:** it is kept as it is.

- 2- **A security and guard room:** a bathroom and office are added to it for personal use of security personnel.
- 3- **Meeting room:** transformed into an office for managing the house through the owner company.
- 4- **Communication elements:** transformed into a kitchen, storeroom, bathroom, and handling elevators.
- 5, 6 - **reception hall - room:** to be combined and converted into a restaurant room.
- 7, 8 – **Crop stores:** they are merged and converted into garages in case there are special cars for visitors.
- 9-**Corridor:** turned into a driver's room and a bathroom.
- 10- **Stairs and a bathroom:** it is maintained as it is with the straightening of the outer wall.
- 11, 12 – **A room and toilet:** the outer wall is straightened, the architectural elements are integrated and transformed into a gardener's room, a store for garden supplies, and a bathroom for the gardener.

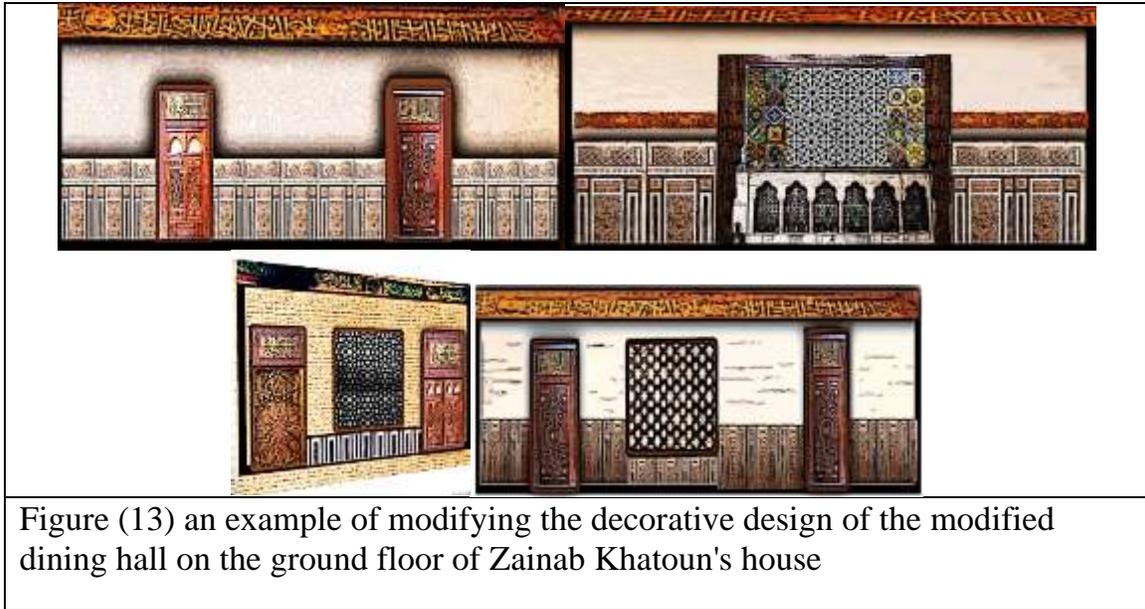


Figure No. (12) The horizontal plan of the Zainab Khatoun house, the ground floor, and the modified model

The decorative design of the dining room on the ground floor of the proposed house of Zainab Khatoun: Figure No. (13)

- Where comes the role of the decorative design of the modified architectural elements, and the addition of decorative elements that are commensurate with the new functions and proportions and are inspired by the style of the house itself.
- The ceiling of the hall, instead of being (a panel ceiling and a basement without decorations), was transformed into (a panel ceiling and a decorated façade) with floral motifs with carnation and Lala flowers, acanthus leaves and intertwining plant branches. Were painted of dyes on wood directly in the Ottoman style.
- Starting with the wall to the right of the entrance from the courtyard by placing (Soffa) with ceramic tiles of a distinctive color for the hall and let it be blue to suit the function of the dining room, where the main wall is considered to be the hall.
- The wall facing it, a wall cupboard was added, which is the wall that overlooks the hometown of the stairs with the same proportions as the door in the wall to balance the openings of the wall with a bottom made of colored marble with simple geometric motifs.
- The wall facing the main door is made of colored marble with geometric designs as in the rest of the room to connect and unite in the decoration of the room as a whole.
- The wall overlooking the courtyard and has the form of two doors with uniform geometric decorations for the doors of the hall, all with a twelve-sided star.

Note: The units are derived from the decorations located in the main hall on the first floor (the hall). Taking into account the proportion used in the distribution of the faience tiles or basement with the wall as a whole.



Third: the waterproofing system:

1- The methods used in the ancient antiquities:

-There is no. The inclination of the roof was relied upon and the rainwater dewatering in a manual manner.

2- Modern technological treatment:

- Insulation known as waterproofing and chemical insulation is adopted in order to insulate the floors of bathrooms and kitchens.

- Water, chemical and thermal insulation is adopted for roof floors, with the necessary slopes and slabs being made and drained on rainwater connected with drainage supplies to inspection rooms in order to avoid damages resulting from leaching of walls and foundations.

- Insulate concrete foundations with bitumen insulation in order to avoid damage to groundwater.

Forth: the sanitation system: -

1- The methods used in the ancient antiquities:

- Using to follow the underground drainage system by the method of filling and draining.
- It was followed by making a floor opening to drain the bathroom to the drainage room.
- It was followed by making a bathtub made of marble, for bathing and massaging.
- Using the bathtub method for bathing, personal hygiene, etc.

2- Modern technological treatment:

- External drainage pipes (legs, supplies and accessories) are approved from (P.V.C) material, and the government sewage network is used to avoid the accumulations of wastewater that harm the building's structure and to dispose of it in a healthy way.
- The Chinese toilets and basins, which are known today, are approved with designs that fit the style to suit human health use and take into account safety conditions.
- Bathtubs are approved for its different materials, with designs that suit the style.
- The bathing method is adopted for bathing in the SPA unit for the home, which includes a massage unit, steam and sauna with designs that suit the style. The body of the bathtub is insulated and covered with ceramic or marble and the use of anti-bacterial and anti-decay chemicals.
- The same motifs of birds or animals derived from the Fatimid style are adopted with the possibility of using vegetal and arabesque motifs in the decoration of the raw materials of pipes and the forms of metal accessories, with the possibility of performing this with copper, as it was known in the Islamic heritage or its alternative in the current era.
- The same geometric Islamic star units are adopted in extended iterations or Ottoman decorative units of plants, flowers and birds of faience tiles of decorations and units. Figure (14)



Figure (14) the use of designs that fit the model

Fifth: Water Supply System:-

1- The methods used in the ancient antiquities:

- Water was supplied by using a waterwheel to lift water from the well, or manually.
- Heating water was by lighting fire in wooden dry branches.
- It was followed by the use of special copper utensils to fill and empty water and clay pots in order to keep it, cool it and use it for drinking.
- There wasn't any way to raise the water pressure except using heavy weight on the surface of water tank to pump it for fountains.
- There was no known method at the time to purify water from impurities.

2- Modern technological treatment:

- The water supply pipelines network (pipes and accessories) is adopted from (polypropylene) and the government supply network is adopted for ease of use.
- Gas or solar system in heaters are used to heat water as an energy consumption and environmentally friendly energy.
- Using copper water mixers match with the Islamic style.
- Water pumps are adopted to increase the water pressure.

All kinds of water filters are approved to purify water from impurities, bacteria and fungi.

Sixth: Thermal cooling works for atmospheric air: -

1- The methods used in the ancient antiquities:

- The thermal cooling process was carried out through the open central courtyard of the house and overlooked by all the openings of the rooms, as the courtyard was the lung through which the internal elements overlooking it breathe from the distribution of air and the expulsion of the hot up and replacing it with the cold. While the internal patios were used for rooms that do not overlook the outside courtyard.
- The internal cooling was carried out by means of (air hooks), which is a building higher on the roof level, a polygonal shape with an upper opening directed to the sea side. The cold air from it gets into the hall and the hot air is expelled to the top until it works to cool the room continuously.
- The (Shokhshekha) was used in large halls such as (Iwans), which have a polygonal shape high from the roof surface and have openings in each rib for ventilation of the halls.
- Mashrabiyya and lathed windows were used to cover openings, whether internal or external, to achieve natural ventilation in rooms while maintaining privacy.

2- Modern technological treatment:

- The thermal cooling process is adopted by the middle courtyard and the rest of the open areas and keeping it as it is to ventilate the halls as a whole as a natural and economical source for ventilation.
- The method (air hooks) is adopted for the process of cooling the halls as an alternative to industrial cooling that is economically costly and harmful to the environment.

The (Shokhshekha) is used in large halls as a natural, economical source for ventilation.

- The industrial cooling system (air conditioners) is canceled as it is not environmentally friendly, harmful to the ozone layer, health, and energy consumption is rationalized.

- The use of mashrabiyya and turning windows is approved to cover openings, whether internal or external, to achieve natural ventilation in rooms while maintaining privacy.

Machines are used in addition to Arab hand turning, as this artistic craft is based on shaping wood by manually turning it into pieces of different sizes and shapes separately or connected in a column, and these pieces are combined by interlocking them together without adhesives until they are suitable for use in making mashrabiyya and windows. Figure (15 - a)

- The same forms of Islamic contouring are adopted from the brambles and the diacritical oblique or straight, narrow or wide for the mashrabiyya, the air hooks, the windows and the (Shokhshekha) (Figure 15-b)

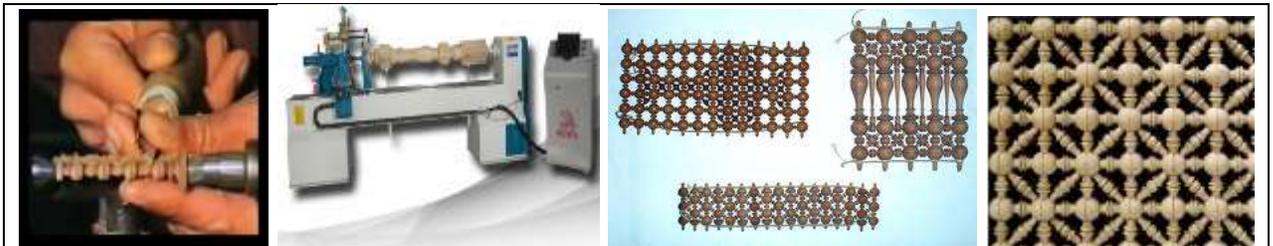


Figure (15-A): Various forms of machining and lathing used in mashrabiyya and windows

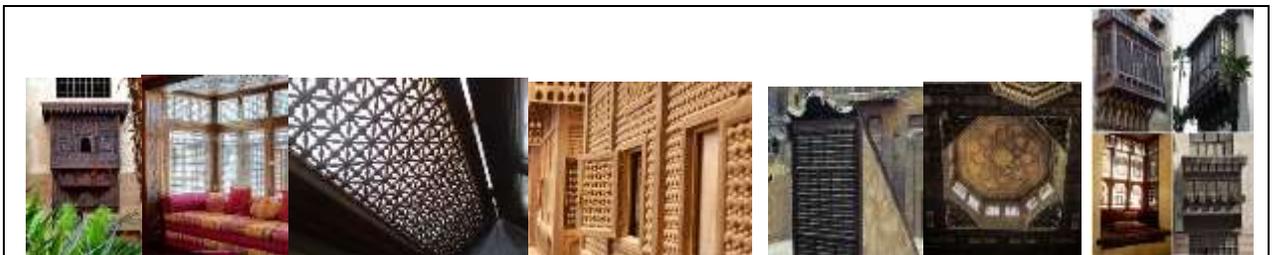


Figure (15-b) The patterns of the maps in the mashrabiyya, stands, (Shokhshekha), and windows, old and new

Seventh: internal and external lighting works: -

1- The methods used in the ancient antiquities:

- The interior lighting process was during the day by natural sunlight that falls on the courtyard of the house, by infiltrating it through the mashrabiyya and stucco stained with colored glass, and also through the, (Shokhshekha).

- The interior lighting process was carried out during the day also by way of the subsidiary courtyards to illuminate the rooms that do not overlook the courtyard.
- In the bathrooms, the lighting was done during the day by means of the stucco ceiling intertwined with colored glass, where there was a gradation in the intensity of the lighting of the person entering, from the strongest light to the weakest.
- The interior lighting process at night was based on chandeliers, pots and lanterns by lighting candles and luminous oils.

2- Modern technological treatment:

- The internal lighting process is adopted during the day by the natural sunlight that falls on the plate of the house by infiltrating it through the mashrabiyya and stained glass adorned with stucco and also by the, (Shokhshekha) to achieve visual beauty, take advantage of natural sunlight and benefit from it healthily with internal environmental sterilization.
- The interior lighting process is adopted during the day, which also takes place through the subsidiary courtyards to illuminate the rooms that do not overlook the courtyard and reduce the daytime dependence on industrial lighting.
- Daytime lighting is adopted through the stucco ceiling stained with colored glass in the bathrooms, where there was a gradation in the intensity of lighting for the person entering, from the strongest light to the weakest, to preserve human health by not exposing the eye to the intensity of lighting or reducing it suddenly while achieving visual beauty.
- The internal and external lighting process at night is adopted by using the same chandeliers, fixtures, pots and lanterns - to simulate the traditional coexistence - by using the electricity derived from a solar energy unit for the house as an economic energy source.

An internal electricity network is used, including burial pipes, wires, key bits, cables, (Internet), etc., to achieve adequate lighting for living.

- Energy-saving (LED) lamps are adopted with colors commensurate with the spirit of the heritage used to achieve the economic aspect in terms of energy consumption and also the lack of maintenance. Figure (16-a)
- The same designs are adopted for the decoration of the rose vase and the Islamic star and the writing in the decoration of the stained glass windows with gypsum

and hollow windows in gypsum as a center for colored lighting, simplified geometric units in bathroom ceilings, or the shape of the central geometric star or its extension in the ceilings of Shokhshekha. Figure (16-b)

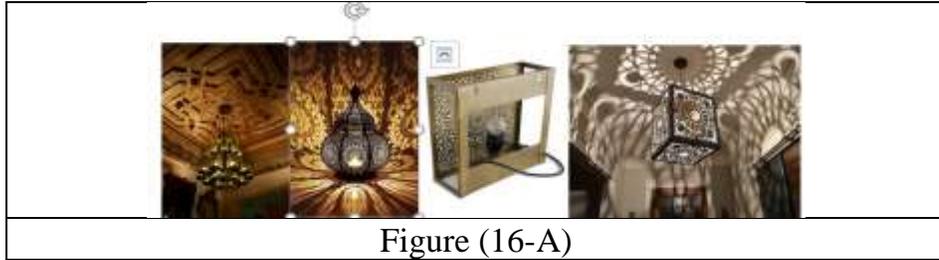


Figure (16-A)

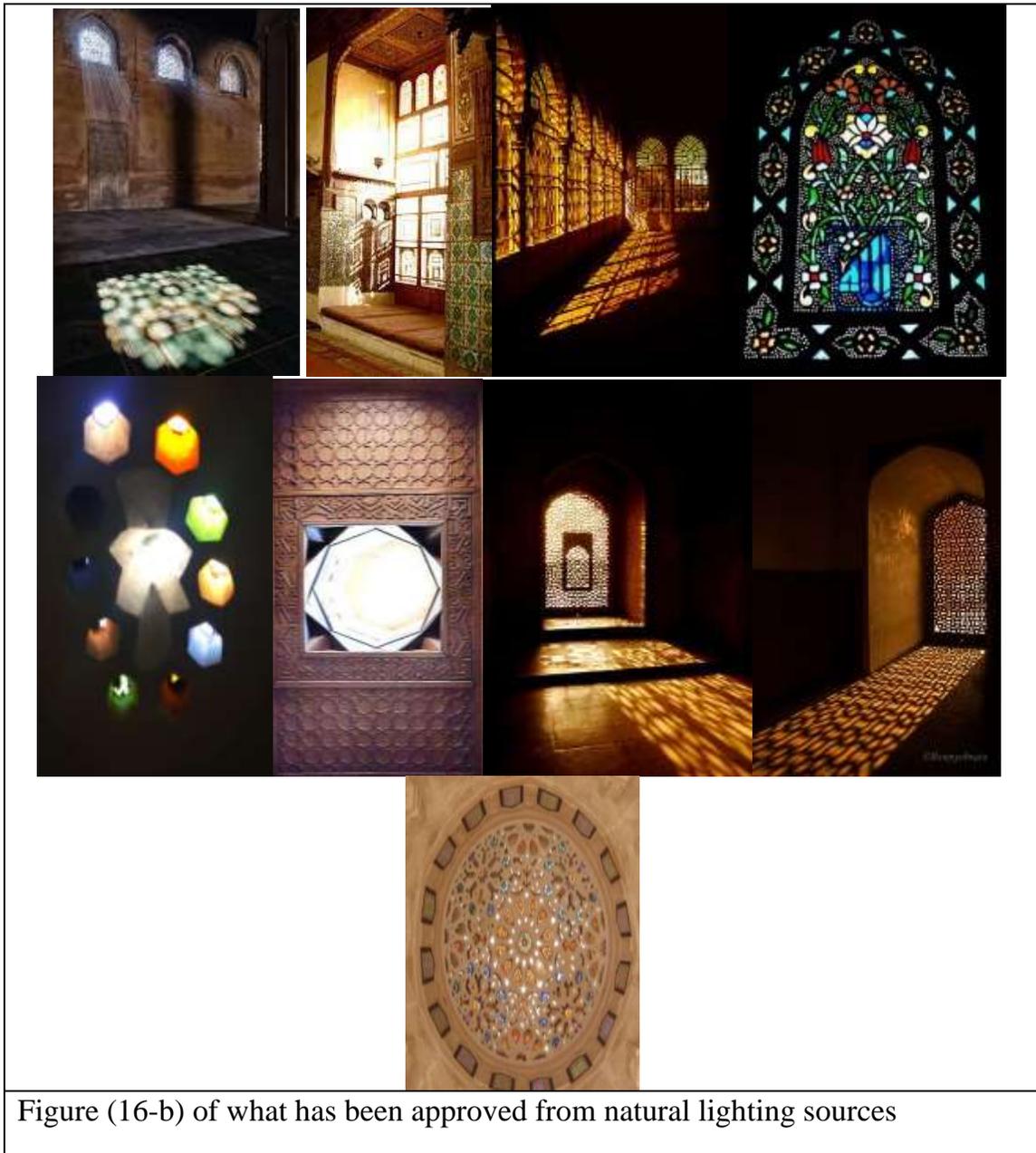


Figure (16-b) of what has been approved from natural lighting sources

Eighth: Wall and floor cladding: -

1- The methods used in the ancient antiquities:

- Mortar was used to clad the parts that do not contain ornaments, and it is not common to use any colors for cladding the mortar, relying on its original color.
- Using coverings of colored marble with geometric shapes in the lower interior of the halls.
- Using glazed and colored faience tiles to decorate the interior halls.
- The famous stone (Ablak) was used on the external façades, which is the sculpted lobe stone, whose courses consist of red and white and sometimes yellow and red colors in alternating and successive rows.
- Using bas-relief and bas-relief in the interior and exterior decoration works.
- Stone tiles were used to cover the bathroom floors, while the bathroom walls were covered with mortar.
- Using scrap marble, of all its colors, in cladding the main halls.

- Using to use tiles to cover the rest of the house's floors.
- The rough stones were used on the interior, exterior and street facades

Modern technological treatment:

- The appropriate cement plaster is used for cladding the parts that do not contain decorations instead of mortar and cladding the walls with soft artificial stone in the appropriate color for the effect.
- Colored marble claddings with geometric shapes are adopted in the lower interior parts of the halls.
- Handcrafted glazed and colored faience tiles are used in decorating the interior halls to preserve the style and revive the traditional crafts.
- Cladding for the façades and arches shall be adopted from colored limestone tiles with the same shape and subdivisions applied in the same original effect.
- Relief and sculpture is adopted in the external and internal decoration works by using marble cladding that has the same texture and color character, which achieves a sense of the temporal dimension.
- The floors and walls of the bathrooms are clad with marble and faience in order to achieve the color character of the effect. As for the walls of the toilets, only the bottom is covered with marble instead of mortar and in the same style, to protect the bathroom walls from leaching and erosion of clamshell and artificial stone.
- Scrap marble is used with its many colors in the cladding of the main halls to preserve the style and the same decorative designs.
- Marble is used with the same color characteristic of the effect in the cladding of the rest of the house's floors instead of tiles (Keddán) for easy cleaning and also for its high resistance to corrosion.
- Cladding is adopted with fine and coarse artificial stone on the internal and external facades and overlooking the street, with a color and texture appropriate to the effect.
- The same structural system and decorative units are adopted between the use of decal as a modern technology that helps in producing a quantity of faience and adhering to the traditional crafts due to its distinction, uniqueness and rarity, hence its importance in reviving the traditional crafts Figure (17a - b)



Figure (17-A) was made of marble with its geometric ornamentation and faience tiles with Ottoman decorative panels.



Figure (17-B) between modern techniques and preservation of traditional crafts in the manufacture of marble and faience

Ninth: Woodwork:

1- The methods used in the ancient antiquities:

- Wood was used in the manufacture of furniture, doors, lintels, windows (in the form of mashrabiyya), lathes, wall cabinets, wooden ceilings, and fences (such as seat fences and stairs), cladding for wall decorations, (Shokhshekha), balconies, mukarnas, and wall arches in Iwans.
- The woodwork was executed by interlocking method (without the use of adhesive or nails).

It used to inlays the woodwork with seashell, ivory and metal.

- It used the work of unloading wooden ornaments by hand.

2- Modern technological treatment:

- The same wood works are adopted with the same geometric decorative designs with their repetitions, but using hard woods such as wood (beech) with dye (ester) and coloring them in the same color degrees with modern industrial products in order to withstand weather factors of dust, friction and ground factors, especially in woodwork on the internal and external facades of Mashrabiyya, handrails of stairs and seat.

- Wooden works are adopted and executed by interlocking (without the use of adhesive or nails) to distinguish that technique and craftsmanship and its uniqueness, and from here the traditional handicrafts must be preserved and revived by educating new generations of technical diploma graduates in carpentry departments. The arts of marquetry occupied a prominent place among the other artisanship because of its connection with Arab carpentry since the beginning of the Islamic civilization in Egypt. Figure (18 - A)

- The implementation of grafting woodwork with seashell, ivory and minerals is approved as it is, but by using modern technologies for speed and accuracy in its implementation, employing and training workers, and reviving traditional crafts.

- The laser cutting and unloading technology (CNC) is used in the wooden presentations, in terms of accuracy and speed. Figure (18-b)



Figure (18-a) Various architectural woodwork based on inlays



Figure (18 - B): Using CNC Laser Cutting and Discharging Technology

Tenth: Metal Artifacts: -

1- The methods used in antiquity in the past:

- The metalwork was based on the (pendants) that are the hanging and wall lighting units that include the cantilevers and chains that carry them.
 - Metals were used to make metal windows in some openings.
 - It was used as hinges for doors and for wrapping wall cabinets, handles and rings, and the outer doors were adapted with copper works.
 - They used utensils made of copper and silver for everyday use.

2- Modern technological treatment:

- The use of the same lighting units of reinforced sheet, laser cut-out (CNC) and copper-coated is adopted to light its weight and revive the traditional crafts. Figure (19 - a)
- Metal windows are approved with the same original designs with electrostatic coating, as it saves the metal from corrosion.
- Door hinges, casings, handles, knobs and adjustment for external doors are adopted by mechanical lathing for speedy implementation and accuracy of their details.
- The manufacture of copper vessels is adopted by modern methods in a manually decorative made to ornament wall cupboards to revive traditional and heritage crafts and artifacts. Figure (19 - B)

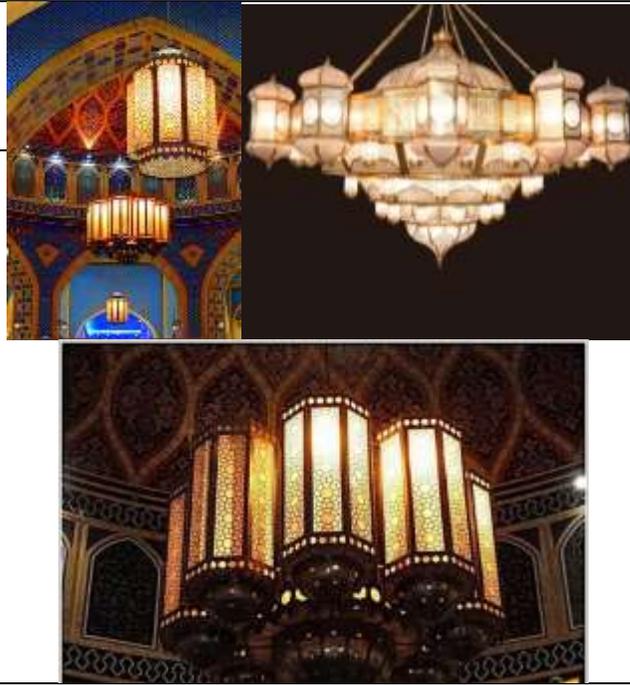


Figure (19 - A) CNC lighting units



Figure (19-B): The necessity to retain the artisanship of roads on copper for its uniqueness and distinction

Eleventh: Glass Artifacts:

1- The methods used in the ancient antiquities:

- Glass was used in the manufacture of various lighting units, stained-glass stucco windows, bathroom ceilings, and some glass pots for drinking.
- Glass was blown during melting.

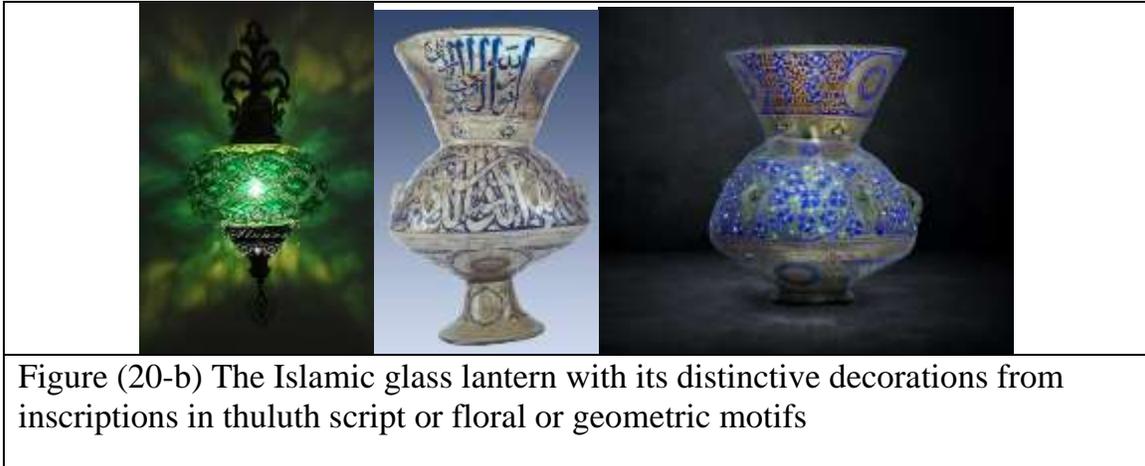
2- Modern technological treatment:

- Adopting the use of glass in all glassworks present in the monument with the same colors and designs in the manual way to preserve the craft of glass manufacturing that is about to disappear. Figure (20 - a)



during melting, preserving the value of handwork that characterizes this era. The same method of manufacturing glass is adopted by the method of blowing

Figure (20 - b)



Twelfth: Stairs:

1- The methods used in the ancient antiquities:

- Stone ladders were used for going up and down.
- Stone stairs are not clad.

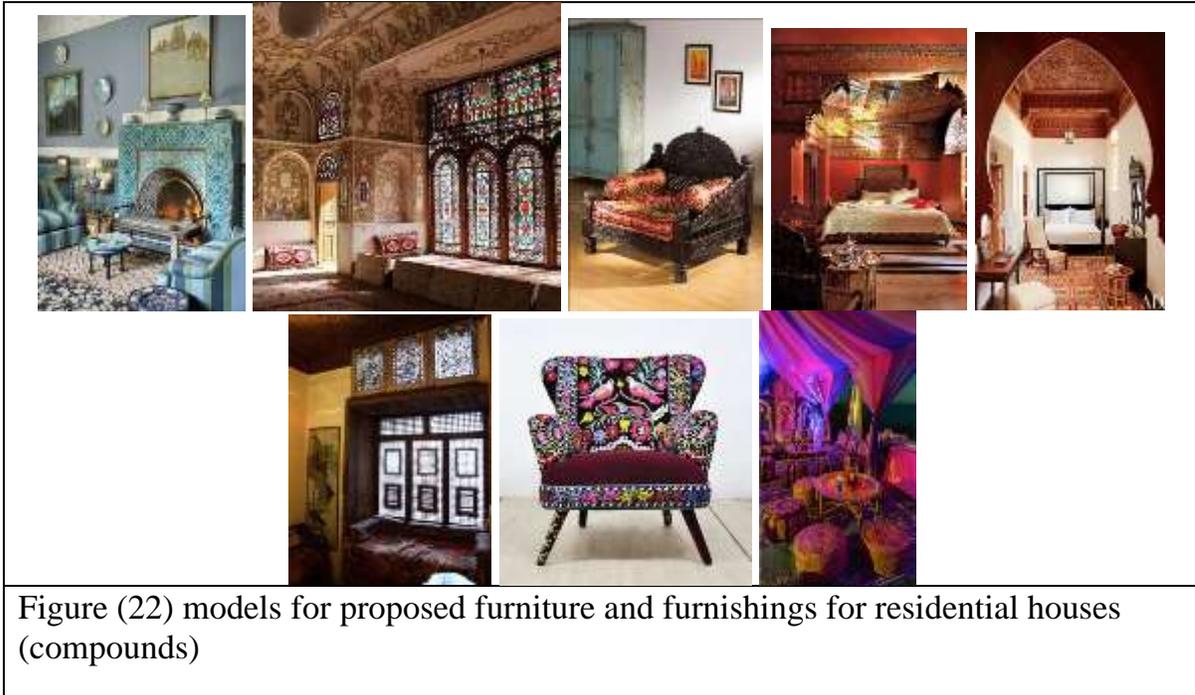
2- Modern technological treatment:

- The adoption of stairs, but (concrete), due to its durability and speed of implementation.
- Concrete stairs are clad with solid types of marble or granite with a color suitable for the architectural style, and the marble has a high resistance to abrasion and friction.
- It is also possible to add faience tiles, glazed and colored with their distinctive decorations, in the cladding of the staircase to add aesthetic value to them. Figure (19)
- Adding (elevators) next to the stairs, as the floors have high ceilings.



Thirteenth: Models of brushes works proposed to be used within Islamic home models that express the mixture between the old and the contemporary using modern day technology to suit the requirements and needs of contemporary man





Research Results:-

- 1- The dream of life coexistence with the Islamic heritage can be realized through the use of modern technologies while preserving the aesthetic values architecturally and decoratively in designing and constructing a residential heritage tourist complex commensurate with the requirements of the times.
- 2- This residential complex can be invested in tourism locally and internationally.
- 3- The traditional crafts that are about to disappear can be revived.
- 4- Various job opportunities may be provided to graduates of intermediate and upper-intermediate technical diplomas in their various specializations.
- 5- Cultural awareness of the Egyptian Islamic architectural and decorative heritage can be spread locally and internationally.
- 6- This Egyptian experiment can be presented as a pioneering and internationally inspiring idea.

Research Recommendations: -

- 1- Paying attention to the heritage crafts neighborhoods that are indispensable due to their importance and distinction despite modern mechanization and technology.
- 2- Paying attention to the implementation of residential complexes by combining modern technology techniques, derived from the Egyptian heritage.

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