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Factors And Concepts for Formulating The Design of The Facades of Residential Buildings in The New Urban Communities According to Egypt's Vision 2030

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ABSTRACT: The research dealt with the emergence of new urban communities as an attractive environment for housing away from the capital crowds, besides its many problems, aiming to find new urban centres that achieve economic prosperity and social stability and improve the population distribution. Also, the influence of the multiplicity of parties involved in dealing with the facades of residential buildings, whether at the design or development stage, according to the case, and the factors affecting them were investigated. Then, the reasons for the change in the architectural composition and the design of the facades of the residential buildings in these new urban communities were identified and determined. In addition, the study demonstrated the effects of the visual image, the mental map, and visual pollution manifestations on life quality in these urban communities. The most significant of such manifestations and effects are the architectural violence phenomenon and the absence or distortion of the architectural pattern. Finally, these two phenomena were analysed, along with how to treat them on the facades of those residential buildings in the new urban communities.

KEYWORDS: Facade, Residential, New Urban Communities, life quality, pattern, violence, Egypt's Vision 2030.

I. INTRODUCTION

Housing is a basic and irreplaceable need for a person, and it is one of the crucial factors affecting his life and the identity of society in general. With the developments of the time, countries tended to create new urban communities. To be a healthy environment for creating housing that makes human life and society more comprehensive and appropriate, and addresses problems that have arisen in existing and old cities, such as not observing or respecting the architecture of the surrounding buildings or the surrounding urbanisation in what is known as architectural violence; Therefore, new designs for these dwellings began to appear according to the whims of the designer and the owner, and the facades and architectural formations are considered as covers for those dwellings as a mirror that reflects all aspects and aspects of their lives depending on factors (political - legislative - economic - social - cultural - religious - technological), as well as thought, and architectural character.

Based on the foregoing, the vitality and role of the architectural composition in building and shaping the envelopes of buildings in general and residential buildings in particular appeared and were confirmed in creating an architectural pattern that takes into account the visual image and addresses visual pollution. As a case study on the contemporary local reality and in the light of the Egypt 2030 vision, the study adopts the facades of residential buildings in the emerging urban communities in Egypt to study, evaluate, design, and develop the facades of these new communities due to their strong and profound impact on the visual image and quality of life and support for advancement and architectural and urban urbanisation affecting all Manifestations and aspects of human life and those associated with the environment and society, and given their role in giving or reviving an architectural identity and architectural character for the place in general or these emerging urban communities in particular.

II. RESEARCH PROBLEM

Countries encourage the construction of new urban communities to provide a healthy housing environment that makes human life and society more comprehensive and appropriate. Furthermore, the problems that appeared in the existing

and old cities will be addressed, such as not observing or respecting the architecture of the surrounding buildings or the surrounding urbanisation, which is known as architectural violence. However, designs for those new residences were according to the whims of the designer and the owner, not considering that these facades and architectural formations are envelopes reflecting all aspects of their lives besides the surrounding architectural thought and character emanating from society.

III. RESEARCH AIMS AND OBJECTIVES

The study aims to find an architectural pattern that considers the visual image and addresses the visual pollution of the contemporary local reality in the facades of residential buildings in the emerging urban communities in Egypt to support the role of these facades in giving or reviving an architectural identity and architectural character for the place in general or these urban communities in particular in the light of the Egypt 2030 vision.

IV. RESEARCH METHODOLOGY

The inductive approach was used to focus on the reasons for the emergence of new urban communities as an attractive environment for housing. Then the role of the decision-makers in designing the facades of residential buildings was explained as having multiple parties participating in dealing with such facades of buildings, whether in the design or development stage, depending on the case and the factors affecting them.

The analytical approach was utilised to list and compile the reasons for the change in the architectural composition and the design of the facades of the residential buildings in these new urban communities. Also, the study examined the effects of the visual image, the mental map, and the manifestations of visual pollution that affect the quality of life and are associated with these urban communities.

Then, the study applied the deductive approach to identify the most significant manifestations of visual pollution, namely the absence of architectural identity and character. They represent architectural violence and architectural pattern distortion. Finally, the study treated them by explaining and clarifying the concept and characteristics of the architectural pattern and its methods and means of finding, designing, and building it on the facades of those residential buildings in the new urban communities.

V. THE EMERGENCE OF NEW URBAN COMMUNITIES

The emergence of new urban communities in Egypt during the late seventies created an attractive environment for housing away from the capital crowds and its many problems. It aimed to find new civilised centres, achieve economic prosperity and social stability, and improve the distribution of the population far from the Nile Valley strip. And the establishment of new attractive areas outside the scope of the existing city or village and the creation of a new extension of the axes of urbanisation to its desert hinterland and remote places. This is to prevent the encroachment of urbanisation on the agricultural area. However, due to the lack of turnout from the population, the lack of means of transportation, and the economic crises, the development process of these cities was not completed. These new cities are divided into three generations according to the dates of their establishment.

In pursuit of the goals of urban development strategies, these new communities were designed, planned, and implemented according to the latest planning methods and systems. Considering that the prices of its lands are at the actual cost, especially for basic utilities, it is an attractive environment for investment while offering many privileges to investors (such as customs and tax exemptions and long-term payments). The foremost priority was to provide housing units to upgrade low-income people by providing adequate and healthy housing in a decent environment that is compatible with social and economic conditions, including the Mubarak National Youth Housing Project and the Future Housing Project. To support low-income people, several housing projects have been put forward flexibly and effectively, in line with changing cases and conditions, and provide flexible facilities commensurate with them.

According to Egypt's Vision 2030, a map for the reconstruction and development of Egypt has been prepared in general. The most appropriate sites were identified for establishing new urban communities, which have a special priority as new axes for comprehensive development on which several new urban communities will be established. The number of such communities is forty-four, spread and differing, and their economic bases vary to match the natural capabilities and resources of each environment to create new job opportunities (New Urban Communities Authority website).

These communities were divided into regions according to activity (residential, commercial, and industrial). These areas were divided into several neighbourhoods. Also, each neighbourhood has several plots of land, in the middle of which are service buildings. Plots of land are allocated by an allocation system, provided that the construction works and stages are managed by the owner or the owner's engineer. Then the periodic follow-up is done by the city apparatus, starting with feasibility studies, design, and licencing and ending with implementation. Hence, when observing and following up on the design of the facades of residential buildings in these urban communities, the study found that most of them varied between a revival of the classical style, as in **Fig. 1**. Besides, the style of modernity in

terms of simplicity, as in Fig. 2, and with a lot of randomness in the proportions and use of the vocabulary of those styles, some of the facades have overlaps of different styles.



Fig. 1. Using the classical style vocabulary with a lot of randomness between the proportions, relationships, and used vocabulary combinations.



Fig. 2. Using the modern style vocabulary with a lot of randomness between the proportions, relationships, and used vocabulary combinations.

VI. DECISION-MAKERS DESIGNING THE FACADES OF RESIDENTIAL BUILDINGS

There are many parties involved in dealing with the facades of residential buildings, whether at the design or development stage, depending on the case. In addition to factors affecting the design of the facades of residential buildings from all three sides, as in Table 1:

- The designer: He will likely impose his style on the house owner with a style or design with special features or vocabulary.
- City Authority: Its role is to follow up on the implementation of the building requirements as well as the requirements for the design and implementation of the facades, such as the colours and materials used, the maximum prominence of the ratio of balconies to towers, the permitted heights, the thickness and prominence of decorations or ornaments, and cornices.
- The house owner or the user: who are not architects and non-specialists, but they have special requirements, needs, and vision in the form, composition, and image of the building from the outside, which is due to their intellectual and cultural level. Their sources of information may be the facades of the houses around them, which they automatically coexist with, or serials or movies, and all of that is in search. It is about distinction, difference, and self-fulfilment, considering limitations such as cost, potential building technology, climatic aspects, privacy, and customs and traditions.

Table 1. Factors affecting the design of the facades of residential buildings for the three parties [1].

No.	Factor	Influencer
1	Globalisation	Travel and movement between countries, different media, and theories and histories of architecture
2	Facades	Facades surrounding housing in the community in old or existing cities and facades of residential buildings in new cities
3	construction technology	Trained hands, careful and periodic supervision, and availability of building materials and finishes
4	The dominant thought	Capitalist thought and participatory thought
5	Licensing authority	Building laws and building requirements vary from one region to another.
6	Financial aspect	The available financial resources or the ability of the owner to cover the cost of implementing the facade of his house

VII. THE REASONS FOR THE CHANGE IN THE ARCHITECTURAL COMPOSITION AND THE DESIGN OF THE FACADES OF RESIDENTIAL BUILDINGS

Architecture is a mirror of the culture of societies, and successive civilizations in Egypt affected architecture. Since the Pharaonic architecture, architecture has passed through five stages: the Pharaonic itself, Islamic, classical, modern, and post-modern, which is the most common stage in the facades of residential buildings. With the diversity of designs from one building to another and according to the vision of the owner and the designer, it sometimes reaches incompatibility with the surrounding residential facades, which is known as architectural violence [2]. This led to the disappearance of the concept of the urban character of the surrounding environment and society, distorted the visual image, and hurt the quality of life in any new urban gathering that is supposed to achieve the exact opposite [3]. Although it achieves the summit of Maslow's hierarchy in terms of individuality and innovation, it negatively affects

the visual aspect and leads to urban pollution and disharmony between the facades of residential buildings, if not between the components and elements of the single facade of the same building, for several reasons:

- 1) Attempting to imitate Western architectural styles that are not compatible with social, environmental, and economic conditions, as shown in **Fig. 3**.
- 2) Employing elements, style vocabulary, and modifying the characteristics of those vocabulary, proportions, shape, implementation materials, and colour, which led to the deformation of the cover or facade, as in **Fig. 4**.
- 3) Using vocabulary and styles for residential buildings in the surrounding urban community close to the classical style, as in **Fig. 5**.
- 4) Utilising finishing materials and architectural treatments in the facades in multiple and contradictory ways, as in **Fig. 6**.
- 5) operating a contradictory architectural composition vocabulary that is alien to architecture associated with the environment and society in the envelopes of residential buildings, as in **Fig. 7**.
- 6) The architectural composition of the cover or the façade conflicts with the residential building function, as in **Fig. 8**.
- 7) User disrespect and modifications on the building facades, as in **Fig. 9**.
- 8) The facades distort architecturally from an aesthetic point of view as a visual image, as in **Fig. 10**.
- 9) Failure to consider the environmental, social, and cultural aspects in the architectural composition of the facades led to a lack of distinctive architectural character from one community to another, as in **Fig. 11**.



Fig. 3. Imitate Western architectural styles that are not suitable for the environmental conditions of the community where the glass surfaces increase the internal temperature.



Fig. 4. Modification of vocabulary features such as columns and aperture proportions led to the deformation of the model used.



Fig. 5. The near-classical style of neighbouring residential buildings without awareness of their correctness and not achieving the style correctly.



Fig. 6. Using several contradictory finishing materials and treatments in the same building.



Fig. 7. Using strange and contradictory vocabulary about architecture stems from the environment and society throughout history.



Fig. 8. The facade design of a residential building does not indicate its residential use.



Fig. 9. Additions and alterations of residents to the facade of the building.



Fig. 10. Low visual and aesthetic aspects of the facade design.



Fig. 11. Lack of local character and lack of consideration of environmental, social and cultural factors in the environment and the surrounding community.

All the causes previously mentioned are due to many factors, namely:

- Individuals in general, in all societies, tend towards individualism and low self-esteem;
- Striving for uniqueness and innovation from what is around it and not taking into account the harmony and architectural pattern in which it lives;

- Failure to activate the laws for reviewing, approving, and implementing the facades, their details, features, and vocabulary from the licencing authorities in the new urban communities; and
- Not activating the role of the architect in the design and implementation, especially in the various finishing stages of the facades, and following them up during all the basic construction stages.

VIII. VISUAL IMAGE AND MIND MAP

Kevin Andrew Lynch defined it as consisting of several elements or vocabulary when put together in a way that creates a mental image of the place and the factors that help or affect the mental image of the place. Among the factors that help or affect the mental image is the design of the residential building from the outside. The building may be a unit of good and acceptable design, although it does not correspond to the surrounding buildings in terms of colours, vocabulary, or style [4]. Although the process of unifying the design or making the buildings a single form weakens the visual image and the mental map that the user draws to walk between buildings, as in housing projects, as in **Fig. 12**. The mint is diverse with the presence of the language of harmony, or the one spirit of design, between harmonious vocabulary and familiar architectural proportions. Thus, it can treat visual pollution.



Fig. 12. Models of the housing project buildings in Damo, Fayoum Governorate, which are repeated in a stereotyped manner, led to the weakness of the mental map.

IX. MANIFESTATIONS OF VISUAL POLLUTION

Visual pollution is the inconsistency, dissonance, and incompatibility between the elements and elements of the building envelopes or its facades themselves, or between the facades of buildings in the same urban environment [5]. They give a compatible architectural and urban character, which may be successful on a single residential building but may be discordant and inconsistent at the level of adjacent residential buildings. The images and forms of visual pollution are numerous, as in **Figs. 13 and 14**, including, for example:

- 1) In the colours of the facades of the buildings, for example, the study found a building with a colour completely different from the colours of the facades of the surrounding buildings. Or within the same single facade, the study found that there is randomness in the use of colours between items and elements, and it is inconsistent with the general facade colour;
- 2) Columns and capitals are used with incompatible proportions or columns without capitals rest directly on the slab without a base;
- 3) Roof fence shapes include fountains, blank walls, and tiles with proportions and shapes that do not match the styles used;
- 4) Balconies have plaster elements with updated designs and shapes that are not compatible with each other, as well as most ornaments, decorations, and cornices;
- 5) The shapes and proportions of windows and openings vary from one building to another; some of them are consistent with the classic, some are similar, and some are not related in the first place; and
- 6) Not considering the entrance relationship to the mass and configuration of the residential building and the neighbour in choosing the location of the entrances.



Fig. 13. The façade of one of the residential buildings, where the ratio of the dimensions and size of the fronton to the façade is unfamiliar to the eye, as well as the fact that the circular opening in the middle of it is small, the dimensions of the four circular

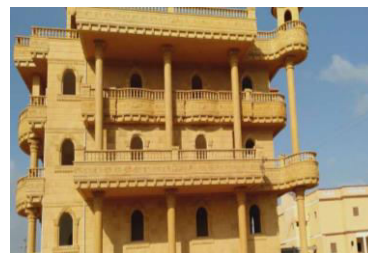


Fig. 14. The façade of a residential building, where the ratio of the length and size of the columns relative to the façade is unfamiliar to the eye, the dimensions of the windows are unacceptable, the ratio of the capitals of the columns is unacceptable, the ratio of the cornices and plaster elements is

columns are very small and not studied, and the ratio of the base to longitudinal, and the different sizes of the columns between the front and the two columns is unacceptable, in addition to its unclear side façades is unacceptable architectural style.

Based on the examples and models previously presented and analysed in the fourteen previous figures, the study found that they are attempts and pursuits towards uniqueness and distinction in the design of the facade or the outer cover of the building. This reflects a lack of sense or appreciation for the role of the architectural and urban character as a societal responsibility for individuals as decision-makers to design the facade of a residential building, which is known as architectural violence.

X. ARCHITECTURAL VIOLENCE

It is one of the emerging negative phenomena that must be addressed to preserve the visual image and eliminate distortion and visual pollution. What is meant is the incompatibility with the facades of the surrounding and adjacent buildings. Among the strongest examples is a classical-style façade adjacent to a modern or post-modern façade, which is a turning point in the general context of the architectural and urban pattern.

This pushes towards finding and building an architectural pattern as an indicator of the quality of life and improving the design of the facades of residential buildings as architectural formations that impose themselves on users and give an architectural and urban character to the place in particular and the city in general. And is a possible opportunity in light of the emergence of these new urban communities and following the architectural rules necessary for these residential buildings to express the traditions and customs of the societies in which they are built and not be far from them. As an attempt to create an environment with features that are more attractive to these new communities or cities than crowding in existing cities and address the problems of visual pollution and mental image.

XI. QUALITY OF LIFE

Quality of life originated with the philosophers Aristotle, Socrates, and Plato in Greece, while indicators of economics originated with the industrial revolution in the eighteenth century [6]. Social indicators arose in the middle of the nineteenth century, and environmental indicators at the end of the nineteenth century. The concept of life quality refers to the general satisfaction of the individual with his way of life [7]. As well as the extent to which factors of happiness and satisfaction are achieved and problem-solving is achieved to address boredom and monotony. As for what our study aims for in the field of architecture and urbanism, it is to fulfil the client's requirements and needs, considering the building codes and requirements, the architectural and urban character of the environment, and the surrounding community through the rules, sources of inspiration, and methods of formulating formations. Moreover, indicators and variables, besides considering the features of the vocabulary as means and tools for evaluating, designing, and developing the facades of residential buildings and their architectural configurations, must be adopted. Thus, a checklist can be accessed for the design and evaluation of the external facades of residential buildings in the new urban communities, through which the pros and cons of the vocabulary features, variables, and indicators of the architectural design of such facades can be accessed and proposals submitted for development and improvement as a guide for the designer and licencing authorities to review the evaluation and design of facades.

Therefore, it was found that the effectiveness of the life quality in users' acceptance of the design of the facades or the covers of residential buildings in a way that achieves safety and beauty for users increases the importance and role of participation in the design by the decision makers of designing the facade of the residential building and in preserving the architectural pattern and the architectural and urban character of the environment and the surrounding community.

XII. THE THOUGHT OF ARCHITECTURAL PATTERN

This makes architecture a distinctive work of art; its elements, vocabulary, and formations are compact in many ways that give rise to the architectural pattern in its material and moral forms [8], [9]. Previously, the facades of buildings had a clear pattern that represented social and environmental characteristics and features. Now, the pattern has faded and has become deteriorating, unclear, or intangible due to rapid environmental, cultural, political, and social transformations. These transformations affected the design of building envelopes in most cities. This led to changes in the features and characteristics of the system or arrangement locally in light of these transformations and their negative aspects, and the need to create and build systems that have the original societal characteristics and features of the human and cultural aspects of our society and serve environmental conditions, technological progress, and emerging jobs emerged.

The term pattern has many meanings depending on the place of its use and according to the studies and fields that have been exposed to it. In the dictionary, everything that is on one system and has standards and indicators on one method follows a similar pattern or follows a system, mode, or style [10]. In the architecture field, it is a unit, or regular and sequential iterative models, that have laws and rules that maintain the relationships between the vocabulary and the elements that create the pattern. The pattern is governed by relationships, rules, and stages, which give indications and

meanings that stem from design thinking based on respect for the environment and the society around it and respect for the surrounding and neighbouring patterns. There are no links between the pattern and the form or the design of the architectural formations based on the language of the pattern, which is the result of incompatibility or interdependence and the result of not observing human requirements and needs [11]. In a way that leads to isolation, difference, and separation, where the system has its language associated with many various system tasks related to human activity and behaviour stemming from habits, concepts, and values, which creates compatible and identical cases in an adaptive design that has rules of congruence.

XIII. THE CONCEPT OF ARCHITECTURAL PATTERN

After studying and analysing the thought of the pattern, it is possible to reach the concept of the arrangement, as it is a model with independent characteristics that express the total change that has an impact on the architecture of space and time. Through it, it is reformulated into other forms and images that can be repeated in terms of design, implementation, and development, continuing in a dynamic way that expresses the foundations and structures up to the functions and construction development, aesthetics, and appropriateness required, and then standing on the characteristics of the pattern to clarify the pattern's role.

XIV. PROPERTIES OF ARCHITECTURAL PATTERN

Architecture is based on organisation, arrangement, appropriateness, harmony, economy, and reliance on several principles that facilitate the achievement of a balanced architecture between structure, function, and beauty. Based on the pattern definition, its structural role is confirmed (it carries itself and carries the origin), and its functional role is confirmed (use, lighting, treatments, ventilation, etc.) [12]. Also, aesthetic roles are the transitions from form following function to form following all aspects. Thus, the pattern role is confirmed as an inevitable result of changes in the aesthetics of architecture. The transition is from well-known aesthetic values as static entrances, such as balance, proportions, repetition, unity, symmetry, axiality, and rhythm. Dynamic entrances appeared due to building technology development, such as interaction with the environment. Moreover, its conditions, nonlinearity, rhythm, diversity, change with time, ambiguity, and pattern characteristics are countless, as follows [13]:

- 1) Repetition: These are the most significant characteristics, including possible means, such as geometric shapes, which give the architect freedom of expression according to circumstances and external influences in a flexible manner;
- 2) Meaning: It stems from and is linked to space and time because it expresses the ideas of each of them, besides the mental image of the surrounding urban context, symbols, terminology, and connotations;
- 3) Scale: It is the size, dimensions, and size of the element; it is one of the relationships between architectural formations and design elements; it expresses the extent of the strength and weakness of the architectural pattern; and most importantly, it is the relationship with the scale of the human body;
- 4) Stillness and movement: they are the constant in the face of the variable and the behaviour of the pattern that changes during a certain time, and it is between displacement, switching, or change in place or time;
- 5) Geometric formation: The pattern is irregular, regular, organic, free-form, or geometrical in construction; and
- 6) Pattern dimensions: It starts from the two-dimensional point and reaches the seventh dimension, which is the assessment of the life cycle of the building or project. It starts with 3D solids and drawings CAD (computer-aided design). Then, it goes up to BIM (building information modelling) because the elements, vocabulary, and formations have physical, mechanical, chemical, and electrical properties. The idea of simulation enters into the factor of time and its impact on the dimensions of the pattern in a way that supports cooperation between all departments and parties involved related to the nature of the project.

XV. WAYS AND MEANS OF FINDING, DESIGNING AND BUILDING THE ARCHITECTURAL PATTERN

In buildings and architectural projects, the envelopes of those buildings and projects are the system that controls the transmission of energy between the interior and the exterior. Therefore, the building envelope has become the focus of many studies. It must meet standards and environmental assessment systems. Before the air conditioning system, it depended on the thickness of the walls and the size of the openings to control the building's temperature. The concept of transparency appeared with the industrial revolution and spread in architecture globally, as in the Crystal Palace exhibition in London, as an example of the use of iron and glass, as in **Fig. 15**. But later on, this idea led to the problems of high temperatures, the use of air conditioning, and the increase in global warming [14].

The development in the design and construction of the pattern varies between simplicity, severity, and complexity. It has recently become more interactive with the surrounding environment due to rapid modern developments. Its tools have become many, starting from point and line to folded paper, writings, nature, sounds, writing, and movements, such as the movement of visual vocabularies such as colour, shapes, rough or soft texture, and even a blade. To what

we want with modern and available design methods and means. Parametric design has recently appeared, involving the establishment and preservation of relationships between elements while developing alternatives to design solutions such as the language of patterns [15].



Fig. 15. The interior view of the Crystal Palace exhibition in London, using iron and glass, led to a rise in temperature, using air conditioning, and an increase in global warming <http://www.greatbuildings.com>.

The patterns developed into groups of relationships that can link many architectural levels and bring them out to reach the technology of transparency. In addition to presenting the beautiful composition and responsive movement and its engineering construction that defines complex surfaces or digital fabrication and employing technology in developing building envelopes and their unique patterns and managing their relationship with the external environment, the concept of multiple patterns began to emerge. The pattern changes from apparent forms with aesthetic features from scale and proportions to a new level based on a series of organised architectural relationships, requirements, and determinants that support interaction and kinetic response with the surroundings, including the intuitive and the spontaneous.

Therefore, the pattern has a role in the outer envelope or the architectural composition of the building, which is creating an architectural character or preserving the surrounding character to interact with the existing urban contexts and control radiation, light, vision, and ventilation. In general, the cover is an opportunity to create many configurations with the capabilities of building technology and digital manufacturing tools, which offer many capabilities, namely:

- Project proposals are produced according to the available rationalisation of digital construction and manufacturing.
- The building or project file is the output, which includes the analysis operations intended for the direct production of all project parts.
- There are two types of digital manufacturing processes in terms of material processing:
 - 1) Elimination operations such as grinding materials, drilling, and cutting, which are laser-based operations, and wire arrangement according to movement; and
 - 2) Addition operations, which are to collect materials and 3D printers, such as small-scale objects.

These methods and technologies of manufacturing and design help to generate designs that are dynamic depending on the variables that can be identified and the constraints that are put in place. This contributes to the production of patterns that consider the nature of each project, which is different from one project to another. This is to achieve the design aspects (construction, function, and beauty) and be compatible with the project, the environment, and the surrounding community. Thus, it is a distinctive, dynamic, balanced, environmental, sustainable, and compatible pattern with the surroundings. Among the most important means of producing and designing patterns are paper folding, calligraphy, writing, the natural environment, movement, and sounds.

From what was previously presented and analysed in terms of the ways and means of creating, designing, and building the architectural pattern with examples, we find that the employment of the patterns in the architectural formations gives flexibility in the multiplicity of levels and stages of expression, makes the complexity an easy matter to deal with in the structural and engineering aspects, and allows the employment of advanced studies on formations and digital fabrication using technology. Also, according to Egypt's Vision 2030 and global programmes to find quick solutions to preserve the environment, given the role of external covers and walls as facades to support environmental systems and the emergence of patterns in many buildings as a mirror of communication or a reflection of the political, economic, and social situation of society, In the majority of buildings and projects, the pattern appears with many uses, such as functionality to suit the use, structural support to carry the building and itself, and aesthetic aspects of the appearance of the architectural pattern.

Therefore, the pattern has a pivotal role during all stages of the project's life. In future projects, the pattern will be employed as an integrated cover that considers the environment and society as contemporary local products. In projects under design, it is dealt with using a pattern that has characteristics that are compatible with the environment, climate, general character, and architectural and urban surroundings as a dual pattern. Finally, in existing projects and buildings, the existing or existing patterns should be identified and then processed to succeed in the functional, structural, and

aesthetic aspects. Hence, the phenomenon of architectural violence on the façade of residential buildings in these new urban communities fades away.

XVI. CONCLUSION

The most significant conclusions of the emergence of new urban communities as a spatial determinant for the study and its relationship to the architectural design standards for the facades of residential buildings in Egypt are to help evaluate, design and develop them for these new communities. Because of its powerful and profound impact on the visual image, quality of life as factors, and the thought of formulating the architectural design of the facades of those residential buildings in these new communities as it appeared during the stages of this study, emanating from the environment and society, and due to its role in giving or reviving an architectural identity and an architectural character for the place in general, as follows:

- 1) The random use of the vocabulary, features and elements of the classical style spread in the design of the facades of residential buildings in the new urban communities because of openness and the culture of users and the designer;
- 2) Many of the facades did not reach the level of architectural composition and acceptable design, especially the facades of residential buildings in the new urban communities. Moreover, there is a difference in the design of the façade from what is found with it in the same neighbouring place or its urban surroundings. Hence the necessity of employing and activating standards for review, evaluation, and making recommendations by the designer, owner, and licencing authorities and following them up during implementation;
- 3) Vocabulary and elements were employed for different styles, but the concepts, ideas, shape, proportions, building materials, and original finishes, which appeared in the same original style, were not taken into account, even if the buildings were compatible with each other;
- 4) According to Maslow's hierarchy, self-actualization is at the top of the pyramid for the needs of users by their levels in terms of vocabulary, elements, and architectural configurations of the facades of their houses;
- 5) Imitation of the concept of the Islamic seat in balconies or balconies carried on columns and roofs and often prominent from the building facade as an abstraction of one of the vocabularies of the Islamic style;
- 6) One of the most significant problems and phenomena that accompanied the new urban communities was the appearance and shape of the architectural formations on the facades and envelopes of residential buildings. Also, they led to visual distortion and weakness of the mental map, and they impacted the visual image, which is both a phenomenon of architectural violence and the absence or distortion of the architectural pattern. This negatively affected the quality of life of users and society;
- 7) Although architectural violence may be considered by some as the concept of distinctive signs in urbanisation, with buildings in the middle of residential communities, it is considered one of the causes of visual pollution and greatly affects the visual image and the mental map of users;
- 8) The study found that the visual image of the new cities shows architectural violence in varying proportions. However, architectural violence may appear between residential buildings in the city and public and service cities. But because the user separates his mind between the neighbourhood in which he lives and when he goes out to those public and service buildings, the influence of the concept of architectural violence fades away;
- 9) Architecture has been updated and developed recently with the emergence of modern building materials and finishes, which affected the shape, features, and characteristics of the vocabulary and elements of different architectural styles; and
- 10) Likewise, the pattern or patterns are continuous and changing stages and processes towards development and creativity, and they have the specificity of the place and high flexibility. It represents a mirror of the users' relationship with their architectural and urban surroundings and represents the extent of compatibility between them. Thus, it is a product of transforming architectural formations from an abstract theoretical point of view into a practical aspect with meanings and contexts that are in line with the urban environment externally and the architectural environment internally.

XVII. RECOMMENDATIONS

- 1) The architectural pattern aims to follow a method by which the building is produced and not merely built in a formal system. But it achieves this through the interaction processes between various variables of building materials, man, technology, possible tools, composition, environment, and infrastructure.
- 2) The pattern is an architectural language that carries and gives meanings to users, and those meanings vary according to their place in the building or project and the general context. Hence, the study finds that such a pattern has ways, means, tools, systems, and architectural and expressive material aspects. Therefore, it is an

- effective way to reach an architecture with functional, aesthetic, and structural meanings to reach acceptable levels of excellence, innovation, and creativity in the environment and the surrounding community.
- 3) However, the pattern is linked to meaning, content, and form; it is independent because it interacts with the outcome of the factors and variables present in the place. Thus, it is one of the means of addressing the problems of designing facades to cope with changing requirements and needs at every time and to achieve integrated, multi-functional facades that express the local conditions and reality and live on later in a meaningful way.
 - 4) The pattern is not ready to use. But it requires research and thinking to find it in light of all those indicators and variables related to the environment, society, and the urban and architectural character that people deal with. To be able to employ it in many ways to solve problems and phenomena and to be the basis for the architectural and urban product that is in line with all-time stages.
 - 5) The process of developing a checklist to review, develop, and improve the design of facades and envelopes of residential buildings is not only to review the architectural style or its vocabulary used or to address the visual distortion of design. But it is to achieve the quality of life for users according to Maslow's hierarchy. It promotes discrimination, achievement, and self-esteem while preserving the architectural pattern and the general architectural and urban character, improving the visual image, and eliminating architectural violence.
 - 6) A checklist must be formulated and structured as a tool or technique for evaluating and designing facades for residential buildings in new urban communities and emerging cities. It is based on the methods of formulating relationships, variables, indicators, characteristics, features, and elements for architectural design related to the urban environment, needs, requirements, and community characteristics. It would serve as a guide for the designer as a checklist and the basis for evaluation, design, development, and improvement.

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