



Architectural Design Methodology Between Human Needs and Designer's Own Capabilities

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KEYWORDS:

design process
Architectural design
methodology - human
needs - designer
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Abstract—Architectural design is a mental activity carried out by the designer to meet the needs of the individual and the group (human, social, economic and civilized). This activity is mainly affected by the capabilities of the designer. The designer's capabilities consist of (the designer's philosophy and interactions – experiences and knowledge stock – subjective capabilities).

One of the most important factors that affect both human needs and the designer's capabilities is the information available in the built environment, which helped in the development of methodologies for architectural design that control the basic design process Therefore, the research focused on studying the relationship between information, human needs, and designer capabilities through three axes, the axis The first: a study of the basic concepts of human needs, information, and the designer's capabilities - The second axis: an analytical study of the evolution of architectural design methodologies according to human needs and the factors of the built environment - The third axis: the role of the designer's own capabilities in reshaping and formulating architectural design methodologies

I. INTRODUCTION

THE specificity of the relationship between design and information lies in compatibility and integration. Information directs the designer towards the physical forms of ideas through information relevant to human needs, information related to the study of the site, information that changes according to time. Designed to implement his ideas with the highest efficiency and with many alternatives.

II. RESEARCH PROBLEM

The designer's intrinsic capabilities remain the main controller of the design process, and it is formed mainly by the information available in the time period of the architect's work.

III. SEARCH GOAL

Monitor the reflection of changes in both human needs and information, which leads to changes in the designer's thinking, which determines according to his own abilities (rationalism - imaginary) the architectural design methodologies that follow to solve the problems of architectural design.

IV. METHODOLOGY OF THE STUDY

The method of extrapolation: through (to identify the basic concepts of research for the design process - human needs - information) - (Monitoring the architectural design methodologies for some architects achieve the relationship between man and space and time).

Theoretical analytical approach: Analyzing the relationship between changes in the process of architectural

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design and informational changes during four periods (prehistory - the era of ancient Egyptian civilization, Sumerian and Greek - the era of Roman civilization until the middle of the 18th century - the era of the industrial revolution till now), analysis of changes in the design process The architecture of some contemporary architects of the information technology revolution to deduce the effect of the designer's own abilities on the design process ... to derive the scheme of the relationship between changes in human needs and the design process in the information technology era.

V. DESIGN PROCESS:

The essence of the architectural design process is that there is a problem in one of the human needs, which needs to be solved, functionally, aesthetically, qualitatively, economically, socially and practically. The human being is aware of the existence of three categories of needs to be satisfied in dealing with the living environment, Which (1):

- Utilitarian need: the survival of the physical entity of the individual to be able to grow, and the maintenance of this body, and then reproduction, to ensure continuity of life cycle instinctive.

- Symbolic needs: After satisfying the utilitarian need, the conscious human being has to determine his identity in exchange for the various things he deals with. Identifying this identity is an intellectual matter. It is an indeterminate relationship, and to make it a clear relationship, thought transforms this implicit relationship into a concrete relationship. A relationship that is associated with a relatively tangible physical matter.

- The aesthetic need: The formation of consciousness to enjoy, while repetition makes the presence of an unintended, the man seeks to achieve pleasure and beauty by creating variations in the world of designs. (2)

A- The design process is a change to the human environment built to meet the requirements of the individual and the community during the collection and handling of information on the design problem and the derivation of the ideal decisions and then tested and evaluated. (3)

B- Mechanism of implementation of the thought process design in the human mind:

The practice of architecture starts from the appearance of a design problem, which may be posed by the user to the designer, or from the designer himself, which explains the need for a human need for a product that satisfies that need. This product is the result of the contemporary data of the emerging need. What is directed and organized by these processes is the science of logic that man needs to deduce in all science and knowledge issues, and in the field of architecture it is necessary to reach the architectural solution, and in order to infer the rule in Architectural Issues The logic of measurement is presented as a scientific method. (4)

C-How to face the mind solving problem:

In this analysis there are five roles: first: facing the problem (the unknown); second: understanding the types of problems; and third, the general study, the movement of the mind between the problem and the information stored in it. And the formulation of what suits the problem and correct the imbalance, V. (delivery of the idea): movement of the knowledge that can be adapted from what is required (5), Figure (1) represents the movement of the mind and its jumps while handling information to solve the problem.

The specificity of the relationship between design and information lies in compatibility and integration. Information directs the designer towards the physical forms of ideas through information relevant to human needs, information related to the study of the site, information that changes according to time. Designed to implement his ideas with the highest efficiency and with many alternatives.

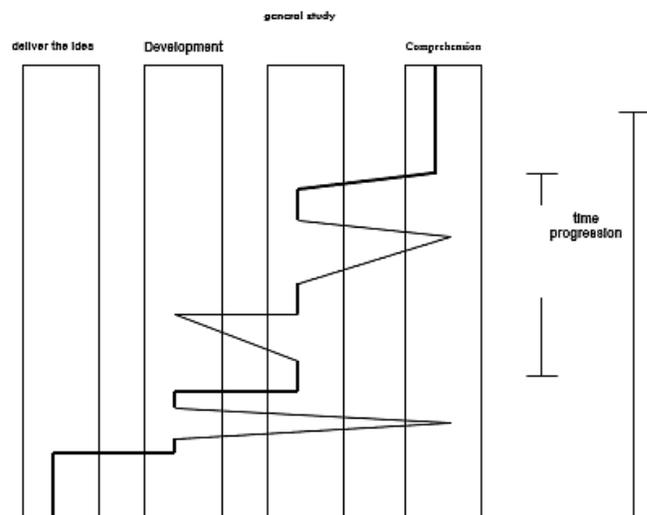


Figure (1) unexpected jumps between the different stages in the decision-making process as a result of the evolution of the concept of problematic situation and the extent of the interdependence of information related to it with a time progress from the first phase to the fourth stage.

(Source: Bryan Lawson, How Designers Think)

VI. DEFINITION OF HUMAN NEEDS

It is a state of deprivation accompanied by a specific desire of the individual to obtain various means of saturation to remove this deprivation.

A. Types of Human Needs and Desires:

Scientists have tried to reach what can be done to influence the behavior of individuals and established theories for many based on the basis of "human needs" cannot be limited to the theories that dealt with and tried to interpret the individual's actions and statements resulting from a particular need to take advantage of that need to increase The ability to understand and influence other people, and this is evidenced by the complexity of human behavior, and the difficulty of reaching an agreement among scientists on one theory to influence this behavior because the needs of the individual tangled and complex and tends to the individual behavior that leads to Achieve

According to its needs and priorities that are consistent with his personal view of thing(6).

B. One of the Most Famous of these Theories is the Human Needs of Abraham Maslow:

Maslow considers that the driving force of people is a series of needs and when the saturation of needs at the bottom of the chain shows higher needs that the individual wants to satisfy, so the trend continues upward. Maslow's theory is based on two principles: (*He believes that the unsaturated need*) is an engine of behavior, (*The principle of the hierarchy of needs*): It is here that it is necessary to satisfy the initial needs first and satisfy the higher needs, which means starting the needs at the bottom of the pyramid up to the higher needs) (7), Figure (2) illustrates the humanitarian needs of Maslow.

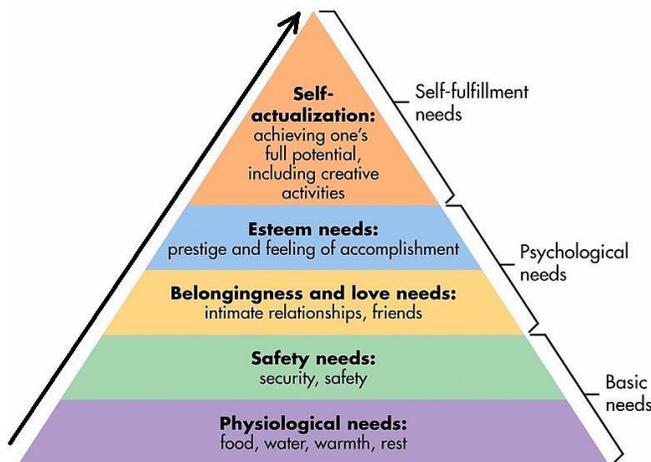


Figure (2) illustrates the humanitarian needs of Maslow. (Source: Schultz, Duan, "Personal Theories", 1983)

Thus, we can classify the needs from the Maslow point to the following:

- Basic physiological needs such as food, air, water and housing
- The need for security, reassurance and protection against dangers.
- The need for social affiliation such as love, belonging and acceptance of others.
- The need for self-esteem, self-confidence and achievements.
- The need for self-realization by feeling the society's appreciation of its services and efforts and realizing itself by disclosing what is going on in its chest in order to affirm its sense of its existence and its value in society.
- Other scientists added to these needs two times and became 7 needs: -
- Need for knowledge and understanding.
- Aesthetic needs

VII. NEED FOR UNDERSTANDING AND KNOWLEDGE

The activities of the humanitarian community in all its forms and patterns of development are related to the accumulation of experience and knowledge, and the use of data

and information for further innovation, modernization and development. The information revolution has become the main feature of the modern technological revolution. (8)

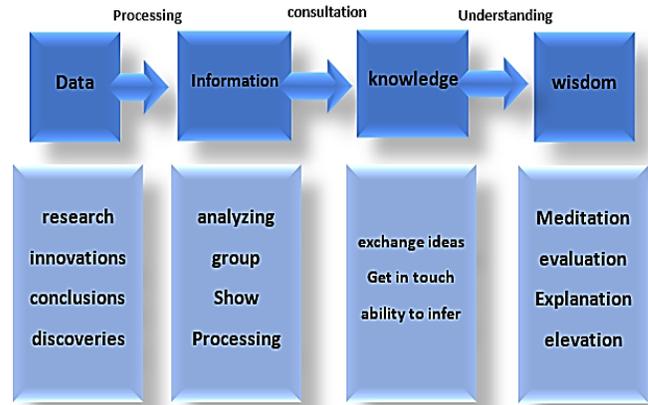


Figure (3) Information industry systems for the realization of human knowledge and benefit (Source: Samira Jamal Jameel," Technological Culture Repercussions and Its Effect on The Future of Architecture",2008)

Data defined as an unconnected series of objective facts that can be obtained by observation or through research and registration. In general, data is a set of letters, words, numbers, symbols or images related to a given subject. Term Information. Inputs are in the information system and do not have a clear impact on decision-making

Information is defined as data processed so that it becomes meaningful and is associated with a particular context. Information is a broad term used for several meanings according to the context of the conversation, and is generally associated with terms such as meaning, knowledge, instruction, communication. (9)

However, any information system starts with data and ends with information so that it cannot set a clear and precise boundary between them. What is considered information at some stage is data in the next stage.

Knowledge is the result of the hidden confluence between information, experience, sensory perceptions, and ability to govern. We receive information and get it out as our senses understand it. Where information is a means of acquiring knowledge in many ways, such as intuition, guess and actual practice. (10)

Wisdom can be defined as the mental energy that we apply to our knowledge and evidence to generate ideas, to discover relationships and to demonstrate theories, that is, the application of knowledge in human judgment or judgment that revolves around certain criteria or values. (11)

The information is the result of data processing, which in turn turns to knowledge as soon as it is mixed with the experience of the recipient and the skills he enjoys, and therefore the information is the basis of knowledge.

VIII. DESIGNER CAPABILITIES:

The designer is the first responsible for choosing ideas and solutions to the design problem, as he represents the basis in the design process, and this requires that he have a sound intellectual structure linked to his community and that intellectual building is formed through the knowledge stock available to him, which represents his personal experience and to be specific to his philosophy and design direction and works to develop his capabilities subjectivity, so we can divide the factors affecting the construction of the designer's thought into (the designer's philosophy and orientations – experiences and knowledge stock – subjective capabilities).

The designer's philosophy and orientations: Each designer has attitudes and attitudes towards issues related to any problematic situation he faces, representing his own philosophy and intellectual logic, and embodying his opinions, self-conviction, and intellectual approach to addressing these situations, and they are divided into (the human approach – the methodological scientific approach – the creative artistic approach).

Experience and knowledge stock: Good knowledge is one of the important factors in building the designer's thought and enabling him to provide successful solutions to the design problems he faces. Also, the designer's personal experiences play an important role in the process of conscious awareness of this environment in which he designs, whether these experiences are in the field of professional practice. Or in the field of its relationship with society and its vital surroundings, because these experiences represent an intellectual accumulation of the designer by which his stock of knowledge is formed, which is automatically and directly reflected in most of his works.

Self-abilities: The designer uses his own skills and abilities during the design process stages, and those abilities can be divided (mental abilities - productive abilities - evaluative abilities)

IX. THE ROLE OF INFORMATION CULTURE FOR THE DESIGNER AND RECIPIENT (MAN):

It is no exaggeration to say that information technology has made culture a stand-alone industry with its alphabet, goods and services. Information is the most important component of the culture industry in its various forms and symbolic languages. The art of the information age is characterized by the symbolic symbolism, where information culture links the arts of the symbol to its different branches, adding a new dimension to a function closely related to the development of thought itself. (8)

The information culture provides the designer with a wide and extended perspective to enrich his creative experiences, develop knowledge awareness, increase interaction with developments, keep abreast of global developments in specialized fields, and open up new horizons to express himself and promote his work.

It also transformed the information culture received from a negative future into a positive participant that can implement

the work and details of the technical work, thus achieving an integrated system of expertise in the design process.

The research study presents two conceptual models of architectural architects from the Arab world who adopted their vision of the process of design and its relation to man. They are the architect Muhammad Makiya, whose concept of the process is based on three pillars (man - place - time). The second is the architect Rifaat al- Social - human technology). (4)

A. The vision of architect Mohammed Makiya for the design process:

The design process according to the vision of the architect Mohamed Makiya

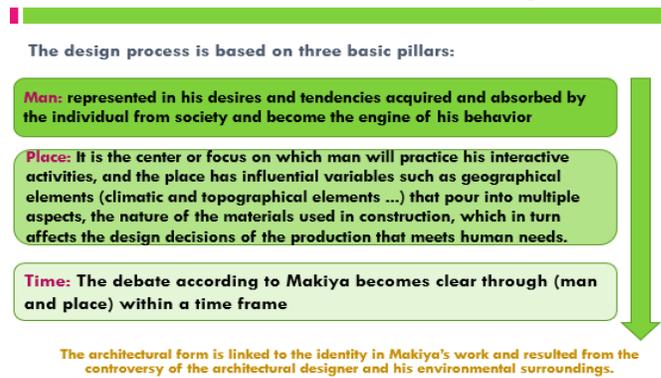


Figure (4) The vision of architect Mohammed Makiya for the design process (Source: Researcher)

B. The vision of the architect Rifaat al-Jadriji for the design process:

The design process according to the vision of the architect, Rifaat Chadriji

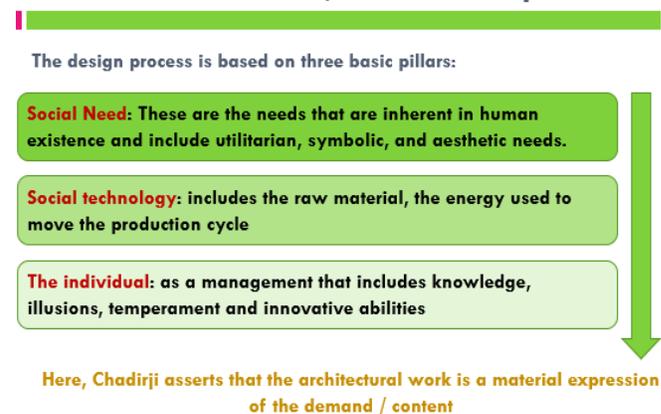


Figure (5) The vision of architect Rifaat al-Jadriji for the design process (Source: Researcher)

C. The Overall Model of the Relationship Between Information and Designer:

We can formulate a virtual model that is a measure of the information used by the designer, which has appeared in the architectural works of Muhammad Makiya and Rafat al-Jadriji. The designers' thought is based on a solution to architectural problems in an architectural form expressing identity.

The overall model for the thought process of the design process of Makiya and Chadirji

It represents a measure (of the nature of the parameters used by the designer, and the nature of the relationships between the information through which the designer moves to reach a solution to the design problem)

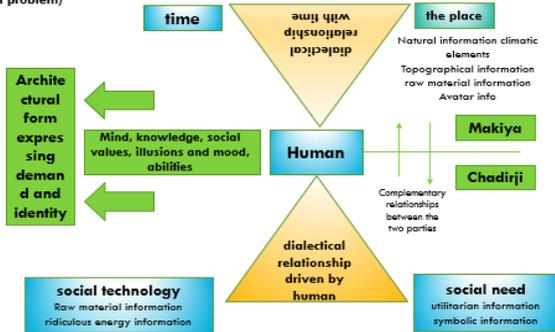


Figure (6) The overall model of the relationship between information and designer (Source: Ibrahim, Bilal, "The Impact of Information and Communication Technology on Dialectic Image of Vernacular Architectural Thought",2016)

X. THE RELATIONSHIP BETWEEN (HUMAN - THOUGHT PROCESS DESIGN - INFORMATION):

The design process depends on many information that can be classified into:

Location-related information: information about climate, sun, soil, movement and access, noise.

Information related to the person (user): information on functional needs (utilitarian), symbolic needs (intangible intellectual needs), aesthetic needs (innovation and innovation), social dimensions, economic dimensions.

Variable time change information: building materials, construction systems, building legislation, historical dimensions, cultural dimensions

Study proposal for the relationship between design, information and human needs

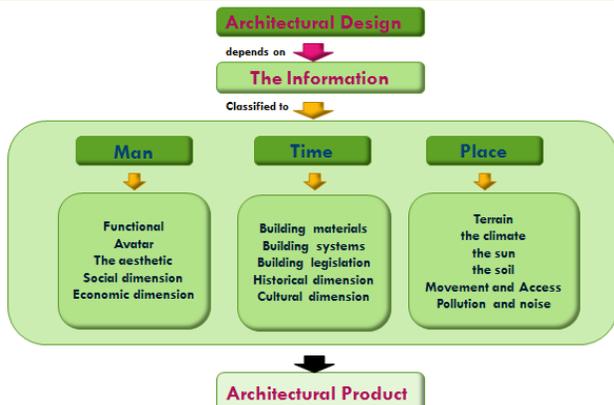


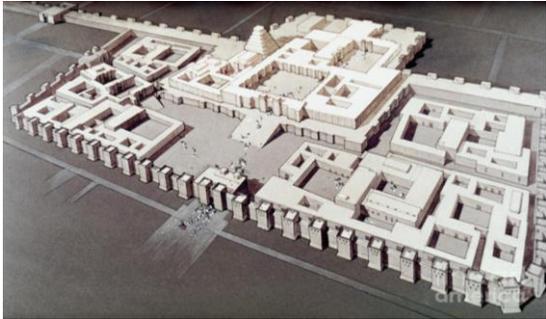
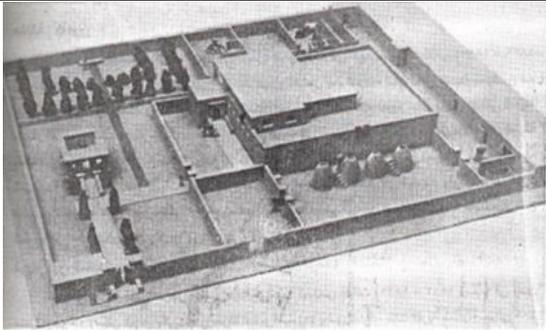
Figure (7) Proposed model for The relationship between (human - thought process design – information) (Source: Researcher)

Figure (7) represents a proposed model in this paper to describe the change of the mechanisms of architectural formation in parallel with the changing of the human needs in the intellectual environment of the cognitive changes that

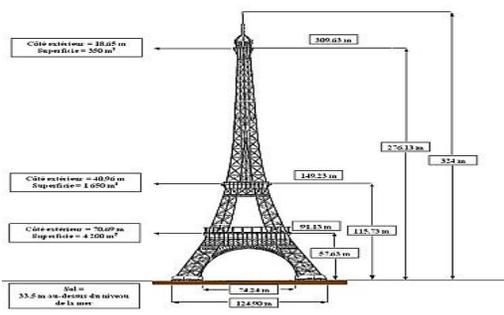
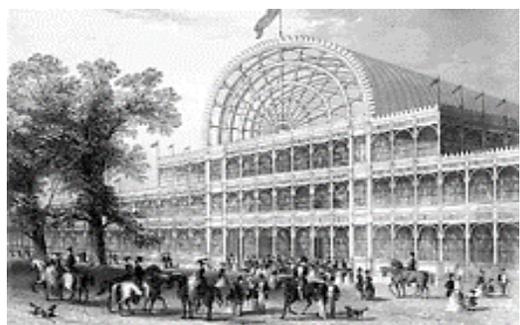
influenced the human life, which made it reshape its environment by taking advantage of the information technologies which resulted in these changes in different periods of time Which the researcher tries to test through his theoretical study of the history of the development of these three variables, and modern history in particular

The second axis: an analytical study of the evolution of architectural design methodologies according to human needs and environmental factors

Pre-Knowledge of Architectural Design Methodologies	
Architectural Design	The design process is due to the primitive efforts made by man to find a shelter that protects against the vagaries of the atmosphere and predators and from the human hostility to the brotherhood of man
Information	Man (Utilitarian needs): In the old stone age, man lived on food, fishing, fishing, fishing, and did not have knowledge or knowledge of the manufacture of tools or agriculture (economic): increased his activity and direction towards civilization, man learn how to make tools of stones and emerged many industries such as pottery and extraction Trade and discovery of agriculture and animal welfare (social) Stability in permanent gatherings on land or around lakes, where man learns how to build and build real housing all of the latest developments of the modern stone age
	Time (The historical dimension): prehistory (old stone age - modern stone age) - (building materials): materials available in nature (branches of trees - animal skins - rocks and stones in nature)
	Place Dealing with the natural environment and its variability
Architectural Product	The first thing that a man searched for caves found in the caves has passed thousands of years and is inside the cave trying to secure himself and defend
	To learn to build huts of woven and twigs of trees and then take the tent house of animal skins and wood
	The human mind then evolved to try to build a house with primitive stone tools, some of which were randomly assembled

The First Stage of Architectural Design Methodologies		
Architectural Design	The architectural product is not an individual product, but it belongs to generations through long periods in which it contributed, lived and stored it in unconsciousness and inherited it in its feeling. The basis of this process is the craftsman and the user, who represent two parts of a civilized society that is protected by a sacred vision of space, man and time	
information	Man	(<u>Functional requirements</u>) buildings have emerged since its inception to protect the human from the forces of external nature, which cannot control or its negative impact, and summarized the idea of buildings in being a shelter for the human to achieve the desire to stay and provide security
	Time	(<u>Historical side</u>) Ancient Egyptian architecture, Sumerian and Greek- (<u>Construction and building materials</u>), making bricks from silt, cutting wood and using them in ceilings- (<u>The cultural side</u>) Intellectual knowledge formed the basis of knowledge of man to try to understand the existence and the universe
	Place	Dealing with the natural environment and its variability
The vacuum shall be through the presence of a confluence between the different blocks and the production of the shape is restricted by the craft style in the design		
Architectural Product	 <p>Sargon Palace of Assyrian Civilization Bu</p>	
	 <p>Model to a suburb in the city of Tel Amarna (Pharaonic civilization)</p>	

The Second Stage of Architectural Design Methodologies		
Architectural Design	Dependence on the traditional curriculum in architectural design with the beginning of the trend towards rational thinking systematic to adapt the intellectual knowledge to discover the physical world and the beginning of the trend towards practical application and the discovery of the intellectual foundations of mechanisms and methods of architectural design and freedom from the art and approach to the principles and scientific rules ... The historical period is the control of individual action (at the expense of collective action) and the extensive practice of the principle of trial and error, despite the considerable consumption of the time of completion of the project	
information	Man	(<u>Religious</u>) but scientific atmosphere tense at the time, any scientific correction of any part of the image of theological universe in the Middle Ages is an attack on the religious system, social and cosmic itself, and must be strongly challenged by the Church and the state ... (<u>aesthetic</u>) Fit the parts according to the ideas of Roman landscape Vetrovis, and compatibility with the environment
	Time	(The historical aspect) Roman civilization until the middle of the eighteenth century - (the cultural aspect) freeing human thought towards the discovery of the physical world and the salient philosophy of mathematical and experimental philosophy
	Place	Compatibility with the environment
The problem of identifying the internal vacuum and the elements of its formation began through the use of cover in the vaults and vaults, which led to the passage of the vacuum stages of development in the composition and treatment (structural and environmental)		
Architectural Product	 <p>Cologne Cathedral built in Gothic style</p>	<p>Circus and saloon building</p>  <p>Colosseum</p>
	 <p>Models of Roman architecture</p>	 <p>Bathrooms</p>

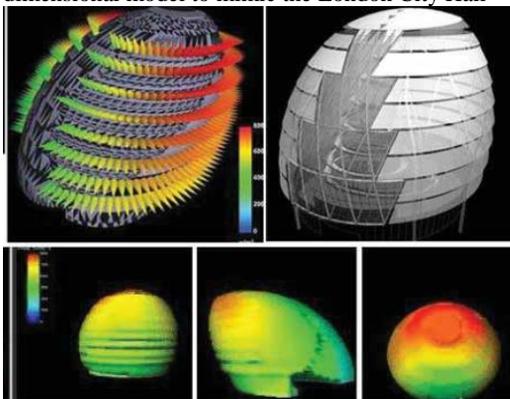
The Third Stage of Architectural Design Methodologies 1-The Era of the Industrial Revolution (1690 - 1890)					
<i>Architectural Design</i>	The designers were greatly influenced by the industry and the technological progress during the industrial revolution in following the systematic way of thinking where the designer's mind represented a glass box. The design process is interrelated, and the design was linked to the experimental scientific climate and the rule of applied mathematics and the direction of definite and specific solutions. Science is faster than the development of the arts, a gap between science and art became the focus on science				
<i>information</i>	<table border="1"> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);"><i>Man</i></td> <td>(Beauty) corruption of the public taste became the product of the machine is concerned with the quantity and quality, and therefore lack of taste general compared to the manual product - (functional requirement), which affected the culture of society and humanitarian needs in a negative and became functional is the only motive to meet the needs of human - The emergence of a comprehensive space for the need for exhibitions, meeting rooms, seminars, conferences and multi-purpose halls for the promotion of industrial products.</td> </tr> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);"><i>Time</i></td> <td>(Historical aspect) Industrial Revolution 1690-1890, (construction and building materials) Utilization of science and knowledge in building a new world through the adaptation of mineral wealth - glass, iron and concrete - for design and production processes</td> </tr> </table>	<i>Man</i>	(Beauty) corruption of the public taste became the product of the machine is concerned with the quantity and quality, and therefore lack of taste general compared to the manual product - (functional requirement), which affected the culture of society and humanitarian needs in a negative and became functional is the only motive to meet the needs of human - The emergence of a comprehensive space for the need for exhibitions, meeting rooms, seminars, conferences and multi-purpose halls for the promotion of industrial products.	<i>Time</i>	(Historical aspect) Industrial Revolution 1690-1890, (construction and building materials) Utilization of science and knowledge in building a new world through the adaptation of mineral wealth - glass, iron and concrete - for design and production processes
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<i>Architectural Product</i>	The need to develop special designs for the factories, and provide the appropriate space for the movement of the production line, and consequently the impact on the formation and aggregation in the factory building, where it was decided these designs engineer God himself, and expanded the building of the plant became the need for a building system.				
	<p>The Eiffel Tower was built from 1887 to 1889, influenced by the industrial revolution in a record period</p>  <p>Among the most prominent architectural examples of this period (Crystal Palace)</p> 				

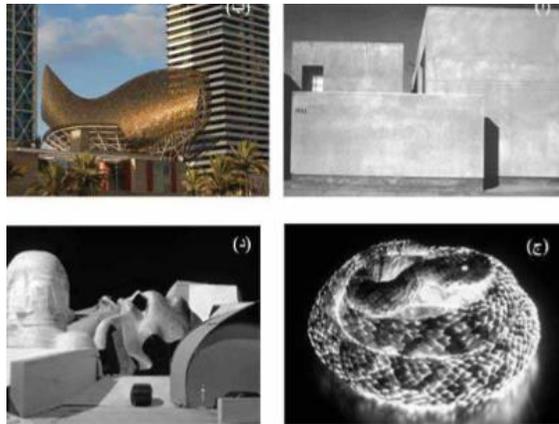
The Third Stage of Architectural Design Methodologies 2- 20 th Century (1890-1950)							
<i>Architectural Design</i>	The designers went to organize the steps of thinking based on the full application of the mathematical and mental thought based on technology, influenced by the evolution of war methods through the development of technology ... which affected architecture, especially after the World War and the total destruction in America, Europe and the Soviet Union and the trend towards rapid, simple and functional construction. Large housing						
<i>information</i>	<table border="1"> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);"><i>Man</i></td> <td>(Functional) human needs exceeded the broader horizons, and with the development of materials technology, man began to exploit the possibilities of the surrounding environment and what can be provided for the internal spaces in the building to achieve its various functional and psychological needs</td> </tr> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);"><i>Time</i></td> <td>(Historical aspect) the beginning of the twentieth century - (construction and building materials) the use of glass and aluminum and the development of building foundations</td> </tr> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);"><i>Place</i></td> <td>Compatibility with nature and the beginning of dealing with nature and the exploitation of its potential</td> </tr> </table>	<i>Man</i>	(Functional) human needs exceeded the broader horizons, and with the development of materials technology, man began to exploit the possibilities of the surrounding environment and what can be provided for the internal spaces in the building to achieve its various functional and psychological needs	<i>Time</i>	(Historical aspect) the beginning of the twentieth century - (construction and building materials) the use of glass and aluminum and the development of building foundations	<i>Place</i>	Compatibility with nature and the beginning of dealing with nature and the exploitation of its potential
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<i>Place</i>	Compatibility with nature and the beginning of dealing with nature and the exploitation of its potential						
<i>Architectural Product</i>	The dimension of time was added to the three dimensions of the vacuum. The vacuum was realized through the movement within it and its vision from more than one point and angle, and at that time the idea of perceiving the vacuum was eliminated through the one-point perspective						
	<p>"We want a style that gives everything in its proper place, and we want everything to have its proper place according to its nature," Mays Vandroh said of the vacuum. Villa Tugendhat</p>  <p>He also expressed his vision of emptiness in his famous "House of the Living" and it shows in his most important work "Villa Savoy"</p> 						

<p>The Third Stage of Architectural Design Methodologies 3-The Second Half of the Twentieth Century Until Now</p>	
<p><i>Architectural Design</i></p>	<p>The designer went to focus on the cognitive and value aspects of the design problem to reach non-deterministic design solutions that can be reviewed and changed according to the value conditions, objectives and strategy adopted. Thus, the method with the strict follow-up steps is no longer the guide to the design process. The methods of self-organization and the adoption of the intellectual trend and self-reflection in thinking with more attention to different environmental, human and civilizational changes</p>
<p><i>information</i></p>	<p><i>Man</i></p> <p>The revolution of information, the digital revolution, nanotechnology ... the impact of all this on the values and ethics and the thought of the non-spiritual and expressive of human feelings and the universal knowledge of the system of eternal value relations in the relationship of man with his society and creation and environment. The human vision and needs in this age changed as a result of boredom and desire to exploit the available possibilities. Many scientists have proven that man needs constant change. He develops his thinking. He must live in a field with successive variables and a variety of impressions and sensations (13). Designed to free the imagination and transfer reality to meet his own desires and human needs in the era of information technology</p>
	<p><i>Time</i></p> <p>(The historical aspect) for the second half of the twentieth century and until now (1950-2021) - The cultural and cognitive aspect: to benefit from science and knowledge in the field of communications engineering, metal engineering, cosmology and atomic parts</p>
	<p><i>Place</i></p> <p>The use of the same bio-responsive designs is environmentally friendly and environmentally friendly.</p>
<p><i>Architectural Product</i></p>	<p>The almost complete elimination of the physical determinants of the architectural form of the development of computer technology and mechanisms in the design and implementation, in addition to the development of metal engineering, the emergence of nanotechnology and the large spatial revolution in the methods of communication and survey via satellite led to the transfer from fiction to reality</p> <p>The most important buildings implemented within the framework of this architectural approach (the twisted trunk tower) in Malmo (Sweden) in 2001-2006 (for the Spanish architect) Santiago Calatrava (Santiago) Calatrava, inspired by the body of the human trunk in its sculptural design of the block building, came to form the building of the tower in the form of nine separate minds; penetrated by a concrete heart similar to the spinal cord in the human body, the heart contains the elements of vertical distribution and service elements of the tower building, From the structural heart Crooked ...full 2012 m.</p>

<p><i>Architectural Product</i></p>	 <p>Building (twisted trunk tower) in Malmo (Sweden) for architect Santiago Calatrava (2001 - 2006) (http://en.wikipedia.org/wiki/Turning_Torso/17-12-2012)</p>
	<p>The Water Center in London is one of the architectural works of Zaha Hadid that reflects the non-standard shapes and the freedom of producing architectural form and its implementation of the possibilities of digital technology</p>  <p>marine passenger station, designed as an extension of the surrounding environment across a range of collision surfaces that cover various project elements; loads are transferred across these surfaces to the ground, which corresponds to the Japanese topography affected by earthquakes. The building reflects a real revolution in the architectural configuration and compatibility with the environment in terms of flow of shape and reflection on the horizontal projection and spaces</p>  <p>(The Yokohama Pier Port Terminal) Yokohama International Port (Project 1) Format Group Design (FOA Architects) 1987 - 2002 (http://en.wikipedia.org/wiki/%C5%8Csanbashi_Pier/17-12-2012)</p>

ANALYSIS OF EXAMPLES OF THE WORK OF SOME ARCHITECTS IN THE THIRD STAGE OF DESIGN METHODOLOGIES

The Third Stage of Architectural Design Methodologies (1) Architecture (Norman Foster) 1935		
Architectural Design	From the pioneers of high-tech architecture, his designs are distinguished by the hi-tech style, focusing on the technological structural aspects but then the construction lines began mixing technology and art.	
information	Man	-
	Time	Advances in science and knowledge, general trends towards ecology and consumption of renewable energy sources, sustainable engineering, use of aluminum materials and techniques, use of computer software
	Place	The use of glass, aluminum and evolution methods and methods of construction
Architectural Product	<p>Figure showing an analytical study of the effects of temperature and sunlight on the facades of the three-dimensional model to mimic the London City Hall</p> 	
Architectural Design Steps	1-Norman Foster begins by studying the location of the project and its surrounding factors that can affect the design idea, studying how to achieve an idea for the project that combines designer's thought and functional aspects within the framework of the principles of sustainability.	
	2-The establishment of three - dimensional models of the site before the start of the design, and the analysis of climate to determine the trends of wind, temperature, and terrain of the site, ... Start to put several ideas for the initial project, and be the appropriate alternative through the suspension of various analysis programs, Of these wind to reduce the working hours of air conditioners throughout the day.	
	3-When stabilizing the final form of the building is to study the component parts of the building from the whole to the part by implementation models...	
	4-The study of how to implement the building through three-dimensional models adopted the building to be implemented by the building to discuss the difficulties and how to overcome them before the start of implementation, which helped to avoid many of the problems during the implementation phase.	

The Third Stage of Architectural Design Methodologies Architecture (Frank Gerry) 1929		
Architectural Design	One of the pioneers of the movement of architecture deconstruction, his designs are characterized by simplicity and lines are not parallel at the same time, and was characterized by the construction of the use of beams and metal supports, as well as the adoption of new materials, and succeeded in this way to break the state of distress.	
information	Man	What distinguishes the participation of the client
	Time	Progress in the fields of science and knowledge, the use of computer software.
	Place	The use of glass, aluminum and evolution methods and methods of construction
Architectural Product	<p>Models of the works of Frank Gerry before and after the use of information technology</p> 	
Architectural Design Steps	1-Frank Gerry begins by studying the initial idea of the project with its functional and structural requirements through manual sketches. "The problem of functional problems is an intellectual exercise, which is just as important as solving problems, To his wishes, and the contents of the project, looking for a real moment to understand the problem"	
	2-the development of preliminary models of the idea in the form of McCarthy to study the suitability of spatial and functional solutions for structural training, in which Frank Gerry depends on the forms of the physiological and irregular curves, which necessitates the creation of non-conventional construction solutions, which makes use of models of the three-dimensional almost necessary in this	
	3-After stabilizing the initial idea by means of the market study, a digital survey of the market and converted to a three - dimensional model to study more deeply.	
	4-After the transformation of the building into a three-dimensional model, all elements of the building are studied through the digital medium, studying how to convert it into an execution graphic, and clarifying the appropriate building methods and materials for each part. This stage contains many surface operations and analyzes and how to assemble complex curves or 3D models are needed to study.	

**The Third Stage of Architectural Design Methodologies
(2) Architecture (Norman Foster) 1935
Hong Kong Bank Project**

Three-dimensional studies illustrate the architectural concept of the Hong Kong Bank project.



Figure : CAD isometric view.



Figure : CAD isometric view.

Lighting distribution studies for Hong Kong Bank project



Structural distribution studies of the Hong Kong Bank

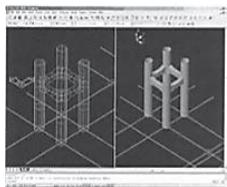


Figure : Beam insertion.



Figure : Grid setup.

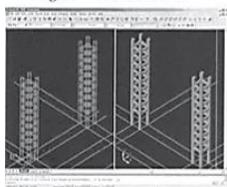


Figure : Mast replication.

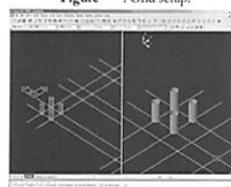


Figure : Extruding component sections

Wind impact studies on the structural systems of the Hong Kong Bank



tion in side view.

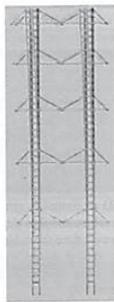


Figure : Deflection in front view.

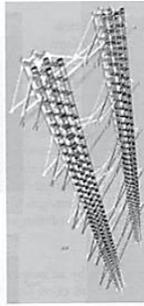


Figure : Deflection analy

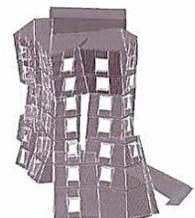
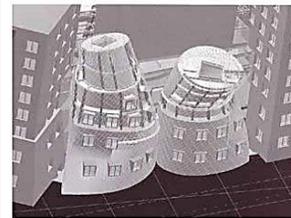
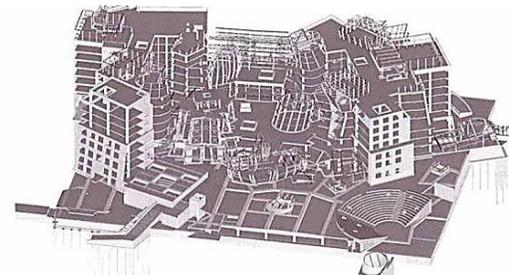
Architectural Design Steps

**The Third Stage of Architectural Design Methodologies
Architecture (Frank Gerry) 1929
Sata Center Project,**

Collection of spaces in the Sata Center project

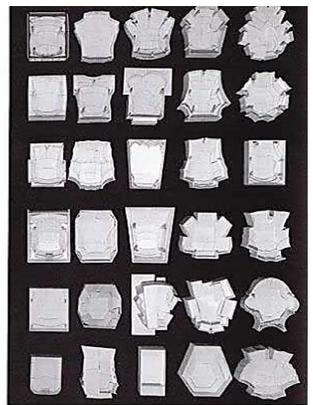


D3 models for the entire Sata Center project, which explains the ways of construction

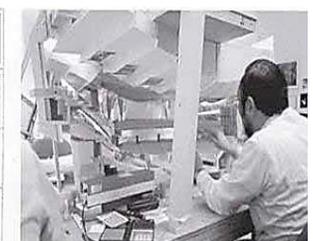
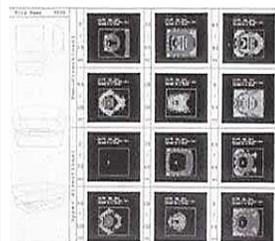


Architectural Design Steps

The shape of the machiets that were manufactured and tested



The stages of sound analysis on both maket and 3D models



The Third Axis: The Role Of The Designer's Own Capabilities In Reshaping And Formulating Architectural Design Methodologies			The Evolution of Architectural Design Methodologies					
			Pre-knowledge of architectural design methodologies	The first stage of architectural design methodologies	The second stage of architectural design methodologies	The third stage of architectural design methodologies		
						-The era of the industrial revolution (1890-1690)(Twentieth century (1890-1950)-	The second half of the twentieth century Until now
Factors affecting architectural design methodologies	humanitarian needs	physiological needs	*	*	*	*	*	*
		need for safety	*	*	*	*	*	*
		community affiliation		*	*	*	*	*
		Respect my self			*	*	*	*
		knowledge and understanding			*	*	*	*
		aesthetic needs			*		*	*
	designer capabilities	designer philosophy					*	*
		Experience and stock of knowledge			*	*	*	*
		intrinsic abilities					*	*

XI. RESULTS

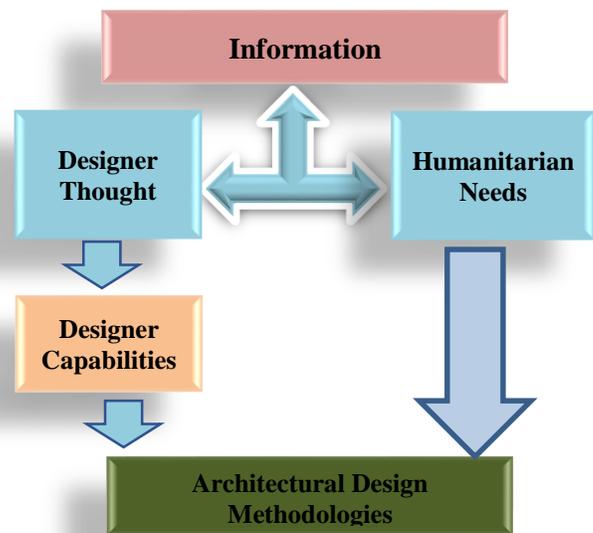
In the prehistoric period, human beings had limited information about social needs and dealing with the place negatively and for fear of its dangers. There was no need for the architectural design of an architect.

In the era of the emergence of civilizations, where stability grew, the social needs of man and his innate attempts to exploit the possibilities of his environment and the emergence of the craftsman who worked only by transferring experiences, the role of architectural design methodologies did not appear, the limited role of the designer.

In the era of the Industrial Revolution, the development of science has become faster than the development of the arts. A gap formed between science and art. The focus on science and its impact on human needs has become negative towards fulfilling the job only, and the designer has become repeating the same patterns based on cognitive experiences only, and no clear effect of the imaginative abilities appears.

With the development of materials and technology, human needs extended to broader horizons to achieve the functional and psychological needs of designers to organize the step of the scientific approach, so the methodologies of architectural design developed, and the role of the designer's capabilities appeared in reshaping and formulating architectural design methodologies.

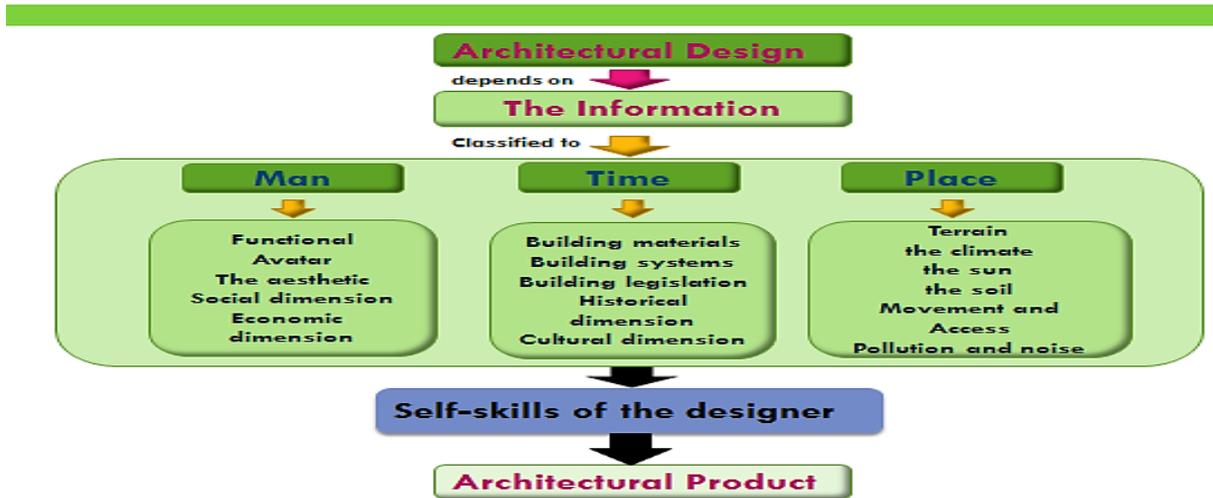
Through the monitoring and discussion of the relationship between the three variables it became clear that the change and development in information and technology throughout history has strong impact on the needs of man and then on the designer. As the development of science evolved architectural design methods, which are automated laws to regulate the steps of the design process.



What technology has created in the designer is a constant interaction with all the elements of the design process and the architectural work, which has added new culture to the architecture, but although Norman Foster and Frank Gere use the same technology but voluntarily according to his ability to change architectural culture to prove again that the designer is the first influential on the design process, depending on his own capabilities.

Through these results we can modify the proposed model of study to:

the relationship between design, information and human needs



XII. RECOMMENDATIONS

The permanent designer should follow the latest information and techniques because of their great impact on the human needs in every place on time and thus affect the ways of thinking in the process of laboratory design.

New generations of architects must be interested in the development of computer software for architectural design so as not to interfere with non-architects. The architectural product, as in the industrial revolution, will be affected by the intervention of engineers of production and industry.

Development of architectural education by taking advantage of the development of design methodologies and techniques and benefiting the advantages of each of the traditional design approaches, modern and contemporary.

Development of the self-capacity of future architectural students.

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TITLE ARABIC:

منهجيات التصميم المعماري بين الاحتياجات الانسانية وقدرات الذاتية للمصمم

ARABIC ABSTRACT:

التصميم المعماري هو نشاط ذهني يقوم به المصمم لتلبية احتياجات الفرد والجماعة (البشرية والاجتماعية والاقتصادية والحضارية) ، حيث يتأثر هذا النشاط في الاساس تبعاً لقدرات المصمم وتتكون قدرات المصمم من (فلسفة المصمم وتواجهاته – الخبرات والمخزون المعرفي – القدرات الذاتية) .
ومن أهم العوامل التي تؤثر على كل من احتياجات الانسان وعلى قدرات المصمم المعلومات المتوفرة بالبيئة المبنية والتي ساعدت على تطور منهجيات التصميم المعماري المتحكم الاساسي في العملية التصميمية. لذلك اهتم البحث بدراسة العلاقة بين المعلومات والاحتياجات الانسانية وقدرات المصمم من خلال ثلاثة محاور، المحور الاول: دراسة المفاهيم الاساسية للاحتياجات الانسانية والمعلومات وقدرات المصمم – المحور الثاني: دراسة تحليلية لتطور منهجيات التصميم المعماري تبعاً لاحتياجات الانسان وعوامل البيئة المحيطة – المحور الثالث: دور القدرات الذاتية للمصمم في اعادة تشكيل وصياغة منهجيات التصميم المعماري.