Online Journal of Art and Design
volume 13, issue 4, October 2025
DOI: https://doi.org/10.30935/ojad/2513065

The Forces of Optical Interference in Interior Design

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summary
The visual interior in interior design stems from the use of techniques and the process of communication between interior and exterior spaces, and it is positively reflected when used optimally, achieving success and progress on a functional and aesthetic level. This emphasizes the communicative nature of the discipline with the available technologies, which provide comfort, speed and ease of use. The forces generated by the role of visual interference in the contexts of physical and technological development, with the acceleration of the creative process, provide the interior designer with solutions to achieve all possibilities in diversity, compatibility and harmony, which are related to accuracy, speed, cost reduction and the growth of the new through suitability. This is what the current research sought to address in dealing with the subject of technologies as active forces in interior design.
Keywords: forces, active, interference, visual, space, interior, design.

Methodological Framework

Research Problem

The reflection of technologies within interior spaces and their effectiveness in human activity extends to the perception of those forces, which we describe as visual interference, in terms of enriching or imparting new ideas to the recipient about the technologies and forces contained within the space that are aware of visual interference, which stems from elements to generate other forms and shapes , in which mechanisms of transparency and spatial openness are available, enhancing the recipient's understanding and perception. and the forms themselves acquire the same qualities of influence. This requires interpretation and the establishment of rules in accordance with design principles, as they are linked to direct or indirect relationships through the embodiment of the influence of forms and compositional vocabulary, which carry multiple spatial meanings and, in an expressive style, give the recipient meaning and expression to form a kind of (icon) to the place and creates an identity through it, as the relationship of overlap gains its importance through the new formal data it provides, revealing the construction of multiple patterns and styles, which are the product of the relationships of that visual overlap. The aesthetic values provided by the overlap result from the multiplicity of styles, elements and characteristics, each influencing the other to achieve linear, formal, colour and material diversity, as well as optical overlap. Hence, the research problem arose through the observation of some weaknesses in the waiting rooms of malls in terms of the technical aspect of perceiving visual overlap. Accordingly, the research problem was formulated based on the following question: Are the active forces of visual overlap in the design of interior spaces embodied through techniques and materials that are reflected in the following question: Are the active forces of visual overlap in the design of interior spaces embodied through techniques and materials that are reflected in the following question: Are the active forces of visual overlap in the design of interior spaces embodied through techniques and materials that are reflected in the following question: Are the active forces of visual overlap in the design of interior spaces embodied through techniques and materials that are reflected in the following question: Are the active forces of visual overlap in the design of interior spaces embodied through techniques and materials that are reflected in the following question: Are the the research problem was formulated based on the following question: Do the active forces of visual interference in the design of interior

spaces manifest themselves through techniques and materials that are reflected functionally and aesthetically in the perception of the recipient?

Research Significance

The current research gains its importance through:

-Contributing to enriching the knowledge of designers and specialists with scientific material that addresses semantic signs and the nature of their use in interior spaces through visual interference.

-It contributes to providing a knowledge base for interior designers to clarify the concept of optical interference techniques and mechanisms and their use within the interior space of malls.

Research objective

To reveal the effectiveness of optical interference techniques in interior space design.

Research limitations

The current research is limited to the following:

1- Subjective limitations: Studying optical interference techniques and their effectiveness in interior space design.

2- Spatial limitations: Studying the interior spaces of malls in Baghdad.

3-Temporal limits: the year 2024.

Definition of terms

Active forces

-The inner movement that completes life according to spiritual principles (Jung, 2000, p. 22).

-A composite of a number of interconnected and interacting parts, each of which has a specific function, with a degree of cooperation and integration between these different parts in the performance of their functions (Mustafa, 1987, p. 16).

Procedural definition: These are the influences embodied by the energies generated that flow from objects and affect the recipient.

Visual interference

-Interference: to interfere, interference, and interference of things: to enter into one another. Linguistically, interference means 'the interference and intermingling of joints: entering into one another, and the interference of things: their similarity or confusion and entering into one another' (Ahmed, 1989, p. 315). In logic, overlap is the entry of a part into a whole, such as the entry of a positive part into a positive whole, and the same applies to a negative part and a negative whole.

Procedural definition: It is the process of combining and forming two things or two states and merging them to create a single visible and perceptible scene.

Internal space

-Space is linguistically defined as that which extends from the earth, empty of the earth (Masoud, 1987, p. 122)

As for interior space, it is defined as the creation of a specific internal environment with sensory, aesthetic, cultural, temporal, social, economic, and psychological expressions for the efficient performance of human activities and events (Ching, 1987, p. 17).

Procedural definition: It is a specific formation in length and width that contains a space-time area through which various activities and events can be performed, employed according to functional and aesthetic needs.

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Theoretical Framework
The Nature of Technology and Optical Interference and Their Relationship to Interior Design

Defining Concepts
1-Techniques: The systematic application of scientific or other knowledge to achieve practical tasks. It is also the integrated organisation of people, machines, ideas, opinions, working methods and management, so that they all work within a single framework. It is also the systematic treatment of art or all the means used to produce things necessary for human comfort and continuity of existence, and it is a technical method of performing or accomplishing scientific purposes (Al-Khatib, 1981, p. 13). It is thus an organised cognitive process for achieving practical tasks within a series of relationships, used to produce things necessary for human comfort and continuity of existence, leading to the achievement of the design process.

2-Visual overlap: Interference is the creation of diversity between elements through the diversity of their parts and includes overlapping in part, as each element appears in a form that clarifies its shape, with simple parts disappearing as a result of parts of another element passing over them, so that the two elements appear as if they are penetrating each other (Al-Ajili, 2013, p. 50).

Visual overlap, then, is new formal data that reveals complex and multiple patterns and styles within a series of overlaps between a group of units or elements that make up the overall form, allowing for the generation and formation of new readings.

3-Interior space: What it represents in terms of creating a specific internal environment with sensory, aesthetic, cultural, temporal, social, economic and psychological expression, and for the performance of human activities and functions with high efficiency (Ching, 1987, p. 10), It is 'the primary concern of the interior designer, as it is formed through the relationship between the geometric elements and how we perceive them, and the space inherits its aesthetic and sensory characteristics from the elements in its field' (Ching, 1987, p. 17). Thus, interior space is: the basic unit in the interior design process that reflects a set of elements that are physically embodied and have a sensory and aesthetic expression with the aim of enriching the interior space with visual scenes that have meaning and purpose, reflected in the design compositions of the interior space, thereby defining its identity and function.

The effectiveness of optical interference techniques in indoor spaces:
The active force is hidden in all beings, and can be released naturally or in the form of chemical, physical or biological elements. It is subject to a stronger will in technology, which is the will of God, and is linked in all its forms by relationships formed by the fundamentals of employment (Al-Razi, 1982, p. 38).

Force is also a vector quantity that has magnitude and direction and is either a pull or a push. If a force acts on anybody without being balanced by another equal force, that body moves rapidly under the influence of this force. and forces impose a kind of relationship in which the ability to innovate requires flexibility in controlling the separation and particles of elements, moving them and directing them in the desired direction, and in interior design, they are constrained by the design form (Ahmad, 1970, p. 31). Therefore, it is force that brings about modification and change in composition, design and formation.

The astonishing scientific development achieved by humans during the 20th century has effectively influenced the way of life in all societies, in order to meet the demands of contemporary life, which has also led to the rapid completion of tasks and work and the rapid achievement of goals. It can simply be said that today's world is full of images and sounds generated through various multimedia, and contemporary culture can be described as a culture of reading, writing through media, and that the process of communication and

interaction between them is the concept of technology that has added to the interior space performance values related to the beauty of the design output at the performance level, which can link the reality of performance technology to other interior spaces, as a physical entity with an organisational structure whose main purpose is to contribute to increasing the effectiveness of the interior designer in using the wide spaces provided by physical technologies that overlap and reinforce his role, which can be linked to the use of a set of more complex design technologies that are higher than the level of individual privacy (Badria, 2017, p. 24). The concept of technology focuses on three groups (Krajewski, 1999, p. 133):

The first: represented by the machines, tools and materials used in the production of goods and services.

The second: emphasising comprehensive knowledge of procedures, methods and presentation techniques.
Third: Focusing on the relationship between humans and machines through the use of optical interference techniques.

Effective work in general is that which achieves a predetermined goal, and it is the degree to which multiple goals are achieved, as it is considered to be the degree of correspondence between organisational goals and achieved results. Meanwhile, the Arab Administrative Sciences Organisation (1974) viewed effectiveness as "the extent to which the elements used inputs‘to obtain the desired results ’outputs." Some have linked effectiveness to efficiency, which is achieved through the optimal and economical use of available resources to achieve a certain volume or level of output. It is one of the most important measures of success in achieving objectives (the organisation, 1974, p. 5).

The technical aspect contributes fundamentally and effectively to revealing the characteristics of form and its apparent variables, especially the nature of compositional techniques, by emphasising the best means of visual communication and aesthetic reception. The technical development of modern materials clearly shows expansion and development beyond what was adopted by primitive and traditional techniques. Cognitive and technical changes have led to the introduction of material and service products that have influenced design systems and methods of finishing and environmental insulation, playing a role in changing the performance of spaces and establishing new foundations for internal spatial connections between them and the outside (Hamdallah, 1997, p. 62). The principle of real materials today may be completely penetrated by industrial technology in a new real formulation of materials that differs completely from what we have seen in the use of materials, especially those used in the composition of interior spaces, as we observe a comprehensive change in the pursuit of hybrid materials with forms far removed from the characteristics of natural materials (Osama, 1999, p. 90)

From the above, it is clear that modern technologies are directly linked to scientific and technological progress, which has opened up broader horizons in the design process in order to keep up with new developments. as it has given designers ideas and visions that differ from their past views to create new systems that meet current needs and future aspirations in the field of expression and creativity using modern technologies and materials. This has influenced human activity and behaviour, the environment, and people's perception of interior space and their sense of belonging to it, leading to new results which may have been difficult to achieve in the past.

Third: Artificial intelligence techniques in interior design: The goal of artificial intelligence is to understand the nature of human intelligence by creating computer programs capable of simulating intelligent human behaviour. This refers to a computer program's ability to solve a problem or make a decision in a given situation based on a description of that situation, with the program itself finding the method to be followed to solve the problem

or reach a decision by referring to the various inferential processes fed into the program. This is considered an important turning point that goes beyond what is known as 'information technology,' in which the inferential process is carried out by humans. The most important reasons for using computers are their superior speed (Alan, 1993, p. 11). One of the pioneers of organic theory believes that design intelligence comes through harmony and complete integration between organic design and digital design and the use of materials in their natural state. Although this theory differs from what European functionalist intellectuals have advocated, namely that design perfection is manifested in the designer's control over the surrounding environment with the explicit purity of the masses and the expressive power of the interior space (Al-Kriza, 2005, p. 111). There are several types of energy that interior designers use to implement their design ideas, such as the use of laser energy to create virtual walls in modern interior designs. There are many uses for electrical energy, for example, or kinetic or thermal energy, among many others, but the expected reliance on laser energy in future interior designs is one of its most prominent applications in modern technologies is its use in computers and the Internet (the international communications network). The most prominent examples of this are the Internet home and the smart home, and the electrical energy produced from the conversion of various energies (thermal, solar, wind, water, etc.) as well as its use in technologies for implementing future ideas, especially solar ones, as researchers try to exploit solar energy more and on a wider scale. This is clear in global future designs, which show how to use solar, laser, and electrical energy, as well as the use of computer technology in interior design, which is one of the most prominent manifestations of progress and cultural development in interior design (Mayada, 2004, p. 50).

The researcher believes that the technological revolution, whose effects are clearly visible in lifestyles and the urban environment, will be reflected in all aspects of life and in how various activities are carried out. Therefore, we must take into account the changes in the concept of space that have accompanied the digital revolution. The future seems to hold many radical changes to the concepts on which these theories were based in the past. Studies in this field have led to a major shift in the general direction of artificial intelligence research, which she defined as the response of a machine to its surroundings in a way that can be described as intelligent (Saleh, 1989, p. 67). It is a system that aims to understand the nature of human intelligence by designing computer programs that can mimic intelligent behaviour (Alan, 1988, p. 21).

From this, it is clear that artificial intelligence is an application of human ideas based on the machine's simulation of human behaviour, combining human intelligence with the possibility of linking it to computer work to form a direct response that corresponds to the human reaction to the environmental changes surrounding it. This enables it to exhibit a type of response that can be described as intelligent by providing it with a number of specialised software programmes in various fields that are capable of self-control in the internal space.

Among the technologies involved in the treatment of internal spaces and related to interior design, and the visual interference provided by these technologies, are the following:

1-Visual techniques: Perceiving visual form and aesthetics requires advanced technology and mental activity, as it is a sensory mental process whose importance lies in revealing the inner workings of things within the sensory stimuli perceived by the human mind, which seeks new information that elevates interior spaces through form to the level of technological modernity. The interior space of the mall is formed from a group of overlapping visual elements that mimic the visual senses of the recipient, as the movement of the eye within the visual system of the recipient is within the space that connects the surface level of the design with the kinetic variables that are the results of interactive processes. Therefore, the state of visual illusion is related to the change in the physical stimulus (material). The interrelationships with the state of relations to interpret the

apparent movement of the eye produce expressions in stimulating the network from small changes in the specifications of the visual scene (Wade, 1995, pp. 399–402).

2-Lighting and colour: Lighting is one of the most important elements of attraction and excitement in interior spaces through the modern technical methods used by the designer to achieve the required function, as well as taking into account strategies to control both daylight and artificial lighting (Christopher, 2008, p. 133). Lighting is one of the most important elements complementing the interior design techniques of shopping centres (malls). Its presence enriches the interior space and directly affects the success of the visual scene, adding a special appeal to those spaces, which the viewer sees as an artistic language that conveys expressive meaning through its diversity. Space has several functions and characteristics that distinguish it, the most important of which is its ability to transform (Samia, 1980, p. 93). This is what distinguishes light from its ability to transform quickly and extensively due to its ability to move freely between the elements of the interior space as a functional sign. The importance of light lies not only in revealing and presenting visual signs to the viewer, but also in contributing to the construction and composition of the visual scene's elements as a single unit, as the expressive power of lighting works to unify the vocabulary of the design work (Bernard 2005, p. 13). The idea of using optical interference technology is limited to emphasising the functional and aesthetic performance of lighting in space by clearly emphasising the use of performance technology for most special lighting units to provide a luminous environment with clear and intentional optical interference, represented by the large hall space (Badria, 2017, p. 40)

3- Material and tactile values: Visual materials are forces that give shapes their identity, characteristics, and design personality. The external appearance of a material is called texture or tactile composition, which means 'the external reflection of the deep structure of the material, whether natural or industrial, in all its diversity' (Al-Imam, 2002, p. 78). The element of texture refers to the characteristics of the surface of a shape, as every shape has a surface, and every surface has certain characteristics that can be described as smooth or rough. Shape and texture are inseparable, because the connotations of texture on the surface are also shapes (Wasius, 1972, p. 79).

The visual sensations through which we perceive design, by presenting a representative or symbolic description, have a certain appeal to attract the attention of the recipient. They are perceived visual forces that have an effect and interaction within the context in which they are included. This interaction either increases and develops this energy or wastes it, depending on the hypothetical powers of these elements in terms of their apparent characteristics, as well as the type of interactive relationships that have been established as a system for integrating directed forces (Tariq, 2002, pp. 27-28).

The aesthetics of visual overlap in interior design

The aesthetics of design fall within the cognitive, semantic, artistic and scientific framework of the interrelated processes represented by the elements of construction and the foundations of organisation. Design is no longer merely aesthetics or formal or colouristic effects of the designer's emotion, but aims to address the mind and stimulate the imagination of the recipient, as well as to arouse the desire to know and explore more about our strange world and how it is shaped in line with the changes it is witnessing in the field of modern technology in communications, computer use and the innovation of modern industries. The aesthetic function has become a basic requirement that everyone strives for. Therefore, electronic and mechanical machines, metal and glass materials have been incorporated into modern designs to achieve the greatest possible level of luxury through the diversity and multiplicity of lighting, air conditioning, and interior and exterior decoration systems, which are handled by the designer using artistic techniques in line with the elevation of general taste that surrounds both production and consumption conditions. It is not possible to reorganise these elements and materials in an objective and functional form without a certain degree of abstraction, reduction and simplification, which are the

elements that reveal the designer's emotion, expression and beauty (Al-Husseini, 2008, p. 64).

1-Visual perception of the interior space: Perception is based on a person's view of themselves and the world and their understanding of it. Sensory perception involves interpretations of sensations and gives them meaning and organisation, which is an advanced stage of sensation (Hassan, 1971, p. 41). It represents the process of acquiring, storing, and organising knowledge, which can be easily retrieved and used to form specific responses. The difference between perception and sensation is interpretation and analysis, which are important characteristics of perception (Hassan, 1971, p. 42). There are some characteristics in images that make the process of attention easier and clearer (Qasim, 1982, p. 142):

A. Different intensities of lighting: The reflections of light falling on different colours vary in intensity, so an image containing different colours reflects different lighting and is quickly noticed. The eye and its light-receiving nerve cells are of two types: sensitive to light but not to colour, and sensitive to colour but not to light, and they work to stimulate judgement and perception of the image.

B. The outer edges and boundaries of the shape: The more distinct and clear the boundaries of the shape are, the easier it is to read, receive, and perceive the space. The more distinct the boundaries and outer edges of the shape are, the more likely it is to attract the viewer's attention with this feature.

C. The purity of shapes and the absence of manipulation: The purer and more directly perceivable and readable the shapes are, the quicker the attention is drawn to them.

D. Amount of information: The more information an image within a space contains, the more attention it attracts than those containing fewer subjects. Important subjects that attract attention include: size, to emphasise the important element in the space; contrast and harmony in lighting and texture; movement in space, curved shapes and overlapping structures, distortion and conflict.

The most important characteristics of attracting attention (Lynch, 1971, p. 219).
- Number: Increasing the number of details reduces the focus and clarity of attention.
- Size: A large element is more effective in attracting attention in relative comparison.
- Repetition: Central value plays an important role in attention and focus.
- Vitality: Resulting from the contrast of the adjacent shape, it produces unusual attention.

2- Visual communication and the relationship between the interior and exterior spaces in shopping centres: The act of communication refers to the continuation of a strong relationship between two parties, and means openness to the other party. It is based on the idea of the inevitable dialectic between form and content, or appearance and substance, in evaluating appearance through channels or keys between essence and its opposite, which are in harmony here, since the essence is reflected in the appearance, since the inside and outside are two integrated, coherent systems conditioned by scientific, technical and design principles, because everything inside may impose a condition on the outside, and in many cases the outside is indicative of the inside, and the inside is part of the outside, so it is a continuous alternating essence in terms of functional, volumetric and formal interconnection (Huda, 2004, p. 55). There are elements that determine the method of separating the interior space from the exterior, namely (Al-Dabbagh, 2002, p. 58):

A. Materials: Architects have recognised that materials change with location and that the texture of materials has a different effect on the interior than on the exterior.

B. Scale: The interior scale appears smaller than the exterior scale.

C. Colours: Architectural colours are derived from open spaces, and colours in interior spaces tend to be rich in order to achieve psychological comfort.
D- Light: It is the main active force in visual contrast because it has a functional dimension of clarity.

3- Open and closed spaces: Any composition between spaces represents a pattern of perceived internal relationships, and this pattern has its own laws, in that it is characterised by closed unity and regularity, or it is open in a way that leads to changes in the relationships between those parts, which works to change the pattern itself. However, it imposes its design conditions to convey one or more meanings, emphasising that design openness (Al-Asadi, 2017, p. 20). It is possible for the open to become closed, and vice versa, in part of the design based on the physical level and visual impressions of that space. Closure and openness coexist in design, and one may prevail over the other depending on the design and the rules and regulations intended by the designer, as well as the function of the space, its users, and modern technology, in order to achieve the best design (Al-Asadi, 2017, p. 22).

4-Transparency and its applications in interior space: Transparency is one of the most important characteristics that has helped bring about significant changes at the design system level. Transparency contributes to the penetration of interior space and gives a sense of continuity, due to the feeling of spatial overlap and the unification of space with neighbouring or surrounding spaces, and communication between the interior and exterior. In addition to the functional benefits of transparency and the cost savings it offers, the aesthetic considerations it achieves are evident in its gradations of transparency and variations in surfaces through the interaction of light, colour and transparency to create a dynamic space. Transparency can be graded to (transparent, semi-transparent, opaque) or may be affected by the size of the openings and openings or by the type of determinants or spatial, spatial and volumetric organisation, and may depend on technology (Faraj, 1982, p. 148). We can classify materials into three types (Al-Hashimi, 2001, p. 61):

A-Transparent materials: which allow high visual penetration, such as pure transparent glass, transparent plastic surfaces, and other materials with high visual permeability.

B- Translucent materials: which allow partial optical penetration, through the perception of spectra of visible shapes through them, such as some types of coloured or reflective glass, as well as the type in which sandblasting is used, as it transmits blurred, unclear images.

C-Opaque materials: These do not allow any penetration or visual influence through them. Transparency in interior spaces brings life and light to closed indoor environments by connecting those inside with each other and with the outside world, i.e., it transfers external views and information to the inside and vice versa. It is a tool for communication between spaces in all their various physical and expressive forms and types (Al-Baghdadi, 2004, p. 2).

From this, we find that the effectiveness of transparency as a starting point for the visual forces associated with the materials and raw materials used in interior and exterior design, and the visual scene it achieves by opening up to other spaces, represents a force for visual communication and, therefore, visual comfort. These points and their ramifications are also evident in the construction of the forces of interaction between the recipient and the physical components, aesthetically, functionally, and performatively.

Research Procedures
1-Research methodology: The research followed a descriptive methodology for the purpose of analysis.

Online Journal of Art and Design
volume 13, issue 4, October 2025
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2-Research community: A research community was selected representing three indoor spaces in malls in the city of Baghdad, namely Zayouna Mall, Babylon Mall, and Baghdad Mall.

3-Research sample: Two intentional samples were selected, representing 66.7% of the total.

-Reasons for sample selection:

A-Selection of the most visited malls in the year (2024) and what was recorded by the statistics of the Tourism Authority of the Ministry of Culture and Arts.

B-Two samples were selected for malls with limited space and proximity (i.e., they share the same land area).

C- Each has technologies and spaces open to the interior space (the main space) and is known as a public rest area.

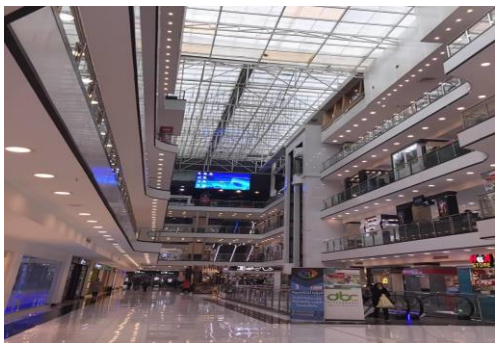
4- Research tool: The theoretical framework axes were adopted in the description and analysis as the basic basis for reaching the analysis results and achieving the research objective.

5-Analysis: The principle of analysis was adopted in accordance with the scientific basis of the theoretical framework and according to the following axes: (the active forces of the design system, aesthetic value variables, visual interference, and formal interference considerations).

A-Analysis of Model (1)

1-General description:

The Zayouna Mall building is located on Palestine Street in the Zayouna neighborhood, near Al-Rabie Street on the Karkh side of Baghdad. It was designed by architect Mohammed Ammar, with the façade designed by architect Ahmed Basem. It was constructed by the Nakhil Zarbatiya company, with a total area of 33,000 m2. The building has five floors, each with its own character and specific function. Its interior spaces consist of several areas that are organised to overlap with each other, with a main space along the corridor that extends along both sides of the interior space of the five floors.



2-Analysis:

The driving forces behind the design system: Shopping centres (malls) have many functions and design relationships, based on considerations and requirements that meet human needs, which are in harmony with the nature and function of the activities carried out and the location of the building. The mall's design is based on the principle of dual utility through natural lighting and high-performance artificial lighting systems, relying on the use of glass in the ceiling of the interior spaces, as well as in the facade and entrances of the mall, where large openings allow natural light to enter. to a large extent due to the huge glazed areas in the ceiling of the mall's internal courtyard, which made it the main factor in lighting the mall's interior spaces and entrances, providing the interior spaces with the required light levels for events. Modern technological techniques also played an

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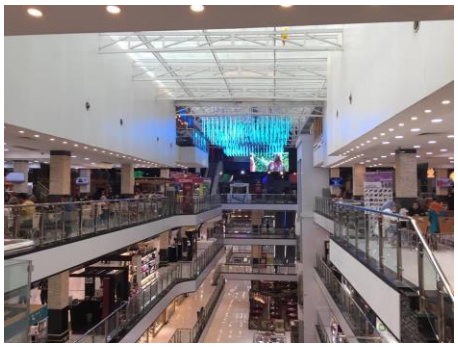
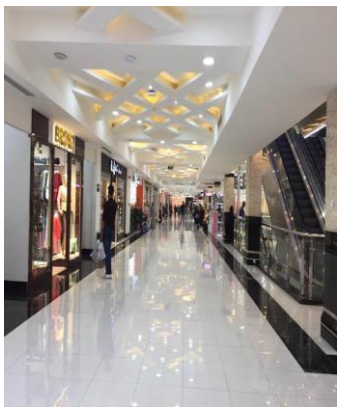
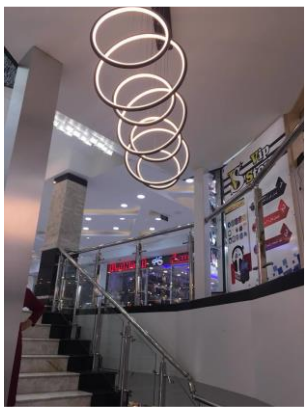
important role in controlling the entrance systems through laser-operated sensors, as the technical aspect contributes fundamentally and effectively to highlighting the characteristics of the form and its apparent variations, especially the nature of the compositional techniques, by emphasising the best means of visual communication and aesthetic reception, in addition to the use of remote sensing technology through the control of mechanisms for opening and closing openings, doors, glass windows, and other remote operating systems, which allow the user to open and close doors before arrival, as well as in various systems in interior spaces. These technologies were also used to move between floors, via automatic elevators, as well as via escalators.



Aesthetic value variables: The designer seeks to give each space within the mall its own unique form and colour scheme. The interior space of the model includes a series of formations and compositions with expressive characteristics, thanks to the aesthetic values that these forms convey, which emphasis the meaning and clear message related to the effectiveness of the space and the functional suitability of the model. The colour diversity of the model's elements contributes to highlighting these features and distinguishing them from each other through their colour characteristics and physical qualities, thereby emphasising their appearance. This achieves a utilitarian effect in terms of general perception and varying proportions. The colour diversity of the elements and the emphasis on appearance distinguish the elements through their colours, which increases the aesthetic value as an expressive state, gives the visual scene of the mall its identity, and the nature of the transparent glass achieves communication between these spaces, making the recipient interact emotionally with the visual structure. Thus, it has achieved relative aesthetic values in accordance with the design relationships between the parts and between the part and the whole.





Visual overlap: the active forces and the lighting effects they achieve in the centre of the space, resulting from the variables of multiple colour tones to create excitement that achieves the illusion of space from the central courtyard using the technique of overlaying, as a technique to emphasise the interconnectedness and multiplicity of layers, to achieve dynamic balance and to break the monotony of the ceiling. The design also uses overlapping structures achieved by lighting with variations in colour and intensity,

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volume 13, issue 4, October 2025
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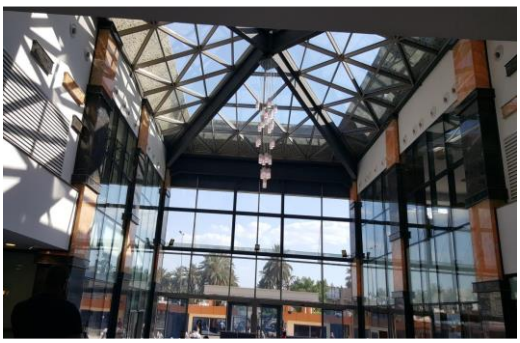
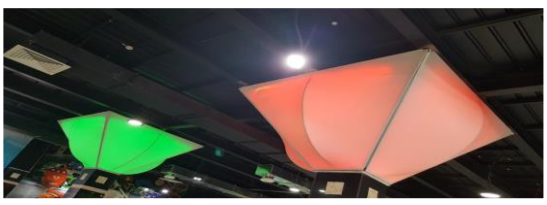
depending on the properties of the material and its unusual forms, and the formal overlap comes from the action of the components in the spaces and their basic courtyards.


Considerations of formal overlap: The floor of the model derives its importance from its functional role and what it achieves in the organisational process and in guiding its users or furnishing elements through its orientation and the quality of its surfaces as a result of the method of formation or composition. The neutral colour of the floor is also appropriate for the type of space, these materials achieved advanced performance in terms of colour and value through the nature of the finishing material and its porosity, which reduces sound reflection in the space. They came in unusual shapes with flowing lines on the floor, forming a kind of rings that vary in size. These formal overlaps were generated based on functional considerations on the one hand and aesthetic considerations on the other, reflecting visual comfort for the user.



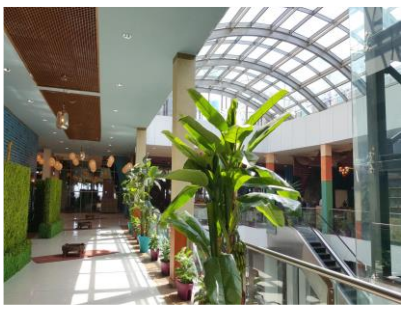
A. Analysis of Model (2)
1-General description:
The Babylon Mall building is located on Al-Amirat Street in the Al-Mansour neighbourhood, on the Karkh side of Baghdad. It was designed and built between 2011 and 2013 by the Iraco Group, with a total area of 7,222 m2. The mall has seven floors, each with its own design and function. Its interior space consists of several areas with different and overlapping activities. Areas have been allocated for the movement path connecting all areas of the mall, in addition to a special area for elevators, as well as the use of fixed and moving stairs.

Online Journal of Art and Design
volume 13, issue 4, October 2025
DOI: https://doi.org/10.30935/ojad/2513065

2-Analysis:

The driving forces behind the design system: The large windows allowed the maximum amount of natural light to enter, thanks to their huge glazed areas, making them the main factor in lighting the interior spaces of the mall and entrances, which will provide the interior spaces with the required levels of light for the activities to be carried out. Modern technological techniques also played an important role in controlling the entrance systems through sensors that operate using laser technology, as well as the use of remote sensing technology to control the opening and closing of openings, doors, and glass windows remotely, allowing users to open and close doors before reaching them. It has also enabled the use of digital cameras with advanced laser technology, which are widespread at exits, entrances, and other spaces, regardless of their functions, for security control of both internal and external spaces, as they are connected to the main computer and its connection to the building's self-protection system, which in turn remotely controls the interior space and makes it an integrated protection network. The functional content is not limited to the technical aspect of the interior design and its multiple levels, but goes beyond that to the aesthetic aspect by embodying the principle of transparency and creating visual overlap through the glass used for that purpose.



Aesthetic value variables: Thanks to the aesthetic values conveyed by this structure, with a clear message related to the effectiveness of the space and the functional suitability of the model, the aesthetics of the elements attached to the interior space have had a clear impact on the overall design of the mall, as the type of materials and their tactile values in achieving aesthetics, as contemporary techniques are not devoid of visual stimuli, which are projected onto industrial materials in order to stimulate the sensory excitement of the recipient with different aesthetic formations that achieve great selective values for the design, deepening the perception of visual texture. The materials used in the elements of the model are characterised by clarity, reflecting images that enrich the aesthetic value and reinforce the intensity of the lighting inside space. The visual scene has gained its identity, and the nature of transparent glass has achieved communication between these spaces, making the viewer interact emotionally with the visual structure. It has achieved relative aesthetic values based on the design relationships between the parts and between the parts and the whole, but it has not achieved the use of modern design materials and techniques, such as nanotechnology.

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Visual overlap: To achieve visual overlap, the design deliberately used the relationship between lighting, material, colour and texture as a technique to achieve visual overlap within the design unit that embodied the reality of astronomy, including stars and planets, using a display technique with a fantastical character. Hidden strip lighting was also used in the centre of the space, represented by protruding plaster decorations in the shape of flowers. From these, lighting units with innovative and unusual technology hang in the middle of the inner courtyard of the third floor in a surprising manner, achieving visual overlap within the design unit of the lighting as a technique to emphasise the self-protrusion of the new shapes, achieving excitement, strangeness and unfamiliarity in the interior space. The perception of visual form and its aesthetics requires high technology and mental activity, as it is a sensory mental process whose importance is manifested in revealing the inner workings of things within the sensory stimuli of the human mind. This was embodied through the use of lighting units hanging from the ceiling in the shape of planets surrounding the Babylonian civilisation, which was embodied by the design throughout the space, creating an expressive atmosphere that indicates the existence of a period of time with a civilisational and cultural character and historical depth.

Considerations of formal overlap: The use of distinctive symbols and expressive meanings, and their visual scenes of the interior space, were achieved through the use of finishing materials with sensory meanings that provided real and suggestive data in accordance with design considerations that harmonise with the nature of the function performed. These materials, their colours and values achieved advanced performance ratios, in accordance with considerations of the nature of the finishing material and its porosity, which reduces sound reflection in the space, but lacks safety and security due to the somewhat smooth surface values of the material. The central courtyard scenes were also embodied at several levels through the difference in the viewer's angles of vision. This difference came about through the use of visual images that were renewed in their presentation, themes, and colours within the space, through the elements of tension and excitement that the viewer perceives within the space. All formal and visual elements share the same fixed considerations depending on the type of space and its formal content.

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Results

1-The visual elements achieved a high degree of efficiency in visual impact based on the design system in processing the organisation of shapes and adopting modern techniques in the use of certain devices to facilitate the task of moving in space for users.

2-Relying on laser technology to control lighting and combining both natural and artificial lighting methods provided efficiency and the ability to contain those forces that directly affect the use of spaces in a manner that is proportionate and appropriate to their use.

3-Focusing on the general content to show the aesthetic dimension of visual interference on the one hand and the formal dimension of aesthetic values on the other, with attention to the type of material and its visual texture.

4-Great attention to colour tones due to their effect on the user-recipient, which gave the interplay its visual qualities and reinforced the smooth, soft surfaces that suggest activity and visual flow through the direct perception of the shapes and their embodiment as blocks within the space, and their familiarisation and adaptation.

5-The visual overlap is regular according to the longitudinally extended spaces, which come to mind with their multiplicity and diversity as interconnected formations through the use of similar materials, allowing the user to follow and move implicitly and participate in the sensation of receiving them and their geometric shapes and variations.

6-The adoption of formal overlap is based on considerations of symbolic and semantic visual representation as a creative visual identity that resonates with the recipient, which is an important aspect in the functional performance of the finishing materials.

7-In the important aspect of these spaces, the repetition of visual overlap comes from the feeling of comfort and what is related to it within the space, which is found in those basic systems that both models may lack, namely safety tools and systems (such as the central fire system or the emergency evacuation system).

Conclusions

1- Formal interference stems from actual forces and their ideal use, which is reflected in performance, thereby strengthening the formal interconnection of elements.

2- The effectiveness of design forces is generated by formal and spatial organisation, the space occupied, and the fixed, variable and even changeable elements contained within the space, as an attempt to achieve formal harmony between traditional and modern design through the diversity of raw materials and substances.

3- Active contribution to the process of composition and synthesis gives formal overlap the power to attract attention as a perceptual image that is mostly timeless and present in the mind of the recipient, which the designer strives to embody at all times.

4-The process of colour and form construction depends on the spatial elements of the structure, along with designs that are appropriate in terms of functionality and aesthetics, reflecting the nature of the design and its impact on the viewer, thereby generating a positive response and perception in the viewer and user.

Recommendations

1-Paying attention to formal diversity, adopting semi-open spaces, and using multiple techniques gives the user the opportunity to visit and enjoy the space, reflecting the positive impact of the effectiveness and power of the space design.

2- Focus on the effects of colours, their diversity and value through the use of advanced systems in treating the change and diversity of surfaces.

3-Relying on factors and considerations that are compatible with the nature of the user and their needs for entertainment, shopping and rest areas, such as psychological and exploratory studies through which space design models are built.

References

Ahmed Hafiz Rashdan and Abdul Halim Fath al-Bab: Design, Dar al-Jami'iya for Publishing and Distribution, Cairo, 1970.

Ahmed Matlub: Dictionary of Ancient Arabic Criticism, Vol. 1, 1st edition, Dar al-Shu'un al-Thaqafiyya al-'Amma, Baghdad, 1989.

Al-Ajili, Riyad Hamid, Deconstruction and Its Functional and Aesthetic Reflections in Interior Design, Master's Thesis, (unpublished), University of Baghdad, College of Fine Arts, Department of Design/Interior Design, 2013.

Alan Bony, Artificial Intelligence, Ambition and Performance, trans. Dr. Adnan Hamid, Jassim Al-Anbaki, Jinan Fouad Zaitoun, Dar Al-Kitab Publishing House, 1988.

Alan Bony, Artificial Intelligence: Its Reality and Future, Translated by Ali Sabri Farghali, World of Knowledge, Kuwait, 1993.

Al-Baghdadi, Asil Adel, Transparency in Interior Spaces and Its Relationship to Changes in Perceptions of Volume, Master's Thesis, Interior Design, University of Baghdad, College of Fine Arts, 2004.

Al-Dabbagh, Shama'il Muhammad Wajih, 'The Foundations of Aesthetic Preference in the Aesthetics of Contemporary Interior Space,' unpublished master's thesis, University of Technology, Department of Architecture, Baghdad, 2002.

Al-Hashimi, Shayma Nabil, Artistic Light Formations in the Interior Design of Public Reception Areas, An Analytical Study of Hotel Lobbies, Unpublished Master's Thesis, University of Baghdad, College of Fine Arts – Department of Interior Design, 2001.

Al-Husseini, Iyad Hussein Abdullah. The Art of Design: Philosophy, Theory, Application, Vol. 1, 1st edition, Sharjah, Department of Culture and Information, 2008.

Al-Isadi, Faten Abbas, Interior Space and Adaptation Mechanisms, Al-Fath Office, Baghdad, 2017.

Al-Khatib, Ahmad Muhammad, Manufacturing Methods and Processes, Baghdad: (Dar Al-Kotob Foundation for Printing and Publishing), 1981.

Al-Kriza, Abbas Ali, 'Coding as a Strategy for Describing Contemporary Architecture,' unpublished doctoral thesis, Technological University, Faculty of Engineering, Department of Architecture, 2005.

Al-Razi, Muhammad ibn Abi Bakr Abd al-Qadir: Mukhtar al-Sahah, Dar al-Risala Publishing and Distribution, Kuwait, 1982.

Arab Organisation for Administrative Sciences, Administrative Effectiveness, 1974.

Badria Muhammad Hassan Faraj, Intellectual Techniques in Interior Design, Majdalawi Publishing and Distribution, Amman, 2017.

Bernard Hewitt, From the Writings of Odile Abia, trans. Amin Hussein, Cairo, Ministry of Culture, Cairo International Festival for Experimental Theatre, 2005.

Ching, F. D., Interior Design Illustrated, van Nostrand Reinhold Company, New York, 1987.

Ching, Francis D. K., Interior Design, Vann Strand, Reinhoid, New York, 1987.

Christopher Cuttle, Lighting by Design, 2nd edition, Architectural Press is an imprint of Elsevier, USA, 2008.

Hamdallah, Raghad Nima Allah, Technology and Form, The Impact of Modern Technology on the Form of Housing, Master's Thesis, University of Baghdad, 1997.

Hassan Abu Jad, Visual Phenomena and Interior Design, Beirut University Press, Beirut, 1971.

Huda Mahmoud Omar. Industrial Design: Art and Science, 1st edition, Arab Institute for Studies and Publishing, Beirut, 2004.

Imam, Alaa Al-Din Kazim, The Formal Structure of Doors and Their Symbolic Dimensions in the Interior Design of Baghdad College Buildings, Master's Thesis, Design Department, College of Fine Arts, University of Baghdad, 2002.
Jabran, Masoud, Al-Ra'id Dictionary, Dar Al-Ilm Al-Mala'in, Beirut, 1987.
Krajewski, Lee, J. & Ritzman, Larry, P., (1999), Operations Management: Strategy and Analysis, 5th. ed, Addition-Wesley Publishing co. U.S.A.
Lynch, Kevin, 'Site planning', MIT Press, Cambridge, 1971.
Mayada Fahmi, Futurism in Interior Design: Between Assumption and Realisation, unpublished doctoral thesis, College of Fine Arts, University of Baghdad, 2004.
Mustafa Metwally: Influential Forces in Educational Systems: A Comparative Study, Dar Al-Matbouat Al-Jadida Publishing House, Alexandria, 1983.
Osama Qahtan, The Structure of Intelligence in Architecture, unpublished master's thesis, Faculty of Engineering, Department of Architecture, University of Baghdad, 1999.
Qasim Hussein Saleh, The Psychology of Colour and Shape Perception, Ministry of Culture and Information Publications, Dar Al-Rashid Publishing House, Baghdad, 1982.
Saleh Muhammad, Alaa al-Din Aweid, Fundamentals of Artificial Intelligence, Glom Encyclopedia, Scientific Culture Book Series, Ministry of Culture and Information, Dar al-Hurriya Publishing House, 1989.
Samia Ahmad Saad, World of Thought, Vol. 10, No. 4, Kuwait, 1980.
Tariq Mustafa Abu Bakr, Structural Relationships and Symbolic Meanings in Sudanese Banknote Designs, Master's Thesis, Design Department, College of Fine Arts, University of Baghdad, 2002.
Wade, N., 'Portraits of artists and scientists', in The Artful Eye, Oxford: Oxford University Press, 1995.
Wasius, Wong, Principles of Two-Dimensional Design, New York, Van.nastr And Reinhold company, 1972.
Young, Richard and K.G. Willhelm: Spiritual Forces and Analytical Psychology, translated by Nihad Khayata, 2nd edition, Dar Al-Hawar Publishing and Distribution, Sarwiya-Latakia, 2000.