Architectural Mimetism Between Heritage and Technological Advancement

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Abstract. The rapid technological progress, media and marketing of urban development has affected the features of contemporary Arab architecture in general and Iraq in particular, in terms of designing either regarding to the local identity or regardless to it, so this research tends to study and analyze a group of architects who constantly work on local projects in Iraq to mimic those who do it in harmony with the local identity, and those who work on globalized basis preparing their designs of modern technological references without taking into account the local identity, neglecting the spirit of heritage and the possibility of making an mimetism between heritage and modernism, to produce high-tech designs, performance forms and attributes that bear the spirit of heritage and mimics the identity of humans making it the highest value in design as humans are the user of this new urban environment.

This research focuses on the certain definition of the term mimetism and the mechanism used to apply it in terms of architectural design thoroughly then drawn conclusions from the practical study to illustrate what have been learned through carrying out the study and analysis of those projects along with general conclusions for the research as a whole.

Keywords: Mimetism, Heritage, Technology, Identity.

1. Introduction

Architecture is a reflection of public civilization and the spirit of the times. Today, our era is witnessing an intellectual transformation in the architecture worldwide, which is constantly influenced by technology and information revolution. It is possible to see the great impact on the level of the Arab world in general and the Iraqi counterpart in particular, especially as Arabic architecture are moving towards the neglect of the local identity and heritage to give the impression of a global architecture. That is resulting from the tendency to give the impression adopting the designs that are similar to those arise in certain other countries. This would lead to the loss of the most important characteristics and making designs merely functionally successful buildings. Designs should be based on respecting the spiritual characteristics of the Arab person in terms of time and place to reflect the Arab and Iraqi traditions and heritage, especially the intellectual orientations, cultural values, living styles, history of civilization and spiritual values.

The research objective is to conceptualize contemporary Iraqi architecture and to study the mechanisms and architectural orientations on which architectural thought is based, by analyzing the approach to heritage and adopting some of the modeling and absorbing some of the technological development.

2. Mimetism Definition

lingual: Mimetism; (Noun)
Biology= "mimesis".
Generally, imitative behavior in humans, which reproduces (consciously or not) the characteristics of another person or group; (Sociology) = “mimesis.” (1)

In Sociology: The social science dictionary defines mimetism as “the tendency to imitate certain behavior of something, and it may also indicate the process of emotional fusion, or the state of this emergent fusion, with this same thing.” (2)

in Literature: This term is frequently used in the field of literary criticism, such as: the mimetism between the author and the characters of the work, the distinction between the narrator and the hero, the distinction between the figures of literary work ... and so on. (3)

in Psychology: The process of mimetism in psychology is explained by the following:
Definition: It is the tendency to imitate the behavior of something, and may indicate emotional amalgamation like when a child observes that he/she is similar to another person, and then the child participates which is not just imitation. The child adopts all the traits, attitudes and values presented by the role model. (3)

Through the above we conclude the following operational definition of mimetism: It is the symmetry and matching that is resulted from the vision of interest that reaches the extent of neglecting reason, and in terms of the moral characterization, to hypocrisy and falsifying as a mix, at first it’s related to sub-consciousness to make its handling effectiveness strong and conscious control is very weak. Secondly, it’s related to identity which makes it a vital conscious directive for the individual to determine their position within the zones of culture and the values of the community and the world in general.

3. Mimitism In Architecture:

In spite of the importance of mimetism concept in different areas of life, it is in architecture not clear and explicit, but reflected in terms of synonym and similar concepts. The characteristic feature of architecture that differentiates it from other human activities is that it has independent personality and atmosphere. The real value of the architecture is not limited to its direct relationship with the social, economic or technical conditions it creates, but its effect extends and continues even after the characteristics of its original environment changes, or after the reasons that led to its appearance disappear. Architecture extends beyond the boundaries of the place and time of its birth, the social class responsible for its appearance or the model to which it belongs." (4)P.37

Dr. Mahmoud Darweesh¹ talks about the concept of mimetism in his article "Oriental Arts: Plot of the theme mimetism with aesthetics” 2012 in Al-Bayan newspaper. He points to the mimetism of the Eastern and Islamic art with the daily life of man as we see it in houses, places of worship, streets, shops, markets, handicrafts, furniture, clothing, means of transportation, and most of the things and tools that help man in the exercise of the daily life and make it easy and pleasant visually and spiritually.

Oriental art in general and Islamic art in particular, is characterized by its practical use. It is an art in the service of the daily life of man with all its diversity, richness and multiplicity. So this art enters all fields, such as external architecture, interior architecture (decoration), crafts, industries, works and tools, thanks to a set of specific aesthetics that captures both the eye and the spirit.

The mimetism process with the values of the usability and aesthetics in the eastern art has reached the interior and exterior architecture as they are located in the mass of external construction and its vertical and horizontal elements, the gaps that permeate them, the general movement achieved in the space, and the compatibility with other surrounding architectural blocks or spaces to be utilized with the addition of trees, plants and green areas.

Mimetism is also found in the decorations that adorn some of the external architectural facilities and specific areas of the emerging blocks in space. These elements come from the material in which architecture was completed (marble, stone, cement) or from added materials and substances (mosaic, ceramic, tiles, colored marble, metal). They may also come in the form of thoughtful lighting (natural or artificial). The magical aesthetic characteristics of mimetism between the physical values and the decorative values in the eastern arts, crafts and design works are confirmed and enhanced by the modern need of man to such values, day after day, especially after the dominance of mechanization and its influence on man’s life, feelings and emotions. Pure artistic work (painting, sculpture, engraving, masterpiece, handcrafted, song, film or television, music) reduces this mechanization and interferes with its intense pressure, direct and indirect, on man’s body and spirit. (5)

Dr. Khalid Al-Sultani² in his article "Half a century on the design of Al-Khulafa Mosque: Discovering the architectural self” 2013, Al-Mada newspaper, talks about the concept of design mimetism with familiar elements and symbols to the collective memory and investment of the design event to reproduce heritage through the historic importance of the site as well as the use of unique style of decoration and the nature of materials and their construction structures. He points to the architectural impact within its historical and cultural context and alerting the architects to the value of architectural history and its rich memory with the promotion of the value of architectural traditions and symbols. This came in response to the domination of the international trend at the time when function is given priority to local interests which transgresses geography and denies traditions (6)

The Egyptian architect Isam Safi El Din, from the Egyptian Architecture House in Cairo 2017, talked in his lecture about the concepts of uniqueness, unanimity and differentiation between them. In his speech, he highlighted two names or visions that are discussed in the field of Arab architecture; Zaha Hadid on one hand and Hassan Fathi on the other hand. Hadid sought uniqueness while Fathi's works were based on the idea of collective or poor architecture, so that a

¹ Resource in Arabic: P Dr. Mahmoud Ahmed Darweesh, Professor of Islamic Archeology, Department of Archeology Faculty of Arts Minia University, Egypt, Date of Birth: 30 July 1953 Mahalla Al-Kubra - Western Province.
ar.wikipedia.org/wiki/%D9%85%D8%B3%D8%AA%D8%AE%D8%AF%D9%85:Dr_mahmoud_darwish

² Dr. Khalid Al-Sultani, School of Architecture / Royal Danish Academy of Arts, Kobe Nhawk / Denmark
Essam Safi El Din, Advisor to the Academy of Arts for Architecture and Advisor to the Arab Bureau of Art Buildings and Consultant of Urban Design and Museum Exhibition. fineart.gov.eg/arib/cv/cv.asp?IDS=2093
whole area would take on a certain character without penetrating the issue of modernization in exchange for mimetism with the ancient architectural heritage.

Safi El Din like Fathi because he is a student of him and the founder of his museum at the Egyptian House of Architecture. Safi al-Din is also close to the theories of Baudriar, which takes into account the issue of interaction with architecture both visually and invisibly.

Safi El Din discussed the issue of uniqueness and found that he does not like the uniqueness from Hadid’s perspective, as there is no contradiction between a modernist building and an environment of heritage nature. This example was also applied in the Pompidou building in the heart of the old city of Paris (a building full of corridors in the form of cylinders and iron poles). The French did not see in this design colliding between the two environments. Safi El Din said: “I believe that uniqueness can mean the opposite, like Fathi model, which is based on the idea that all buildings in a certain area have a certain character. The whole gives one scene and the part gives uniqueness and meaning.” (7)

In the "The Structuralism of Art and Architecture 1995", architect Rifaat Al-Jadraji discussed the relationship between heritage and technology and the extent of their differences. He was one of the most important architects interested in studying heritage and employed it in his architectural projects by stripping the traditional form and mixing it with modern techniques. He also pointed to lifestyles and patterns existing in every country in our time, which has brought with it the danger of wasting a number of beautiful cities such as Baghdad's unique cultural identity in a collection of similar buildings built on a world-class basis. He aspires to create a modern architecture with the architecture of the preceding generations. In other words, he is aspiring to intertwine with the swab of traditional Baghdad architecture, but at the same time refusing to enter the architectural monuments imported from distant areas and the reproduction of traditional heritage elements.

Ali bin Jaafar al-Lawati wrote in his article "Loay Al-Jubouri: The architect of adjoining, about the characterization of modernity in the designs of Loay Al-Jubouri, Such as Islamic and classical architecture. However, that tendency towards modernity does not prevent this architect from presenting other architectural styles. He plays all roles it offers traditional and Islamic architecture with a modern touch, in addition to the postmodern architecture, which he employs in an innovative way in contemporary design trends. A good architect is the architect who can efficiently navigate between design trends. This does not mean in any way that the architect accepts the surficial treatments as is the case today in the Arab architectural reality, because designers paste the arches and paint them with sandy color, to present them as heritage, while in fact they are very far from the essence of architecture. Architecture requires the pursuit of the culture of professionalism, the intellectual and mental harmony with the elements of history and the evolution of architecture. Without having such knowledge, real architecture cannot be produced, but it will be only physical and decorative, which is unfortunately evidenced by the reality of today's architecture and it is the reason for this deterioration in the absence of the culture architecture among architects. (8)

The study was conducted by Azarshahr, Motamadniya, Basiri (8)P.76 which is about the impact on the Iranian architecture in the last century with the Western ideological trends and ideas. In the following section, some of these developments were obvious in Iranian architecture. However, it should be recognized that the most important factor for the development and improvement of architecture and its authenticity is the return to the Islamic history and culture of the country. The first step in such endeavor is the full understanding of the relevant culture. In the modern world and especially in the Western world, the identity crisis is widespread. The destruction of stable and consistent beliefs and opinions and the use of unjust and irrational definitions of development and improvement have obscured the nature of authentic and genuine identity. The rejection of the innate humanitarian, moral and logical principles that cannot be dispensed with has led to the exclusion of human beings and driven them to tampering.

Through the above studies we have an operational definition of the concept of mimetism in architecture as such: the concept of mimetism in architecture is the relationship of the designer with heritage and modernity in terms of making infusion and mimicking between each other and as the following figure presents:

Figure 1: (concept of mimetism in architecture), Ref: Researcher
4. Mimeticism between Heritage Reproduction and the Technological Advancement

4.1 Mimeticism and Heritage

The architectural heritage of the Arab world is characterized by intellectual wealth reflecting the Islamic thinking. This kind of thinking was able to mold the architectural elements of the ancient civilizations into a new formation in harmony with the concepts and philosophy that came with it. It has special characteristics that match the requirements of life, people and the surrounding environment across the ages. The most recent theories in design and beauty, characterized in this architecture, and the nature of design solutions are unique and mimicked in the functional and aesthetic aspects. Kibree also pointed to the need to study this heritage functionally in the treatment of the interior spaces of traditional Arab architecture to demonstrate its advantages. Civilizations are usually created through a combination of interactions among several factors such as the geographical region, climate, culture, religion, economy, etc., meaning that the architectural character over time reflects the cultural environment prevailing in the relevant region at each stage of history, so the importance of heritage architecture is shown in its association and interaction with the following aspects:

**The environmental aspects:** Hazmi (10) defined a number of environmental features of architecture in the Arab ancient cities including: directing the inside to the courtyard, reducing the openings on the outside and covering them with privacy facilities, protecting the courtyard with walls to reduce the impact of the solar radiation, the decrease of outer space areas like pathways in comparison with the inner ones like houses, and the use of stalls solve of climatic issues. Here we notice that not every traditional is suitable to be used in modernity. Street width, for example, with the invention of modern means of transportation, is no longer appropriate, and the horizontal expansion in light of the high costs and limitedness of real estates is also considered a non-economic solution. However, the content of interaction with environmental solutions remains the most important.

**Social and Cultural Aspects:** There is no doubt that architecture in ancient times reflects the social, religious and social values and the regional environment of that era. Al-Hazmi (10) pointed out that there is similarity in many of the elements in the traditional Arab architecture due to similarities in social values and geographical environment. However, each region has its own cultural specificity that has led to some differences.

The idea of designing a traditional house is a general reflection of the social requirements. All its forms and elements are compatible with the needs and requirements of the social life, beliefs, ideas, customs and traditions of the typical Arab family. The Islamic architecture throughout the Arab world and the Mediterranean basin is a reflection of the Islamic religion which are reflected in the design and as such it helped create a special Islamic model on the architectural side throughout the Islamic world as a result of the interaction of various tribal and urban groups. Since the social needs of Arab Muslims are nearly similar, their relations are also similar. Social relations play a role in giving a special architectural form that is compatible with the community and gives it identity and personality. Achieving comfort, privacy and safety of the residents of such houses is an important goal for the Arab-Muslim architect, as well as paying attention to family ties inside the house and social ties within the community (11). The traditional house is both socially and culturally valuable, reflecting the identity of its inhabitants and fulfilling their living conditions. It is not just a refuge for human habitation, but a place where man develops his thoughts and hopes.

**Religious aspects:** The religious factor has had a great influence in the design of ancient buildings of all kinds, especially in the design of houses, which has influenced the basic characteristics of the traditional Arab house, as well as highlighting the Islamic identity that distinguishes it from any house in other civilizations. The Islamic religion has had an impact on organizing the life of society in a very detailed manner. It also organized the human and community behavior inside and outside the house. The Arab house design is thus described as Islamic by virtue of this effect and it contains the following elements:

- The outer entrance, the main door and the curved corridor to provide privacy for the house dwellers.
- Openness inward towards the courtyards, in a way that integrates with the architectural fabric of the Arab neighborhood in terms of its houses and neighborhoods contiguity, the city looked like one house through the harmonious fabric of the city.
- The inner courtyard, which is the core of the house. It plays an important social role. It serves as a center for family social activities. It helps to achieve intimacy between individuals and provides privacy of family members from the outside world.

In the context of preserving the heritage content in architecture, Figure 1 shows a solution for a multi-floor residential building, in which the privacy of the entrances and the openness to the inner courtyard are revealed. The spacious terrace is provided as a small private garden for each apartment on each floor and they have vital spaces in the apartment.

Figure.2: (modern residential apartment models with private space concept) (13)
It is clear from the above that mimetism with heritage is linked to social and cultural factors such as customs, traditions, economic potentials, local materials and the surrounding environment, influenced by time and space. It is also influenced by the Islamic thinking, which was able to form a new architecture by molding the elements of ancient civilizations to reflect the philosophy of the principles that came by stressing the uniqueness of the Arab identity.

4.2. Mimetism and Technology

- **Direct impacts of technology on architecture**

Eldemery (15) points that the evolution of architectural styles is the result of technological progress, which has become a process of continuous development and spread, and is credited with rapid urban growth. Modern technology and trends in architecture are indispensable, but must be used as a tool to achieve localism and preserve the identity of the place in new ways commensurate with the current age and in harmony with the physical environment that is not separate and distant from the past.

Buildings that do not have columns, thick walls, large dwellings, and delightful and flexible spaces can be adjusted to the needs of users, as positive effects of technology on architecture. The famous architect Le Corbusier believes in technology and its impact on architecture and refers to the house concept as life machine. Of course, these terms were later used against him. Mies Van was in fact very interested in modern architecture. Although he was considered a superlative engineer, he highlighted the importance of technology in architecture. He believes that the only way towards the development and progress of architecture is through technology. Mies argues strongly that the value and merit of technology are in its novelty and innovation. However, at the time of Mies, technology was not highly advanced. According to the current standards of the technology used by Mies, in his style of architecture, pillars and columns were of paramount importance. Pillars and columns are carefully designed in a simplified way and placed on the screen. Of course, it should be said that other features that characterize Mies’s structure include visible supports on the ceiling, visible space frames and large intakes. However, after the 1960s, technology has reached unprecedented and unpredictable development, with the possibility of creating virtually any innovative and design boldly. Technology developments should not be confined to the construction of facilities; instead, the impact of technology in architecture is evident in any aspect of industrial production that can be applied and used in architecture. (8) p74-75.

- **Indirect impacts of Technology on architecture**

The use of computers in architecture created the concept of beyond the double dimensions in the minds of many people. The images that can be produced from computer applications such as Auto cad, 3D Dax, Photoshop and others, are able to show and simulate the design of spaces of any kind of structures before they are built. (13) P.06

It is clear from the above that the mimetism with technology is a reason to move away from heritage as a result of the possibilities available from the manufacture and import of building materials and the development of modern technologies that contribute to the rapid urban growth and to emphasize their use in a way that ensures the preservation of identity in connection with the past commensurate with the current time and the urban environment.

5. Objective of Mimetism

Highlighting the Iraqi identity through the defining and employing the elements and characteristics of heritage architecture that can be introduced in the design process to achieve the link between authentic and modern architecture of the 21st century through the search for new perspective that seeks to make the outside of the structure reflective of the civilized perspective of society by employing the characteristics and elements of heritage architecture in a modern way to be reflective of the individual's cultural perspective. (8) P.76.

6. Mimetism Levels

The current global trends have resonated in Iraq through the effectiveness of the academia in the Iraqi school by the objective effects and are directly or indirectly involved in their ideas and concepts. The traditional architecture was influenced by international trends after maintaining its conservative style for a long period of time and began to show new features that adopt the modern movements in the world.

Some architects cover their works with heritage to connect it to the past so that it conforms to the traditional elements without being adapted smoothly to modern architecture (conservative approach). Others criticize the clear influence of western architectural thought on Islamic architecture and the reasons for moving away from the local heritage free approach). While others mimic beyond intellectual and methodological trends that do not provide their heritage in order to keep pace with developmental, technical and technological progress of the world (transformational approach). (14) P.13-14.

Others resort to another method in dealing with and employing heritage in modern architecture, through the study of heritage and focus on the “cultural features” that constitute this heritage, through which modern architectural identity can be developed, that is to understand and redevelop the “cultural dimension” in modern architecture, rather than copying heritage and its elements as they are. This depends on the architect's ability to think logically and adopt abstraction. (15)

From the above, the levels of mimetism are as follows: (Figure 3)
7. Mimetism Mechanisms

The previous studies point to the levels of achieving heritage architecture by fully adapting to the past or partially mimicking with it to achieve modern heritage architecture linked to the past and keeping pace with the present, and to connect and communicate intellectually by the architectural dialogue. The designer depends on a set of mechanisms to achieve this, these are copy and imitation, which take into account the balance between modern requirements and the need to communicate with the past.

**Copy mechanism:** selects aspects of previous forms (parts) or elects whole structures. In both cases there are inherent meanings in which they are invoked when used (fixation and repetition). In this case, the previous characteristics of the references are either apparent in relation to the form felt by the recipient or are intrinsically derived from the relationships that govern the form and appearance and the elements contained therein. Here, they increase the intellectual interaction between origin and recipient. (16)P.11.

Copy mechanism contains two types:
- Complete copy of heritage: A process that relies on the production of mechanic and refined source of origin focusing on the characteristics of its appearance without any essence of the original duplicate.
- Partial copy of heritage: A simplified copy of some elements of the original source and highlighting the characteristics of the piece in which any partial version is incomplete.

**Imitation Mechanism:** An innovative creative process that addresses the appearance and essence of heritage, highly flexible in creating new relationships to pre-existing elements, and the ability to generate products that reflect the present and connect with the past at the same time (16)P.13-17.

| Copy mechanism                                                                 | Imitation mechanism          |
|--------------------------------------------------------------------------------|------------------------------|
| Addressing appearance                                                         | Addressing both appearance and core |
| Reproduced products                                                           | Developed products            |
| Copying repetitive model                                                       | New creation from original source |
| Limited creativity of the designer                                             | Vast creativity of the designer |
| Reflecting only the past                                                       | Reflecting the present and relates to the past |

Table 1: Comparison between the mechanism of copying and imitation

Technology has had obvious effect on architecture to make it suggestive of being from the far space, in contrast to classical architecture that seems to have sprouted from Earth. This resulted in a clear separation from the traditional methods in the return for the technological influence in construction and formation. Proponents of this trend express their vision of beauty by automatically arising from mechanical efficiency, function and shape.

The potential to produce new, more efficient materials for different manufacturing processes has been shown to achieve higher performance to suit application areas such as lighter, bigger, cleaner, cheaper, easier materials, or more capable materials to provide alternatives to raw materials. New materials such as plastics and polymers have replaced rare or limited natural materials. The emergence of new materials with their plastic sources, technical properties and operating technology has played an important role in the creation of structural forms and building that were difficult to imagine in the past (17).

Metal construction systems and methods have been developed in the use of flexible elements and joints, iron, aluminum, glass and plastic materials in metal facades and roofs, and the future trend of digitalization in architecture, such as the trends of digital building, intelligent building, energy-saving homes, etc. The modern technological
revolution represents a good setting for the rework of architecture to fit in with modern technologies in the context of the principle of “form follows technique”, which reflects the response of the architectural form of the high-tech era and information revolution (18) P.06-10

It is clear from the above that form has become a tool or a technical instrument that provides what man wants. Since the tool has made everything possible, it is important to study the potentials of this tool and what it can provide for architectural thinking.

After the introduction and discussion of the studies in different fields of knowledge and the extraction of the most important elements related to the mimetism between heritage reproduction and technological progress, the main element of the conceptual framework came as follows: mimetism objectives, mimetism levels, mimetism mechanisms and mimetism achievement degrees. Then comes the Selection of the last three elements to apply to the selected projects (Table2)

| Table 2. Mimetism Elements |
|-----------------------------|
| 1- mimetism objectives      | Highlighting the Iraqi identity |
|                            | link between authentic and modern architecture |
| 2- mimetism levels          | heritage Mimetism with tradition and association with the past |
|                            | Modern Mimicking with technology and keep pace with progress |
| 3- mimetism mechanisms      | Both Technology with heritage |
| Heritage mechanisms         | Copy Complete |
| Technology mechanisms       | Partial |
| 4- mimetism achievement degrees | Complete |
|                            | partial |

8. The Practical Study

The level of application was determined on models which their design process was based on heritage represented by the works of Mohammed Makiya and Rafat Al-Jadri and model that was keen on keeping pace with technological development and modern techniques such as the works of Zaha Hadid and Manhal Al-Haboubi and measuring the degree of mimetism towards heritage or technology.

The research was based on qualitative measurement based on a descriptive analysis of the selected projects and the adoption of the descriptive texts of the projects, which were illustrated by various sources along with drawings and illustrations.

- Case study models that are mimicking with heritage have been put in (table 3), the models of the ones mimicking with technology been put in (table 4) and models mimicking with heritage and technology put in (table 5)

| A- College of Religious Traditions |
|-----------------------------------|
| Designer: Mohamed Makiyah        |
| Project description              |
| The college was built at the campus of Baghdad University after the development of the campus. It consists of two floors of reinforced concrete, with brick facades, classrooms, classrooms and library. Mohammed Makiya adopted the design of the central courtyard, as he arranged the offices of faculty members and administrators on this courtyard. This is intended to fit the building with climatic conditions and social patterns, and from local materials used in brick construction and mosaics. The design also included a mosque that was not built and was designed to meet the needs of the campus faculties, including this college. |

Project description according to application elements

- Levels of mimetism with heritage are shown by using traditional elements such as balconies, arches and domes, with a modern view of changing their proportions
- The use copy mechanism is shown to back the element inspired by heritage with different proportions as it became more agile in addition to repetition
- The building is mimicking heritage style with development so that the ratios varies in terms of width and height
- The use the colors of natural materials and the colors of the open blocks differs from those on the solid blocks. (Figure 4)
Figure. 5: using heritage elements

B- Tobacco silo
Designer: Rifaat Al-Jaderji
Project description
Administrative complex located on a rectangular site comprising seven tobacco storage buildings and consisting of three departments: management, information and sales.

Project description according to application elements
- Mimetism with heritage using traditional elements, mimicking ancient monuments and melting them with modern technology
- Using copy mechanism for the heritage elements, the most important ones used in the abstract style, and the small long openings, size of the circular blocks in the building and their contemporary style by increasing elongation and spacing
- Simulating ancient archaeological features using scaling and small openings
- Using traditional and modern building materials, local and imported. (Figure 6)

Figure. 6: traditional elements melting them with modern technology

Table 4. Models mimicking with Technology

C- Central Bank
Designer: Zaha Hadid
Project description
The project is located in the Al-Jadiriyah, Baghdad and overlooking Tigris. It has an area of 20,000 square meters and a building area of 93,000 square meters, and consisting of a main base and a tower above it.

Project description according to application elements
- Mimetism levels with technology in the project are shown as the design is characterized by organic structure with corrugated shapes in its lines, flexibility and smoothness, taking into account the aspects of sustainability. (Figure 7)
- Using lightweight and elegant building materials as high-performance reinforced concrete panels used are UHPC (Figure 8) in the packaging of all interfaces being high tolerances. Using of GRC (Figure 9) reinforced concrete panels in the upper part of the packaging because this area does not need security protection and it is less expensive than UHPC. Concrete structures, aluminum structures and tempered glass were also used.
- Using digital design process (software) (Figure 10) and the parametric design method in designing complex shapes.
- Using digital manufacturing techniques and mechanisms and digital manufacturing machines in the process of cutting molds, 3-dimensional printers and robots.
Use intelligent systems and technologies to manage and improve building capabilities.
Figuer. 7: organic structure with corrugated shapes in its lines

Figuer. 9: fiberglass reinforced concrete pads (GRC)  Figuer. 8: waterproof, heat isolating steel reinforced concrete pads (UHPC)

Figuer. 10: using (meshes) type elements in designing project junction parts and using (NURBS) type elements in designing the project base and tower

(20)

Table 5. Models mimicking with heritage and technology

| D- The General Secretariat of the Iraqi Cabinet |
|-----------------------------------------------|
| Designer: Zaha Hadid                          |
| Project description                           |
| The project is located in Baghdad near the Green Zone, with a total area of 168,000 square meters. It consists of a main part that represents the core of the project, the Cube Building, which symbolizes the ancient Iraqi civilization (Infinity). Project description according to application elements |
|  - Mimetism levels with technology demonstrate sustainability with state-of-the-art technology from photovoltaic cells, solar breakers, and ventilation towers with intelligent materials and smart cover. (Figuer 11,12) |
|  - Using prefabricated concrete panels in the cladding of the facades as it gives the overlap between the steel and the vacuum and using aluminum structures to fix the glass and double glass panels that are in the middle of the areas excavated by cuneiform writing and concrete slabs |
|  - Taking advantage of digital programs in the building blocks as they give multiple options in the formation as well as the drawing of cuneiforms generated within the programs automatically from the creation of an element and repeating its algorithm. (Figure 13) |
- Using digital processing mechanisms such as cutting and milling for the processing of solar panels coated over the part of the ring buildings and molds for the concrete panels coated the facade of the cube building and robots in the drilling of fountains.

- Mimetism levels with heritage are shown by selecting symbols of historical heritage and rephrasing them in a modern concept to reflect the Iraqi identity in a modern spirit

- Simulating the design of old seals

- Simulating the eternal symbol of Iraqi civilization and analyze the essence of this symbol to give the characterization of the civilization of Iraq in the cube part of the building

- The metaphor of the round shape of Baghdad in the ring section of the building

- The treatment of the outer surfaces with symbols of Sumerian civilization mixed with Islamic motifs

- Using rectangular formations similar to the balconies in ancient Iraqi architecture using polygonal steel grids

- Using integrated ventilation towers in the ring building as this method is used in the Islamic architecture and the architecture of the old Baghdad houses known as Badkir

![Image of vanetlatin towers](image1)

![Image of photovoltaic cells, solar breaker](image2)

![Image of generating cuneiforms using digital programs](image3)

9. Applying Mimetism Elements to the Selected Model

| Elements of Mimetism (1), (2), (3) | A | B | C | D |
|----------------------------------|---|---|---|---|
| 1- Mimetism levels | Heritage | Mimicking with heritage and relate to the past | ■ | ■ |
| Modern | Mimicking with technology | ■ | ■ |
| Both | Technology and heritage | ■ | ■ |
| 2- Mimetism mechanisms | Heritage mechanisms | Copy | Complete | ■ | ■ | ■ |
| Copy | Complete | ■ | ■ | ■ |
| Imitation | Partial | ■ | ■ | ■ | ■ |
| Technology mechanisms | Modern materials and techniques like digital and virtual technologies | ■ | ■ | ■ |
| 3- Mimetism degree | Complete | partial | ■ | ■ |
| partial | ■ | ■ | ■ |
10. Results of the Practical Study

Levels of mimetism are defined from the selected projects in the practical study the:

- Models A and B show familiarity with heritage in terms of form, techniques and materials while giving a glimpse of modernity through changes in proportions and dimensions and the addition of modern building materials.
- Model C is unique to technology by keeping up to date with the latest technologies for design, digital manufacturing, intelligent systems and the latest building materials for sustainability.
- D model Mimics with heritage and technology by selecting symbols of historical heritage and rephrasing them in modern concept to express the local identity in modern spirit while using the latest technologies of digital design, intelligent systems and intelligent materials in the outside.

11. Conclusions

1. Architecture transformed into the digital era the most important features of which are change and rapid development, communication and modern technologies and their advancements.
2. The impact of architectural thinking on the tools of information technology and ability to achieve ideas and imagination is clear, meaning that there is some form that follows the tool, and the tool has become available to the dispens of architects.
3. New types of buildings have emerged based on the availability of information technology possibilities, and deal with the architectural thinking in the form of buildings that combine these technologies, transforming the building into interaction with human, and digital entertainment, distance education and remote services, and connecting with family remotely.
4. Transition is clear from technological mastery and subordination to responding to the development of technologies and the development of self-capacity.
5. Arab architectural models able to employ heritage in modern style emerged, reflecting the extent of awareness and depth in understanding the characteristics and elements of architectural heritage, resulting in authentic architectural experiments to reflect the modern developments and to meet the needs. It is also linked to historical roots and heritage in between the requirements of time and belonging to the past.
6. The trends and ideas of communication with the architectural heritage in modern architecture are multiple and communication with architectural heritage varies objectively depending on the degree of understanding of heritage. Some architects and intellectuals call for dealing with the heritage in terms of science, especially the environmental aspect, and to take advantage of the past experience in creating solutions to modern problems, which gives a state of communication with heritage architecture. Some call for breaking ties with heritage as technology represents our present day.
7. The best treatment of heritage and its employment in modern architecture begins with understanding heritage and assimilation, assessing what corresponds to modern requirements and developing it in an abstract way in terms of time and space.
8. There is a need for integration between heritage and modernism. Heritage expresses the culture of society and originality, and modern life expresses the presence and development of technology and information.
9. Modern building materials and techniques have influenced local architecture by providing new solutions that are free of constraints imposed by materials and techniques of heritage architecture.
10. The problem of architectural and urban heritage has become problematic through the monitoring of practical applications located between two streams:
   a. The emotional stream driven by feelings of nostalgia to the so-called beautiful time through copy.
   b. The other stream is characterized by the symbolic abstraction of heritage and the attempt to adapt it to reflect the modern era, tools and requirements in accordance with the fixed and changing local conditions.

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