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Aalhashem, N.A.M., Al-Kaissi, K.A., Al-Sharify, T.A., Al-Sharify, Z.T., Al-Hamd, R.K.S. & Khaled, T.T. (2023) 'Digital architecture and designing architecture space and ITS effect on future life strategy'. *AIP Conference Proceedings*, 2787(1): pp. 090026-1 - 090026-14. DOI: <https://doi.org/10.1063/5.0148422>

and may be found at DOI:
<https://doi.org/10.1063/5.0148422>

Digital Architecture and Designing Architecture Space and Its Effect on Future Life Strategy

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Abstract. Technological advancements have altered nearly every aspect of individuals' existence and operation in society. When technologies develop, architecture evolves as well: the architectural techniques change, as does the architectural outcome. The digital revolution reflected on architecture, as did other scientific and life fields. Its impact on the work and architectural space was evident. The architectural production became not limited to designing in traditional ways and directing it as computer drawings. Still, it went beyond that, as the designs produced became the product of an intelligent design process directly influenced by the digital community in general. Architectural space has gone through many developments throughout history influenced by technology and building techniques on the one hand and by functional and environmental issues and human factors on the other hand. The architectural space appeared in the form of a living being that grows over time and is influenced by all the variables of the times and expresses the personality of its inhabitants. If the architect determines space and its composition according to human needs, it is also influenced by the imagination of architecture and its vision of freedom. Therefore, the problem of research was determined by "the lack of a clear vision of the development of architectural space and how it is affected by the digital revolution," where the research aims to identify indicators of the development of architectural space in light of digital development and how architectural thought deals with the changes brought about by information technology, and how it was expressed in the form of areas that meet the needs of users, which in turn changed in terms of sensory needs or physical needs. The research thus assumed "the existence of mechanisms, strategies, levels, and degrees of digital use within the process of designing architectural and urban space to generate digital space," and to achieve this will begin to learn about the evolution of space and what it is over time with a quick presentation of the most prominent developments in the architectural and urban space, especially in the recent years, to a final formulation of the characteristics of knowledge of digital areas.

Keywords: Digital space, Digital architecture design., Architecture design, Sustainability.

1. INTRODUCTION

Throughout history, the development of architectural space has been affected by technology and building techniques on the one hand and by human factors, technical and environmental issues on the other hand. Consequently, of the successive changes in life generally and technology mainly, we see that the architectural spaces constitute a great reflection of this change, in the form of spaces that fulfill the users' needs, which in turn have changed in terms of sensory needs or physical needs. To identify these changes, we will begin by identifying the evolution of space and its nature over time, with a quick presentation of the most significant developments in space, especially in the twentieth century.

2. The First Theme: The Theoretical Side

1.Space Evolution:

Siegfried mentioned "Sigfrid Gieodion" in his book *Space, Time and Architecture (Space, Times, and Architecture)*¹ the development of architectural space passed through three stages, the first phase: the phase in which space is formed through the presence of a confluence between different masses, which is the stage of Sumerian, Greek, and Ancient Egyptian architecture, but the 2nd phase: which began in the middle of Roman civilization when the challenge of recognizing the inner space and its elements of composition started through the use of the cover of the dome and domes, which led to the passage of space stages of development In composition and treatments (structural and environmental), this has led to more internal flexibility than before, and this phase continues until the end of the eighteenth century. The 3rd phase, which began at the beginning of the 20th century, where the temporal dimension was added to the three dimensions of space and space was realized through movement in it and thus seen from more than one angle and point. At that time, the ideas of realizing spaces were abolished from one viewpoint. At the beginning of the 20th century, in keeping with the industrial revolution and the changes it brought about in society and the emergence of modern concepts such as modernity, which called for simplicity in everything, and to stay away from decoration and distance from all that is not functional, and expressed this "Miss van Drouh" in his famous saying "little allows a lot less is more"^{2,15,16,20,70-80} and he wanted by saying this, to get rid of decorations and additions, by saying "we want the style that gives everything its proper place" We also want everything to have its proper place according to its nature," he said. Lee Corris also expressed his vision of space in his famous saying, "House is a machine for living in form"^{1,3,17,18}, the development of the pioneers of the architecture of space in accordance with the changes brought about by the industrial revolution and its impact on materials and construction systems and the emergence of ideas such as the idea of "Universal Space," a space that can be divided when needed and with great flexibility, by transparent obedience as these cutters do not reach the ceiling and did not resort to functional expression Given the oversimplification of the architectural space and its abstraction from everything that could distinguish its public and private personality, this has led to boredom, a reversal of the principles of modernity and a desire to return to the past. Until Frank Gehry developed the design system and advanced tools that helped experiment with new patterns of irregular configurations of space, which changed the structure of space in terms of shape and composition and shifted from simplicity, clarity, and order to create chaos and complexity in form and irregular space-specific blocks, Frank Geary's mentioned that architecture was known as a disassembly that did not initially rely on any rules in the architectural design of space, whether in the two or three dimensions, the form of architect^{2,16}. Peter Eisenman says that the building of dismantling is the search between the ugly within the beautiful and the illogical within the logical^{4,14}. However, Gehri's spaces have revealed the enormous potential of irregular forms, where exciting and attractive space bodies can be achieved and creating a mental image among users that add exceptional pleasure.

2.Architectural space and the transition from the age of the machine to the age of digital live

The shift from analog to digital technology has increased the speed of all details of life, saving time. With unlimited developments in electronic possibilities, urban boundaries have lost their sensory value, and moral distances between private and public spaces and between natural and urban have converged. We have seen that entire families of architectural and urban species have become less critical in the first half of the 20th century, such as 1950s box skyscrapers with curtain walls. Multi-role combined commercial centers, while new urban forms have emerged such as streamlined towers, streets and strip malls (Department stores), information-producing buildings without a unique personality, and have appeared in e-cities on the undetermined sides of the villages, urban medical forms very quickly through electronic city topography (E-cities) on the undetermined sides of the villages. Global capitalism. Just as electricity, elevators, and telephones have caused urban vertical sprawl, current information technology pushes cities to reach the horizon through electronic personalities, payment cards, and databases. As the French philosopher and first view of speed Paul Virilio said, "increased speed eliminates the existence of the physical vacuum, and transforms it into a virtual vacuum, and as a result of the development of the communications and information technology revolution, modern times have reached an absolute speed in everything, so communication with others is done through communication and information technology directly and in real-time," which reduced the need. To travel because the world will come to us. Everything will happen on the computer screen and the architectural uses of multiple communications that some attack as having caused a crisis in architecture have infected them in their origins. This occurred when multimedia began to change the vocabulary and language of architecture by changing its external interfaces, solvent the boundaries between form and function^{5,19,17,20,85-91}. As a result of the previously unavailable possibilities, the concept and shape of spaces will change according to these possibilities:

- Speed (information exchange).
- Ease of communication.
- Ease and speed of obtaining information.
- Remote control.

The speed in exchanging information will lead to an increase in merging and dissolving the borders between near and far, which will lead to electronic globalization and globalization in its traditional form, which will reduce time. And it leads to the presence

of the place to you. It will affect many states and patterns of jobs, and cities will turn into electronic cities, the shape of the town will be expressed in the form of virtual reality, and the architectural thought will transform from traditional buildings to a new view through transitional training stages, at the climax of which the computer replaces formal appearances for buildings such as libraries, commercial centers, lecture halls, classrooms, entertainment halls, cinema, and theater. Stores, catalogs, bibliographies, and drawing tables will disappear^{6,17,20-34}. With the spread of electronic uses, all fields of the era were formulated by adding the letter “e” before it in the English language, for example, e-government, e-marketing, e-Learning, e-commerce, e-mail... etc. These activities will turn into “virtual reality” spaces that will be dealt with through the space of the home, work, commercial centers, or electronic cafes. Many of the spaces that have turned into digital spaces will be canceled. Buildings will be reduced from many of these spaces, and only the administrative offices of the higher administrations, which can be assembled in multi-use buildings equipped with remote communication technologies and digital networks. Traditional spaces in their functions will turn into digital spaces (carrying out surgery by a robot, follow-up and remote treatment - conducting purchase and selling operations on the stock exchange in the home space - buying and selecting goods from the information network - working remotely and without the need to move to workplaces). New spaces will develop that are commensurate with the new reality and commensurate with this large flow of information, and transform the spaces into intelligent spaces that meet the needs of their users and provide time and comfort (disabled service buildings, care, and education spaces through communication through digital interaction - smart homes) ⁶, and this will help to:

1. Reducing power loads.
2. Reducing pressure on utility networks.
3. Reducing traffic congestion.
4. Reducing the percentage of pollution.

But this will lead to the person being more still and less moving, which doctors warn of because it expresses another physiological need, which is the need for activity, which may also affect as a treatment for this problem the presence of primary spaces containing a gym in each region and an increase in the percentage of green spaces And ways for pedestrians to encourage movement outside the spaces and away from the harmful effects of being in the middle of wireless communications because of its danger to the body. Obtaining information led to the transformation of spaces into new forms, in which multimedia played a significant role with communication technology Oosterhuis "2001, a Transports programmable visitor pavilion project" ⁵. The interior space is designed to be a sizeable electronic interface for the display overlapping with the structural system and can change its information, colors, and content at one time. The space is formed in a dynamic, irregular form that contains digital displays that the visitor sees in an image of electronic space, electronic screens' constituent material.

The designer "Zaha Hadid" also designed the Guggenheim art galler ⁵ in Tokyo in 2002, where the interior space was designed connected with the ceiling in one continuity and with an area of 600 m² and an intelligent slab ceiling by displaying arts and information to users inside and outside the building, the space has transformed from static space to interactive and informational space. The transformation of digital products and electronic screens into an internal or external envelope for space and transforming walls, floors, ceilings, and windows into electronic parts (e-walls, e-floor, ceilings e-slab, and e-windows), to turn space into an informational medium in which interactive processes between humans and space take place, developing many ideas and conducting many experiments that can change the future activities of space.

3. Space as a carrier of information

The transformation of space elements into innovative electronic features with their programming and processing with technological methods led to interaction with visitors. Hence, activities and ideas appeared looking to transform spaces into entertainment and education through the development of interactive systems and the use of sensors and control systems. Information museums became the form that could achieve These activities. The traditional function of the museum has become from static museum displays in which touch and approach are prohibited to shows through which whole interaction, touch and approach between visitors, products, and museum displays, and the emergence of new activities that can be practiced through these museums, including painting on walls and digital screens. Another example of the change in the job style is the Science Museum project in London, which opened in 2004. New methods of display technology were used in which interaction was used as the basis on which the museum was built, where both children and youth were invited to learn about the different aspects of science and its various forms through touch, interaction, and play. With these sciences in an impressive digital form, a circle of rubber with a diameter of 6 meters was designed. A column was placed with an electric current so that if the visitor entered this circle and tried to touch the pole, a feeling of electric shock would be delivered to the visitor in a simplified form that did not harm the visitor. The case transforms electrical energy into other energy to be transmitted to the visitor through the physical sense of energy. Spaces have been prepared in which sound and light shows are performed, and visitors can dance to the rhythms of music and movement. Lighting and sound interact with it according to its direction and through a moving video projector, electronic systems, and motion sensors within the space.

In addition, the Grand Hotel project in Mexico City in 2002, The bedrooms were designed in the form of a circle of acrylic, inside which an electronic screen of flexible material is placed to take a circular shape and to cover viewing angles on the

borders of the process. Preparing a complete communication system in the surrounding streets gives a feeling that it overlooks an external space from all angles. A similar idea was composed in the same space to provide a sense of the physical transition to exterior spaces and express it in a three-dimensional form. Being in the middle of the field and seeing the players directly while playing and not being satisfied with the upper and outer corners outside the field space ⁷.

4. Electronic Cyber Space

Many specialists have developed different definitions of "Cyberspace." For example, Michael Benedict, who has written a lot on this subject, defines cyberspace as the "global network," which is used by visitors or users, in communication, education or entertainment or work through a computer or any means of communication and in a way that uses physical representation systems or virtual reality for representation and virtual simulation. It is a space that does not contain constituent borders but rather an imaginary space where the visitor navigates and interacts. Its basic structure is data and information, expressed in different images ⁷.

5. Characteristics of Cyber Space

The electronic space has several characteristics, which are:

1. A person feels it through a simulated process that the mind perceives in an imaginary image and can be used in informational applications (such as reading, writing, observation).
2. This space is entered through a computer connected to the information network via wired or wireless lines of communication. It is a space that combines the international information network (Internet) and contacts at one time.
3. It enables its users to interact and communicate individually or collectively. This interaction uses sound, image, and sometimes movement via a computer screen, mobile phone, or digital communication devices.

- The activities that can be carried out through cyberspace ⁹ include: Telephone Conversation.
- E-mail. (E-mail) Electronic mail
- Telephone mail and answering machine.
- Reading news and forums.
- News groups and forums
- Chat Rooms
- Surfing the internet
- Electronic Libraries
- Electronic Conferencing
- Conference calls
- Virtual Reality.
- Interactive TV of all forms including Visual Telephones.
- Multiple services via information networks, such as automatic cash exchange, doing business and distance education, buying and selling operations, and administrative work.

6. Cyber Space City

The features mentioned above of cyberspace illustrate the lack of need for many physical spaces due to digital communication and exchange through cyberspace, which has reduced the importance of individual mobility and direct business. So the question automatically arises as to the extent to which buildings retain their traditional spaces that electronic spaces may replace? Some architects have put forward their future ideas, such as Taylor Mark10, which predicted that architecture would disappear into the past and be replaced by this cyberspace, which would lead to increased speed and lack of need for physical transition and thus the loss of the appetite for the place in its usual character, and explains the form (4) and (5) the transformation of working systems from physical systems to systems based on information technology, in terms of implementation and conduct of business, in terms of communication between the team, and in terms of dealing with individuals. Cyber Space, many organizations are seeking to develop communication, advertising, and online service delivery systems, which has put forward ideas for software and network developers by introducing complete simulation alternatives to transform real interaction into one in which Avatar is used as a simulated model, the user chooses the closest model that resembles it and calls it as if it were the one walking in simulated space, for example, if the user chooses to go to a shopping mall. The search engine directs him to one of the centers to experience shopping and touring in an entirely simulated way of reality, where Avatar will walk the traffic paths, and the user sees through it all that he can see if he is in the mall and if he chooses to buy (jacket) avatar will try it and give a complete picture of the jacket and its available60-90.

7. Architectural and Cyber Designer

Reliance on architects began to design virtual buildings on the information network that reflects the institution's personality that owns the site. For example, the New York Stock Exchange assigned the design of a virtual building on the Internet to the architect (Hani Rashid). He completed the design of the virtual building in 2001 to assist investors in directing the buying and

selling operations of bonds and financial shares from their site without the need to go to the stock exchange building, and in a completely simulated manner, in fact.

With these developments and transformations in the concept of space, which some expect that architecture and information technology will fuse to be a new product, in which all architectural elements are replaced by electronic parts, to create a world controlled by information technology, to produce a new generation of architects that will begin to appear and evidence of many architects heading to that Many, including that many departments, colleges and institutes of architecture around the world have turned into academic departments that rely on studying digital technology in all its forms, and providing scientific and experimental research for structural models based on this idea^{4,7,22,30, 46,60-88}, such as Tu Delft University in the Netherlands ¹¹ and the study of the interactive environment (Interactive Environments) and (The School of Bartlett of Architecture in London), where the designers and researchers (Walter aprile) and (Stefano Mirti), asked many questions to find out what the experimental architects reached and what they benefited from or What Architects can learn from Interactive Designers, and through their studies, they presented many of the architects' experiences in the interaction of the Internet. San with space through information technology, and examples: simulation models and interaction with space users and response to its movement and body temperature through space lighting and giving some audio directions to the user, as well as their experiences in interactive interfaces, which may lead to a new shift in the plastic dimension of space⁶⁰⁻⁹⁰.

8. The plastic dimension of space in the era of information technology

After we examined the possibilities offered by the tools of design, production, and manufacturing in the information technology core to the architectural thought, which was reflected in the architectural works, complex formations, and free and dynamic forms, we continue the impact of the production of these formations on the interior space, where we find that the designer faced the problem of how to take advantage of the treatment of these formations from the inside. And one of the solutions was at the hands of the architect "Frank Gehry" ¹², where he separated the external configuration from the internal space and transformed the exterior space into an envelope to achieve the benefit, which led to the transformation of some spaces in the buildings into spaces.

With open ceilings, as the facades and ceilings remained connected in one composition to give the general impression to the user that in an open space, the outer casing represented the roof of this space, as the architect (Norman Foster) designed (Free University of Berlin) and separated the outer casing from the internal spaces to be able to merge the spaces and to ensure the continuity of formation.

The idea is confirmed externally and internally. Also, the differences in geometry and the external composition led to the irregularity of the internal spaces, which resulted in the diversity of spaces and their asymmetry and the discovery of new treatments, which some considered to have led to a lack of repetition that led to boredom, such as the spaces of the Museum of Music Sensation by the Architect (Frank Gehry), where the spaces were transformed. The interior has been transformed into exhibition halls of various shapes and colors, and a mixture between sharp angles and curved lines, which he achieved like by visitors. The other dimension influencing the forms is the lack of adherence. If the walls, floors, and ceilings are screens or electronic elements that can be transformed and changed in colors and shapes, how can identity be achieved? This will lead to space losing its privacy and memory and becoming an element of display and interaction. The design team for the multidisciplinary systems (A Multidisciplinary Team) (Neuron informatics, Zurich, Switzerland) has developed a set of designs of diverse interfaces for display and interaction called the (Ada) or intelligent room. As an interactive space that relies on transforming the flooring elements into units connected to a communication network and sensors that monitor the movement of visitors and give a reaction⁵⁶⁻⁸⁸.

For their movement in the form of lighting, colors, or images displayed on the walls, and for these effects, specialized units of neon lighting were used, connected to the control systems, to change their colors according to the visitor's movement.

9. The human dimension of space in the era of information technology

Has the human sense of emptiness changed? It is not possible to give a definite answer to this question. Still, it is clear that there is a difference, but to the best or the worse, something that needs more studies and research, but with the changes that have occurred and occur in the lifestyle, we can separate between A. The sensory dimension. B. Physical dimension. If the physical dimension has evolved or changed, which we monitored previously, what is the impact on the sensory dimension? If information technology has transformed space into a medium for transferring information if information technology has helped save time and effort, and if information technology has helped achieve communication between family members and individuals, no matter the distances. What is the impact of this on the human sense? And if information technology helped transform the building and its fundamental elements into intelligence, what is its effect on the human sense? We cannot answer these questions, but we can give examples of the manifestations of benefiting from technological development in transforming building elements into smart ones, as we find that many ideas and research have been developed to serve the disabled and the elderly, who need constant attention in achieving some elements of follow-up and solution Some communication problems, such as the visually impaired, can move around the house by monitoring their movement with motion sensors and directing them^{30-84,21}. Acoustically, the hard of hearing can be guided visually by interfaces and interactions, and there are many ideas that research centers and experimental architects are quick to consider.

10. The Environmental Dimension of Space in the Age of Information Technology

Through our presentation of environmental analysis models on buildings, which are used to conduct studies and the effects of the surrounding environment and its various conditions on buildings at the design stage, we find that many architects have benefited from these programs in analyzing¹³:

1. Wind movement and its transformation into an image of colors and arrows that determine the direction of the wind.
2. A description of the wind patterns, the nature of its formation, and the movement resulting from its collision with the building, and a description of the places affected by the movement and force.
The wind is in gradient colors from red as a symbol of highly affected places to gradient to blue as a symbol of not affected places.
3. Indication of temperatures in a gradient color image from red to blue, where red symbolizes places with high temperatures and gradient colors to blue, which symbolizes areas with low and moderate temperatures.
4. Indicating the places of the astray and the definitions, which led to the early design of the space with the environmental analysis and the formation of the space to achieve the appropriateness of the surrounding environment and to take the design decisions that help to avoid future problems from the fact that the designers Living with natural conditions through these simulation models of reality. Some of the designers, led by the architect (Norman Fossatter), developed the design process and conducted these analyzes in the early stages of the designs on many of his works and sculpting the blocks to match the surrounding environment. Among the famous examples of his designs for the Swiss Re Tower project, in London ¹⁴, where the idea of the project was based on Conducting environmental studies on the project site and through environmental analysis models, which showed the movement of the wind in the place in the form of a circular motion, which made the architect (Norman Fossar) take this movement as the centerpiece of his design idea, as he designed the tower in the form of a circular block shaped from the top and swollen from the top The middle and narrow from the bottom, and he took advantage of the circular wind movement to move the air on the cover and turn it to the top of the tower and opened the top of the building and formed a top in the mouth of the tower, which led to the movement of the air inside the tower as well and directed this air to revolve inside the building through a spiral courtyard revolving around The spaces of the tower, which helps to draw and empty the air and remove it from the bottom of the tower as a sophisticated environmental treatment, and then measure the performance and success of these ideas at the design stage, which has already been achieved on the ground, shape ¹⁰. Also, natural and artificial lighting analysis systems were used through light simulation models to determine the places of light dazzling, which it is preferable to avoid due to its harmful effect on space users ¹⁵, or to find solutions and treatments for poorly lit spaces, by building projects in the virtual environment and measuring the degrees of The intensity of illumination, where these models determine the places where dazzling, darkening or poor lighting occurs, through the applications of smart materials and regulating their performance through control systems to achieve thermal comfort for the space users, and even energy storage by converting light or heat into energy and reusing it when needed.

11. The most important indicators of digital spaces

From the previous, it is possible to identify the most critical spatial indicators in the light of digital architecture. It becomes clear that no single word can show or clarify the distinguishing characteristics of digital architecture. In contrast, these characteristics are prominently manifested in a grouping of more than one secondary item, as shown in Table (1.1). Accordingly, it will be tested later within the practical study to achieve the research goal.

Table1.1:Explains the most important digital architectural space indicators																			
Source: the researchers																			
Main Indicator	Digital Architecture Space																		
Secondary Indicator	Dimensions		Components		Mechanism			Strategies		Functions		Relationships							
	Expressive	Sensuality	Perception	architectural elements	Architectural Relations	Embed	contiguity	extension	Add as external walls	In the form of internal partitions	As walls and external surfaces	Transfer and delivery of information	Connecting the inside with the outside	dynamic simulation	Matching	Environment Simulation	adaptation	Interference	overlapping

3. THE SECOND THEME: THE PRACTICAL SIDE

Within its second theme, the research turned to an attempt to investigate the indicators of the digital space and its effects in light of the digital architecture, which came out within the theoretical framework in the first axis, by selecting a group of projects that used digital architecture as part of their space and functional designs.

- **Analytical process**

The basis of the analysis and its adopted methodology within this paragraph. The indicators of digital architecture and their effects on the function of the architectural space, extracted from the theoretical framework on the research sample, were tested by adopting the descriptive-analytical method based on the observation technique by the two researchers as a basis for testing by adopting the available information on the research sample. It was choosing the research sample from a group of projects (international and Arab) to serve the research direction, as spatial and spatial variances were taken into account.

For the research sample, as shown in Table (1.2).

Table 1.2: Shows the most important indicators of digital spaces extracted																			
Source: the researchers																			
Main Indicator	Digital Architecture Space																		
Secondary Indicator	Dimensions			Components		Mechanism			Strategies			Functions			Relationships				
	Expressive	Sensuality	Perception	architectural elements	Architectural Relations	Embed	contiguity	extension	Add as external walls	In the form of internal partitions	As walls and external surfaces	Transfer and delivery of information	Connecting the inside with the outside	dynamic simulation	Matching	Environment Simulation	adaptation	Interference	overlapping
Projects																			
Temporary Guggenheim \Tokyo Zaha Hadid	■	■	■		■	■		■			■		■	■	■		■	■	■
Science Museum\London Richard Allison		■	■	■	■	■		■	■	■		■	■	■		■	■	■	■
Grand Hotel \Mexico	■	■	■	■	■			■	■	■		■		■	■	■	■	■	■
Swiss Re Tower\ London Foster + Partners	■		■	■	■	■	■	■		■		■		■	■	■	■	■	
Dynamic Tower\ Dubai David Fisher		■		■		■	■	■		■	■		■	■	■			■	■

4. ANALYSIS OF THE RESULTS OF THE APPLIED STUDY

By noting the table for analyzing the examples according to the indicators of the extracted digital spaces, the following appears:

1. A final expressive stage of space characterized most projects, and this means that the feature of explicit stages does not require its presence in digital architecture, as it can be observed in other architectural periods, as it represents the uniqueness of the design of what was designed and not a distinctive feature for a particular architectural movement.
2. The most dynamic verb that has been simulated and interacted by digital spaces, which emerged is the kinetic verb, which shows the characteristic.
3. The most obvious in digital spaces is their continuity of time.
4. Most projects have emerged in the case of research and survey that is left to the recipient (whether it is a touched spectator or a user) fun research or explore to the extent that it can explore and use ports according to its method of finding these ports and digital spaces target this to give pleasure to the recipient and move from the traditionalist of these elements in terms of circulation.
5. Some projects have demonstrated that architectural thought will face the uncertainty of dealing with space in its age, as all matters relating to life develop unclear and undefined.

In many areas, it has been noted that the space has begun to fade, switch to hybrid space or switch to virtual space, and the philosophy of space has changed into a medium for information transmission.

5. THEME 3: RESEARCH CONCLUSIONS AND RECOMMENDATIONS CONCLUSIONS

1. Space went through many stages and saw the change in shapes, composition, and function due to the development of construction systems. Still, the entry of the information age created a different shift from previous changes, not only in form or in content, but less need if not lack of many functions replaced by new technology such as preferred archive storage for the emergence of new technology from storage through CDs and computer storage panels, quarry rooms and meeting rooms, as a result of communication through communication networks and the development of library systems to become Environment simulation compatibility connecting the inside with the outside transfer and delivery of dynamic information simulation like walls and outside surfaces. In the form of internal breakers in addition to adding external walls.

The relationships of architecture are close to architectural elements. Cognitive Electronic libraries, as well as many aspects of space such as: (e-wall, e-floor, e-roof, and e-windows), these changes will reconsider the importance of the need for realistic, fixed spaces to transform into spaces Virtual, through virtual worlds Virtual Communities will affect the transformation of most city elements into virtual worlds and the change of space into space electronic.

2. Information and multimedia media will also affect the transformation of space into a medium for transmitting information, which will confirm the lack of the users of the space need many services that need to be moved, which will affect these spaces and the extent of their need.

3. Through these developments, architectural thought will face the problem of dealing with space in the era of information technology, in light of the development of everything related to life, including unclear and undefined directions.

4. Through this boom, many spaces will merge and dispense with each other, and new types of buildings will appear that contain several functions and hybrid uses to make sure that space in the era of information technology has a new form and of two types:

- Hybrid space.
- Cyberspace.

6. With the transformation of space into a virtual space or an electronic space, the architect will also turn into an architect who practices his profession in a virtual world and designs virtual worlds for use by visitors and dealers on the information network.

7. With societal and professional developments resulting from information technology, the space began to fade away or shift to the hybrid space or shift to the virtual space, and the philosophy of space changed to turn into a medium for transmitting the information.

8. It also appeared that there were many expectations that the research had expected, some of which began to be realized, such as:

- a. As a result of the lack or absence of the need for many spaces, new types of buildings will arise, and other styles will disappear. This will result in a transitional period where experiments and testing will occur, increasing the

- need for multi-use buildings grouped into unified buildings. Large institutions will turn into a mere office where the administration gathers. The rest of the spaces will turn into cyberspaces.
- b. The current spaces will turn into electronic alternatives, and they will be dealt with, and this will require the development of interactive systems and may result in a new form of communication, including the experience of the Avatar or (the companion) who does business in the virtual environment.
 - c. Many architects will design many buildings and environments in which visitors will wander imaginatively. These previous transformations in all building elements (structure and structural composition, materials, space, and function) confirm this technology's impact on architectural thought and even in concepts and constants architecture.

Recommendations

1. Investing the current research results at the applied level in enriching the future local experience.
2. Changing the view of contemporary designs and their simulations with their ability to respond to our objective and social requirements, and trying to encourage the introduction and use of new technologies to reach better technical solutions, emphasizing their visibility because of their role and impact on the recipient, and working to find the means that would make them
3. adapted to the local environment.
4. The topics of digital development and its impact on architecture in general and the architectural space, in particular, are fertile and modern topics whose vision is still unclear to what extent it will reach us and to what extent we will benefit from it. Therefore, it is recommended to pay attention to contemporary technology and increase and intensify studies in its applications and capabilities.
5. The necessity of developing educational systems for architectural education and encouraging students to learn about modern design tools and software and how to develop the design stages through them.
6. The importance of following the development of design theories and curricula that have turned into digital design theories to help solve design problems in new ways and provide different ideas.

ACKNOWLEDGEMENTS

The authors would like to thank Mustansiriyah University (www.uomustansiriyah.edu.iq) Baghdad-Iraq for its support in the current work. The authors also would like to acknowledge the support of the University of Birmingham and Abertay University, UK for its valuable support.

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