

Structural Criteria for Designing Ceramic Murals Inspired by the Saudi Heritage and Its Benefits in Designing Architectural Surfaces

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Abstract:

Wall art is the basis of the origins and development of human civilizations since the human-being was found. Murals always represent the heritage of peoples, their history and thought. This art has been associated with individuals to express its accumulated emotions and experiences. It is the best witness to the development and registration of the most important achievements of countries and has many positive effects on society, and the Kingdom of Saudi Arabia is witnessing a great development in all aspects of life in general and in the field of plastic arts and civil coordination in particular, and the martial arts are considered to be among the wall arts associated with the architectural wall, and from Here lies the research problem in how to reach mechanisms to achieve constructional standards for ceramic wall design and how to employ elements of martial art in ceramic murals in public places with a view to reaching traditional design treatments appropriate to social and technical development to keep pace with the most The era has come to achieve a balance between the architectural walls, taking into account their functions and the elements of the formation of the mural work. Through the texture of porcelain, access to formative treatments and formulations for external ceramic murals derived from the Asiri heritage, and appropriate to the conditions of civilizational, social and technical development to create a positive dialogue between members of society derived from preserving the artistic and cultural heritage.

Key words:

Construction standards – mural – jobs- aesthetic construction

Introduction:

Wall art is one of the oldest arts that people have known where art has been linked to its existence and has become a method for expressing emotions and feelings. Moreover, this art has evolved with the daily development of techniques until it featured scientific design

methodology. Furthermore, design is the product of an idea in the mind of the designer resulted from a set of feelings and emotions to meet the needs of life. Thus the designer makes a planning process to reach the goal through his previous experiences that were accumulated in their mind; the design depends on the methods of its implementation in the various physical media depending on the different styles of design.

The designer is now thinking about designing the external spaces with a form of integration between all elements. Thus, surrounding the artwork to create an integrated environment of plastic, aesthetic and functional elements with the importance of preserving the environment as the design relied on building a new creative culture to develop creative methods. Moreover, the field of ceramic mural design is one of the main areas that have a role in community service by offering suggested visions to take advantage Al-Qatt Al-Asiri decorations by reformulating it to make designs for ceramic murals based on aesthetic and structural foundations. Ceramic art is associated with architecture, given that the ceramic is of an important architectural and aesthetic complement, which includes architectural installations and architectural voids, it has aesthetics that make it suitable for creating many innovative ceramic designs, whether flat or stereoscopic.

Research problems:

In light of the development witnessed by the world in the field of mural designs which are affected by technological techniques, it was necessary to preserve national identity in a positive interactive state between members of the community with roots and heritage through the mural design in places of public transport cultures, knowledge of civilizations, and the development of society; thus, in order to reach to this research's problems, they were identified in the following questions:

- What are the mechanisms for achieving structural standards in ceramic wall design?
- What is the extent of the relationship between the ceramic mural design, the architectural building, and the architectural space?
- What are the mechanisms of employing elements of the art of Al-Qatt Al-Asiri in mural design Ceramic?

Importance of the research: the research attempts to:

- Identify the structural criteria for Al-Qatt Al-Asiri's decorations.
- Identify the importance of mural designs in society.
- Study plastic and aesthetic values in Al-Asiri art and its benefits in designing
- Architectural surfaces through the texture of ceramic to develop new visions of wall designs.

The research objective: the research aims to:

- Reaching the structural standards in designing surfaces for ceramics.
- Setting design solutions for ceramic murals through the structural elements of intricate Al-Qatt Al-Asiri decorations and appropriate to the conditions of civilization, social, and technical development to keep pace with future developments.
- Finding new ways to communicate sentimentally with the receiver and influence them through the designs of murals.

Research limitations:

Spatial limitations:

Mural designs on the exterior walls in public places in the Kingdom of Saudi Arabia.

Temporal limitations:

The origins of Al-Qatt Al-Asiri's decorations in the Kingdom of Saudi Arabia and their stages

of development.

Research Methodology:

In order to reach the research's aims, the researcher followed the analytical approach in analyzing examples of artworks whose artists were inspired by the motifs of Al-Qatt Al-Asiri in their work; to identify the construction standards in creating mural decorations. Moreover, to follow the experimental approach in conducting proposed experiments through graphic programs on computers to find a digital vision and employ them towards architectural surfaces and link them to the architectural space.

Previous studies:

Yousra Saeed Mohammed Al-Qahtani, titled "Aethetics of Al-Qatt Al-Asiri and its Role in Enriching Modern Art Production" published in *The Journal of Humanities and Social Sciences*, issue no. 4, vol. 3, April 2019.

The research deals with Al-Asiri region and the various popular decorations represents in Al-Qatt Al-Asiri and its aesthetic values that contribute in the creation of distinguished fine artistic works. Furthermore, the research sought to confirm the concept of originality and heritage through the inspiration of Al-Qatt Al-Asiri.

Faidah Muhammed Hisham Zakaria, titled "The Philosophy of Al-Qatt Al-Asiri and The Role of Women in The Transfer of The Literary Culture Heritage to Enrich textile Pendants and Activate Saudi tourism Marketing" published in *Architecture and Arts Magazine*, issue no. 15, vol. 4 May-June 2019.

The research aims to highlight the role of Al-Asiri's women in the development and transmission of the artistic cultural heritage of Al-Qatt Al-Asiri; moreover, its objectives in terms of clarifying the philosophy of its construction, its distinctive colors, and the most famous artists of Al-Qatt Al-Asiri. In addition, aims to show empowering women in society, by creating special designs and producing workshops, courses, museums, and villages. Moreover, it aims to develop and preserve this heritage and its properties, as well as creating designs that contribute in stimulating tourism marketing and upgrading the public taste; and revealing its heritage identity and what it holds of archaeological treasures that made it the top tourist heritage destinations in the Kingdom.

Khaled Khojali Ibrahim, titled "Mural Painting Techniques and their Applications on Architecture" PHD thesis, 2014, Sudan University of Science and Technology, College of Fine and Applied Arts.

The study focused on achieving the aesthetic and functional vision of mural painting applications on architecture. The study also aimed to identify the types of technologies, and the modern wall materials related to the design and implementation of the mural.

Mural Art:

Mural art is considered one of the most important arts the world is witnessing, and a mirror that reflects the reality from which man derives his requirements according to his aesthetic appreciation and expressing his needs and emotions and supporting the psychological and social aspects of the human being. It adds an aesthetic and cultural dimension to society, also the art of murals in its history is linked to architecture. Moreover, mural art plays a crucial role in preserving the cultural heritage of the saudian society represented in the art of the Al-Qatt Al-Asiri; it pushes artists and designers for development in the field of design in general and mural design in particular through the inspiration of vocabulary of culture and transforming it into symbols and elements of fine and aesthetics that enrich the visual

culture. According to barakat in his definition of Mural Painting "the technical term the painting that is applied to murals, ceilings and floors using any suitable technology or material for the mural, such as frisco, mosaic, oil, or other techniques and materials, which dicribes Mural Painting" (Barakat, 10).

Mural Design Definition:

The mural design is one of the plastic treatments related to the archetictural surfaces of fixed and movable ceilings, floors, and walls; as it includes a set of plastic and aesthetic values. It can be implemented with many different materials individually or combined on those surfaces, whether vertical, horizontal, or curved; while achieving balance between the architecture in its style and function including a set of structural standards to form the elements of the mural in terms of its organic connection to achitecture to achieve aesthetic values for the mural art to become an affirmation of the architectural space, to reach the goal of the mural taking a set of considerations, including the infantry eye view (Adly et al, 51).

Mural art Features:

Mural art has been linked since the enlightenment of man with emotions and conflicts with the recording of social and historical events, through which the man defined the civilization of previous generations; thus, it is a social art that works to communicate between societies and there are many features that distinguish it, including:

- Mural paintings express the artist's self through the structural formulation of his plastic art installations.
- Mural art is linked to the environmental concepts surrounding society: including customs, traditions, and behaviors, and works to develop human behavior and the promotion and development of cultural and knowledge of society.
- Mural art is characterized by modernity, contemporary, and continuous renewal in a way that suits the requirements of each era, which are affected and affect the structure of design. The Mural designer has an effective role in forming society's personality.
- Mural art is a mass communication language characterized by spontaneity that coincides with all periods, events, and techniques.
- Mural art is used on all architectural surfaces, roofs, columns, openings, etc.

Ceramic Mural Design:

Ceramic is one of the natural materials that can be formed into various works and products, including murals that are usually composed of assembled and colored shapes in the form of design that was prepared for and implemented from them huge wall panels that are installed on the internal or external walls of the building, which the artist uses to cover the surfaces of the walls (Abbas, 56). The ceramic material has many advantages in terms of quality and diversity in shapes, sizes, and colors which can be shaped on two-dimensional and three-dimensional surfaces, in addition to being inexpensive. The ceramic wall design depends on innovation in its methods of employing and aesthetically forming it commensurate with the shape and function of the building, and the creativity of the artist in building the design that is compatible with the function of the architectural void. Moreover, the design can be defined as the positive interaction to organize and arrange the design elements in relationships to reach the artistic value until the functional and aesthetic side is achieved. The ceramic wall design is a creative process that is subject to constructivism which contains a set of foundations aimed at linking the total unit of the mural work and the system of general composition of the mural on the architectural surface ('atmad, 2).

Mural design Ceramic building architectural link:

The plastic arts played an important role in the mural design, as it filled the walls of many different architectural structures, as an example to internal and vacuum surfaces, with the aim of delivering a set of positive messages; whether educational, cultural or scientific, to society. We found a legacy full of valuable artistic paintings in which the walls of temples, mosques, palaces and houses are decorated to tell the stories of our ancestors that we draw from them valuable lessons till this day. As the material evolved, the performance methods and the methods of expression evolved, and this led to increased creativity and innovation. Each material has its nature and potential in expression, where it is a voluntary clay dough in the hands of the artist through which it can express its emotions and thoughts, and when it is treated with chemicals in a way that is compatible with its physical nature, it acquires many other features such as hardness, durability and resistance to environmental factors making it easy to use in different architectural spaces, whether interior or exterior, gaze to distinguish many of the plastic and aesthetic values of the cognitive and visual manifestations in multiple colors and touch and illuminations, making it appropriate and successful raw materials in the design of handling different architectural surfaces both two-dimensional and three-dimensional.

The linkage of mural designs and space:

The space created for a specific human activity, is organized from many architectural elements such as walls, ceilings, floors, and architectural openings. By grouping and coordinating these elements with the study of colours, proportion, light, shadow, and other elements of the formation of artwork. These formations produce a composition that is related to the functional and aesthetic shape of the human requirement that the user holds. Moreover, it is found that every designer and artist has a space or void that is the inspiration for the design process and leads the design process and this vacuum imposes their presence in the design and carries important characteristics that they add to the work of the mural. In the end, this vacuum will express the identity of its user (Zaaror, 32). This shows the importance of design in the spatial mural setting and confirmed by interactive relationships between parietal design and architectural identity of the building by emphasizing the plastic functional and aesthetic values of the mural architecture.

The concept of shape in ceramic wall design:

The form is the basis of the artwork, it is the distinctive element with moral and emotional connotations of the artist and recipient, the form is responsible for achieving the aesthetic and formative values in the design, through the formulation methods that are used in building the work; which affect the reading of the intellectual and aesthetic connotations that the artist is interested in to find a continuous interaction between the artist and the work. Moreover, It depends on that in the structural rules in building the artwork, no matter how different the material, which helps in realizing the artwork, as the forms vary from what is essentially and naturally created by God, including what is man-made that depends on the artist's experience and inspiration from the medical It changes and develops it in the form of paintings, sculptures, etc. with a structural design that depends on the shape and the various design elements of lines, colours, texture, lighting, movement etc; thus, other perceptible elements that reach us to a state of emotional beauty interacting with the artwork no matter how different the ideas and style of the artist

Structural systems design and its impact on the mural design:

Shape and foundations body on which the building design, is a system that combines group axes that make up the design to arrange the plastic elements that result in a variety of plastic

spaces, and help bonding between the designs symbols to make it easier on the receiving cognitive understanding. Furthermore, comprehension is achieved by a set of aesthetic ones values where homogeneity, compatibility, proportionality, consistency, compatibility, balance, symmetry and repetition complete an artwork of integrated parts based construction Fine for the design of the mural.

What is the construction system?

It is the system that combines the basic axes for arranging the formal elements, horizontal, anchored and inclined axes, which results in a group of various plastic spaces through the distribution of lighting and contact. Thus, it is the basic structure for building the artwork and is interpreted as arrangement and consistency.

The structural unit in the mural design:

The structural unit is the basis for the formation of the design building for the mural work; and the shape design with a variety of structural methods that depends on the formative elements and how they are built. Thus, it depends on the structural foundations in organizing the elements and viewing the function of each element in the design. Moreover, during the design phase, the designer must take into account the diversity in the elements and their sizes to achieve the link between the elements in its parts and its generality, achieving the ratio and proportion between the parts and colleges, and achieving unity in formative formulas. Moreover, each according to the formulation methods and according to the structural system of design, including the structural system and intended as a repetition or grouping method GS units for construction in one style coordinator for work and configurations so that a variety of structural configurations can disassemble and assemble of the units construction without breaching the form of structural design and system of structural axial. It is based on the existence of an axis, around which the plastic elements are wrapped wherever it appears, and the network system and other systems that work to organize relationships between the plastic elements of the mural design, whether these elements are from organic or inorganic forms.

Structural elements of the mural design:

The structural elements of the architectural space are determined by many elements, including the physical ones, which are represented in the implementation materials, including the functional, which is related to the function of the place. Furthermore, for each architectural space, size, lengths, shape, raw materials, color, texture, lighting and many other functional elements, and the elements that must be taken into account when creating the wall design, including:

- Study the nature of the place, including raw materials, floors, green areas, natural and industrial lighting, and corridors
- Design space and determine the field of vision for the viewer, taking into account the ratio of proportionality between the place of element architectural and artistic work.
- Taking into account the nature of the raw materials used in the exterior and interior spaces and the ability to withstand different weather and environmental factors, and it is characterized by the raw materials of ceramic.
- Take into account the lighting and its quality, whether it is natural or industrial lighting, direct or indirect.

The functional aspect of the mural design:

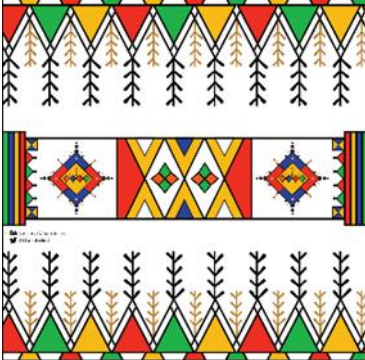
Functionalism in wall painting is intended to show the content and the architectural origin based on it to emphasize the identity of the architectural building (Abbas, 36). Functional

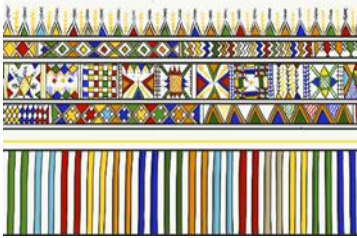
requirements inspire the designer in the primary form of the artwork that he creates, and he is free to innovate so that his innovations do not harm the architectural function of the building and to reach a functional solution to the plastic and aesthetic values available in the designer. Through the ceramic murals, the structural structural values associated with the building can be emphasized by addressing the architectural levels with the elements and fine lines that lead to a sense of embodiment, shadow, light and the different colour and texture effects that make the design of the mural an integral part of the architectural building. Moreover, the aesthetic values are characterized by a set of properties and relationships between shapes and balance training, which governs the design process, and helps to achieve plastic and aesthetic values that shows the architectural form and space in the form of a symphony or symphonic musical that works to share the recipient with the place more positively.

The Art of Al-Qatt Al-Asiri:

Al-Qatt Al-Asiri art is considered an ancient heritage art in the Asir region of Abha, which is located in the south-western part of the Kingdom of Saudi Arabia. With the man assuming responsibility for building and maintaining the house from the outside, the house's lady takes over its decoration from the inside, drawing harmonious shapes on the walls of the room with bright and attractive colours, an art included in the list of intangible heritage in UNESCO since December 9, 2017, and the Al-Qatt decorations were characterized by engineering and plant units, Points, and lines, and its materials were based on local materials, using locally prepared colours from plant or mineral sources. Among the most important pioneers of martial art is the artist Fatima Abu Qahs.

Table No. (1) shows an analysis of models of the art of Al-Qatt Alasiri

Aesthetic values of decoration	Creation of Form	The Shape
The decorative form was characterized by the interconnectedness of the type of decorative units, with the diversity in colours and horizontal and refractive lines of variable directions between the top and the bottom, which gave the form a kind of harmony with the ability to repeat the entire form in a distinct harmony and rhythm.	The shape was designed through a networked structural system that relied on repeating the decorative unit in the form of a horizontal matrix, and grouping the decorative units in one style, while maintaining the structural shape of the design.	 <p data-bbox="1137 1541 1297 1574">Figure No.1</p>

<p>Repeated motifs varied in their shape, colours and sizes, giving richness in the aesthetic values of the form of diversity and harmony in the decorative elements in the horizontal bar in the upper part and giving comfort to the visual vision in the decorative ribbon in the lower part through the simplification of the vertical lines and the unification of their size and colour diversity. That makes the eye in a constant state of vision.</p>	<p>The figure depended on the networked structural system in the style of stacking decorative units that combine symbolism and abstraction in Islamic arts motifs that rely on filling space.</p>	 <p>Figure No.2</p>
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The employment of elements of Al-Asiri's art on the wall hangings:

From the point of view of preserving the Arab heritage, many personal experiences emerged from many plastic artists, and the methods and expressions based on the heritage elements were varied multiplied, such as the artist Mohamed Farea and the artist Fatima Mohamed Said, who dealt with the Al-Asiri's art in many of their works because of its features. Heritage stemming from the environment based on artistic instinct, and the abstraction that emanates from the Islamic faith, whether in form or content. It showed the aesthetic values represented in the fol

- Balance and harmony between visual elements and colors, through symmetry and asymmetry.
- Diversity in the structural rhythm of design through repeated formative vocabulary.
- Unity and interdependence of elements with diversity in sizes and decorative shapes.
- Attention to texture that characterizes surfaces and attention to lighting that affects visual vision.

Works by some artists who took a Al-Qatt Al-Asiri with a modern contemporary look:

Search applications:

The analytical study of the motifs of the traditional heritage Al-Qatt Al-Asiri art has resulted in many design ideas that can be used as ceramic murals. The ceramic wall design has been chosen because of the characteristics of the ceramic material of many aesthetic and functional features. Ceramic is generally considered an architectural material because of its resistance to environmental factors. It is one of the cheap materials and easily available, and it has many manual and industrial forming methods. It is characterized by the diversity of clay used and its characteristics that are suitable for various products, and it is characterized by aesthetics of formation and surface treatment, and it can also be used in the covered areas. There are some design ideas that can be employed as murals linked to the heritage in the Kingdom of Saudi Arabia and contribute to finding new methods to communicate emotionally with the recipient through the wall designs. The ceramic works to activate the tourism aspect with a national identity, some of which are reviewed as follows:



Figures 3 and 4 show a mural of a group of Saudi artists



Table No (2) shows some of Al-Asiri decorative units, the linear structural analysis, and the chromatic structural proposal of the decorative unit by combining the units.

proposal no. 4	Proposal no. 3	Proposal no. 2	Proposal no. 1	
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Figure5 shows a mural of young Saudi female artists

Figure 6 shows a mural by artist Abdullah Al-Barqi

				Original unit
				Linear analysis and combination of motifs



Design no.(1):

The work consists of a set of ceramic tiles of various sizes which adopted technical work on the system Structural Synthesis in mural design, as No.(7). The design thought of the proposal on the axis (horizontal - vertical) give relevant indications of an expressive construction system arising from the interaction of the plastic elements of the ceramic tiles resulting from the decorative units of Al-Asiri with diversity In the type of units in sizes, lines, and contacts to achieve a set of values in terms of contrast, compatibility, interdependence, and harmony between the formative elements, linked by varying degrees of one colour; and the proposal was employed at the National Museum, as No.(8,9).

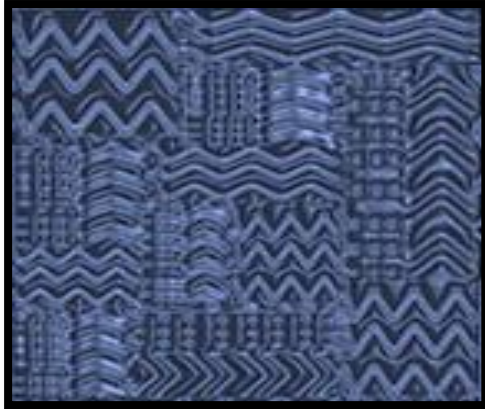


Figure 7

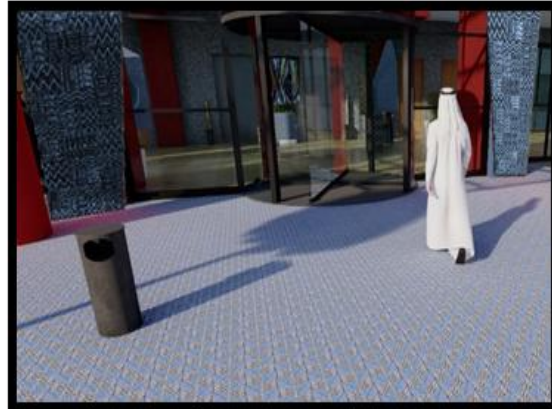


Figure 8

Design no. (2):

The work consists of a set of ceramic tiles of various sizes and the design thought of the proposal on the establishment of semantic geometrical relationships expressive arise from the interaction of consistent repetition of the ceramic tiles resulting from the decorative units of Al-Qatt Al-Asiri art, as No.(10). with diversity in the sizes and finding a plastic relationship between form and ground. Thus, taking into account the compatible colour scheme suitable for the architectural building, the proposal has been employed in one of the national hotels on the columns and treatment of floors with decorative units appropriate for the design and location, as No.(11).



Figure 10

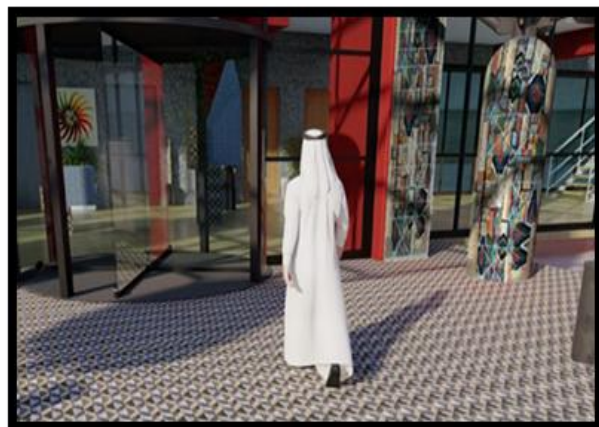


Figure 11

Design no. (3):

The proposed design consists of various ceramic tiles with spaces were created on aggregate system and attempt to employ the design principles of Al-Qatt Al-Asiri through simplification and reduction. The design adopted the frequency and diversity of decorative principles, which helps to achieve aesthetic homogeneity through the achievement of the elements of balance and rhythm in the formal building. The researcher used black colour as a succession and beige to define its drawings, as No.(12,13).



Figure 13

Figure 12

Design no. (4):

The design relied on reshaping the decorative units of Al-Asiri motifs, with the diversity in the structural system of the units. Moreover, their reconfiguration and formulation represents a different aesthetic vision in an attempt to develop the artist's ability to link between traditional and modern design, as No.(14).. The decorative construction has been employed on one of the frontages of the Tabuk Museum in the Kingdom of Saudi Arabia, as a proposal, as No.(15,16).



Figure 14



Figure 15



Figure 16

Design no. (5):

The design was based on the structural system, where a group of ceramic tiles was repeated in a vertical column shape. Moreover, a group of tiles gave the shape of the diamond in a diagonal direction with the diversity in the colour shades of the tiles, as No.(17,18). The design proposal was employed on one of the frontages of the Tabuk Museum in the Kingdom of Saudi Arabia, as No.(19).



Figure 17



Figure 18



Design no. (6):

The design relied on the assembly of a systematic structural, where its construction was based on a single color with contrast between the color tones and the size of the decorative unit to give. Moreover, a kind of diversity was met in the creation of the design through the dark and light grades of the decorative units, as No.(20). Thus, it gave a kind of rhythmic diversity to the design and the design was employed as a proposal on one of the architectural facades The Interactive Children's Museum in the Kingdom of Saudi Arabia, as No.(21).

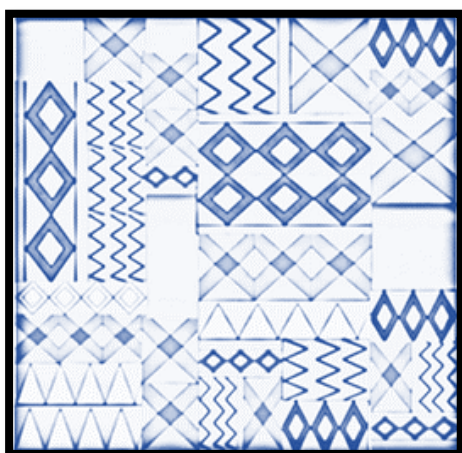


Figure 20

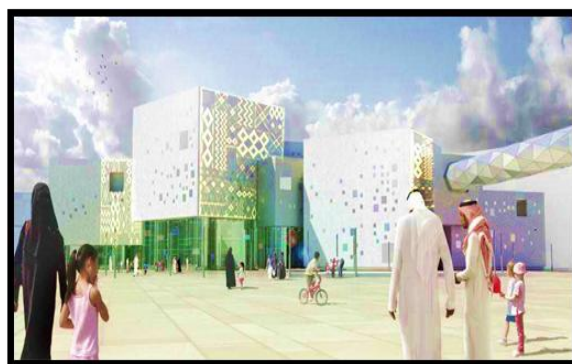


Figure 21

Results:

1- The link between the wall design and the structural standards in building the ceramic wall design that works on arranging the elements and voids and the ease of diversity in design between the different forming elements.

2- The structural standards that govern the artwork make the design unit continuous and help to achieve aesthetic and plastic values in a homogeneous manner that leads to the interaction of the viewer with the ceramic wall design.

3- Creative thinking can be developed through the authenticity of the artwork based on heritage and derived from the foundations and standards of construction with an artistic and scientific reference.

4- The use of graphic programs in processing color and designs led in obtaining variable wall designs.

5- Ceramic murals of materials suitable for all environmental conditions can be used in the architectural building and various spaces.

6- Raw ceramic material has many advantages in terms of quality, diversity in shapes, sizes, and colours; which can be formed in the internal and external branches and accepts formation on the two-dimensional and three-dimensional surfaces, in addition to being low cost.

Recommendations:

1- The necessity of paying attention to the ceramic wall design as an artistic work of aesthetic, plastic value, and social function, including the subject forms and architectural blocks, whether internal or external.

2- Emphasizing the importance of art in society through field applications of works of art.

3- The necessity of paying attention to the traditional arts, emphasizing the aesthetic and functional values it contains, and shaping it in a way that is compatible with the requirements of the times.

4-support agencies sovereign projects manufacturing ceramic murals.

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References:

1- Ismail, Hassan Ismail, 2010 AD, using acrylic colors in coloring theory, MA, Sudan University, College of Fine and Applied Art

2- Iman, Ahmed 2005, AD, The use of acrylic in mural painting, PhD thesis, Alexandria University, Faculty of Fine Arts.

3- Senussi, EatemadMuhammad Abdullah, 2003 AD, Contemporary Wall Painting between Design and Technology Requirements, PhD Thesis, Alexandria University, Faculty of Applied Art.

4- Bismarck, Ehab 1992 AD, Aesthetic and structural principles of design. The activities of formal elements, the Egyptian writer

5- Zarour, Rond 2013AD, the Effect of Interior Design on the Success of Interior and External Architectural Spaces Content, Palestine, Unpublished Master Thesis), An-Najah University, Nablus

6-Fatah elbaab and Muhammad Rashdan, 2002 AD, design in the art, the world of books for publication and distribution.

7- Shawky, Ismail, 2001 AD, design, its components and foundations in plastic art, Zahraa Al Sharq, second edition.

8- Abbas, Raafat Omar Ibrahim, 2016 AD, materials and methods used in the art of mural photography, Master Thesis, Sudan University of Science and Technology, Sudan.

9- Adly Muhammad and Muhammad Al-Daraiseh, 2010 AD, Colour Theory in Design, Arab Society Library for Publishing and Distribution Amman.

10- Abdel-Gawad, Mohamed Tawfik 2013 AD, Architecture from functional to deconstructive, published by the Anglo Egyptian Library - Cairo - Egypt.

11-Muhammad, Barakat Saeed, 2008 AD, wall art, raw material, subjects, publishing science for printing, Cairo.

12- Marzouk, Ali Abdullah, 2010 AD, The Art of Decoration of Traditional Architecture in Asir, Aesthetic Artistic Study, Riyadh, Saudi Commission for Tourism and Antiquities.

13- Bin Saad, Nada Bint Saud, 2013 AD, a contemporary view of mural art in the light of digital technology, MA study, Umm Al-Qura University, College of Art Education, Saudi Arabia.

14- Alfred Daniels, 1988 AD, An introduction to painting with Acrylic, quintet publishing limited, 6 Blundell Street, London.

15- Wheeler. J. et al 2000 AD, Cities in the Telecommunication Age,, Rutledge, London.

16- AIA, Michael Malone, 2010 AD: The architect's guide to residential design, New York, McGraw-Hill.

<https://www.almaany.com/ar/dict/arar/%D8%AA%D9%83%D8%A7%D9%85%D9%84/> 2.

<https://www.pinterest.com.au/pin/349451252327881267/> 3.

http://m.post.naver.com/viewer/postView.nhn?volumeNo=8363524&memberNo=25516952&requestQueryString=rid%3D1094%26contents_id%3D90044 4.

<http://homeklondike.site/2017/07/28/close-to-nature-holiday-residence-in-sunny-bulgaria/>