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Methods of Designing and Creating Concepts in Architecture and Problems in Implementation

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ABSTRACT

Design is a creative process that begins with a spark of imagination and culminates in the creation of a visually appealing product or structure. This journey is the embodiment of the designer's thoughts and ideas, which are expressed in the form of a final plan and the overall concept of the work. However, along the way, challenges may arise that require attention and resolution when necessary. Therefore, identifying and categorizing these challenges is also one of the important actions that architectural designers should not overlook. So in this research, which was conducted by a simple review method with a descriptive approach, the methods of design and the existing problems in this field are discussed. The results of this study showed that there are four methods: analogical, pattern.based, logical, and theoretical, on which many buildings have been designed. The formation of the concept in the design process also involves various types of concepts under the titles: analogical, metaphorical, essential, programmatic, and idealistic, which are derived from design problems that may be extracted using one of the eight methods of theme, analogy, metaphor, experience, symbolism, context, scheme, scenario. The final results of the research showed that in design and concept creation, numerous problems can be identified in two main groups, which can be classified under the titles of: problems outside the designer (design problems) and problems related to the designer, each of which also has its own components.

Keywords: *Design, Concept, Ideation, Architecture, Design Models, Concept Problems*

1.Introduction

One of the most controversial and confusing stages of design is the formation of the main design or design concept. The contemporary use of concept as a method of architectural design has progressed greatly since the past centuries and is heavily indebted to the theory that says that architecture, like art, should express something beyond its materiality [31] .

According to some experts, there are two main driving forces for concept production, which are respectively: inspiration and motivation. Soli mentions two types of sources for generating ideas, which are known as external sources and internal sources. External resources refer to those facilities that are outside the realm of design and are present in various aspects of life such as culture, industry, politics, philosophy and society. Internal sources are those sources that originate from design science [16].

During the last half century, we have witnessed significant changes and ideas regarding design methods and the process of creating concepts in architecture, which can be introduced in the form of three generations, analysis.composition, partnership methods, and design.test methods [28]. Despite the changes in the design process models, ideation and concept creation have always been considered as one of the main parts of this process.

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The concept, the primary generator of design [12], is similar to the nucleus or seed of a plant, which stores all the information related to the shape characteristics and growth stages of that plant as a single unit[28]. And it is an expression of ideal relationships that arise among a number of elements under the control of the architect. Concepts are expressed with a simple diagram and a few words and constitute the requirements of the program, which may include the entire project or be a part of the related plan [10].

McGinty, based on his analysis and the comments of some other architects, divides the concept into five categories: analogical, metaphorical, substantive, problem.solving, and statistical [39]. While various theories with many commonalities have been proposed in this regard across different time periods, it seems that the design process, concept analysis, and especially the problems arising from its creation, require a comprehensive review and examination based on a valid theoretical framework that can reveal other aspects of this position as well. This present study can fulfill this need. Apart from the existing studies in the field of concept design and creation, it seems that the studies conducted in the field of implementation problems of idea and concept generation have not received the attention of researchers, especially domestic ones, and there is limited information in this field. Therefore, since no comprehensive study has been conducted on concept creation methods and especially their implementation problems, conducting a research to fill this gap can be considered an appropriate action. Hence, the aim of this study is to better understand the design and concept processes and their implementation problems. In this study, we will try to answer the main research question: What are the design and concept creation methods in architecture and their implementation problems?

2. Theoretical framework:

2.1.Design and its process

From the time an architect.designer decides to create a work until the time his design is prepared for the implementation stages, various events occur in his movement, including the creative production of an idea and its transformation into an architectural design and product; These events are known as the design process that every architect goes through actively or passively. In this process, there are three obstacles in front of the architect, which are as follows: 1. How to deal with and communicate with the subject; 2. Lack of necessary experience in architectural design process; 3. Lack of continuous communication between the hierarchies of the design process [35].

Nowadays, due to the multitude of factors affecting it, design is considered as a general problem solving method. It is unlikely that all dimensions of the design problem are clear at the beginning of the process, for this reason, the first task of the designer is to identify the design problem. In the course of this effort, sometimes new dimensions of the problem are revealed and it may take a lot of effort for the designer to gain a relative understanding of the problem [23].

Basically, we identify design problems by trying to solve them, so in the design process, the problem and the solution are formed together. The interaction in the design problem and its solution shows that the analysis of the problem and the recognition of its various dimensions strengthen the designer's mental power and thought in order to reach the basis of the solution [21]. In fact, the designer uses his mental power First, he gives a structure to the design problem so that he can understand it, and then, with the help of creativity, he presents the initial idea of the design. Determining stages of the design process are formed unconsciously in the designer's mind, of which the production of the concept (or the basic design) is the main one [8].

2.2. Concept

In design.related texts, there are several definitions of "concept". These definitions cover a wide range of meanings, including: idea, concept, design, program, system, figure, symbol, prototype, model, abstract object, mental representation, description, solution, proposal and Let's point out the plan. Among the existing definitions, we can point to one of them, according to which, concept is "the form of an object, together with other representations such as the properties or functions of the object,

which exist in the human mind, as well as in the real world. or may exist" [42].
Murphy also considers the concept as a kind of pattern that keeps our whole mental world together and helps us to recognize and classify things [27]. Dorraj et al. Accepting this general definition, the concept in architecture means thinking based on form and space, or in other words, how the architect's thinking is formed in the language of architecture [11]. Frederick considers the concept to be a special mental structure that we use to organize our information and experiences from the outside world and give them meaning. From his point of view, the concept acts like the DNA of the building and causes the feeling to be breathed into the architecture [15].
Therefore, on the same basis, it can be said that the concept is a structural plan through which we achieve lines and levels that define the overall form, space and mood of the project and is a mediator between the abstract language of the concept and The real body of architecture. Basically, the initial design idea (concept) is a reflection that is formed in the designer's mind when faced with a design problem, and in many cases it is not obvious. It is to combine different elements or features in a single thing. In architecture, a master plan also defines how to combine different aspects of design needs in a specific idea, and therefore, the master plan directly affects the formation of the design. Therefore, the designs provide vague images of the final design solution and are "ideas that gather different elements together [24].

2.3. Concept, design and creativity

Concept is often associated with design, which also encompasses a wide range of definitions.One of the approaches to the design activity is seen as "a process by an agent (person or system) to produce the characteristics of an object based on things such as: the environment in which the object will exist, the goals attributed to the object, structural properties and Desired object behavior (requirements), a set of component types (primitives), and constraints that limit acceptable solutions are implemented" [36].
The relationship between design and concept has also been considered by Smith & Smith [38], where they linked design activity with concept formulation through their interpretation of various aspects of the design process and idea generation in design. Based on this interpretation, they described design as a non.linear process that moves back and forth between different forms of knowledge and experiences to envision a future product. In this view, the concept can be considered a representation of knowledge that helps to imagine the future product. Concept is often associated with creativity. For example, Taura &Nagai [42] described design creativity as a degree of conceptualization of an ideal and discussed two types of creativity in this context. The former is related to the design process, while the latter is related to the products that represent the results of the former [42].

3. Research background

In relation to the position of design and ideation and how to create a concept, almost related studies have been conducted, some of the most recent of which can be mentioned. Nouri et al.[30] in a study with the aim of explaining the place of metaphor and analogy techniques in the architectural design process concluded that metaphor is in the stages of analysis to composition (understanding the design problem and concept production) and analogy in the stages of composition to evaluation (advancement) problem or concept development, problem solving and redefining the problem) is more efficient and effective than the architectural design process model. In another study, Bastani & Mahmoudi [2], while examining the concept of idea generation (idea and concept creation) as an important part of the design process, in a field survey, the relationship between the design process and idea creation methods in a group of architecture students and consultants was investigated. and concluded that the tendency to use systematic process and logical method is high in both groups. In this study, suggestions for the advancement of the architectural profession, especially the education of students, have also been presented. Golchin [16] in a study with the aim of identifying

interior design concepts, concludes that designers should always be aware of changes and developments in the field of industry. Because this affects basic concepts in professional work. Sharif &Nadimi [37] in a research aimed at investigating the interaction between idea generation and idea processing in architectural design thinking, have concluded that the common feature of the two processes of idea generation and idea processing is analysis, with the difference that in the idea generation process, Analysis focuses on the problem and in the idea processing process, analysis focuses on the solution. It can also be said that analysis is a factor for continuous revision in the design process. In a study conducted by Qiasvand et al [33] aimed at examining the relationship between concept and form, as well as the correlation between the two with architectural performance, they found that neither form nor performance takes precedence over the other in the relationship between form and performance. Rather, these two elements work in tandem to create good architecture. Furthermore, the study suggests that the correlation between form and performance is always reciprocal, just as the correlation between performance and form is always reciprocal. Regarding the concept, the study also concludes that these are mental structures that manifest as lines, surfaces, and specific forms in the mind. Therefore, anything in nature can shape the mental structures of individuals and designers, and a particular pattern or part of it can serve as an idea for the concept of the next design.

By synthesizing these studies and a number of other similar studies that have not been mentioned, five key points can be extracted. The first important point is the importance of ideation and concept creation in design. Recent studies have shown that ideation and concept creation are important parts of the design process that help designers solve complex problems and create innovative spaces (Nouri et al., [30]; Bastani & Mahmoudi, [2]; Golchin, [16]). The second point is the different methods of ideation and concept creation. Some of these important methods have been introduced, which in summary include: the use of metaphor and analogy [30], the use of systematic processes and logical methods [2]. The third point is the important role of analysis in ideation and concept creation. Analysis plays a crucial role in the ideation and concept creation process. In the ideation stage, the analysis focuses on the problem, while in the idea processing stage, the analysis focuses on the solution [37]. The fourth point is the relationship between concept, form and function. These are three key elements in architectural design that are closely interconnected. The concept expresses the main idea of the design, the form is the physical embodiment of that idea, and the function responds to the needs and desires of the users [33]. The fifth point is the need for designers to stay up.to.date with advances in industry and technology. This is because it can have an impact on the core concepts of their professional work [16].

However, despite the existence of studies related to how to design and create concepts, the problems and challenges in this area, especially in domestic studies, have been neglected and there is no significant study in this field. The implementation of the present study can be considered a research innovation, while compiling and reviewing the latest studies in this field, covering the existing research gap and enhancing our understanding of the challenges and problems in design and concept.

4. Research methodology:

In this study, a simple descriptive review method was employed to examine the research topic to achieve the study's objective. The information for this research was gathered from books, articles, and previous research. Therefore, by referring to library and internet documents, the required data was collected using the tool of data extraction and finally, by reviewing and summarizing them, an appropriate answer was provided to the research question.

5. Research findings:

5.1. Design process models

Basically, research design does not have a long life, and it was from the late 1950s and early 1960s that it was proposed and pursued in a systematic way. Among the currents of research

design, there are four models, among them, three specific generations are more recognized. In the first model, i.e. the intuitive process of design that existed before the Second World War until the early 1950s, the position and role of the designer was such that the mind of the designer was used as a black box to transform the obtained data into a usable result. It was considered acceptable that the form of the process was also qualitative and proof that the effective factor was the designer and his past experiences. Later, in the first generation, they considered a high level of rationality for the role of the designer, and therefore they considered the design based on the designer's belief to be more successful. But in the second generation, the role of the designer as the main decision maker was questioned and the designer was considered as a technical director to provide the necessary information for decision making. In the third generation, the accurate prediction of architectural design, the required configuration of the design program and how to implement it relied on the mental structures of the designer. The first generation of analysis.combination methods, the second generation of collaborative methods, and the third generation of subject.test design methods have been named. In a general summary among these methods, the second generation approach is somewhat different from the other two streams and its main approach is focused on the collective nature of decision making in the design process instead of individual decisions. While we know the first and third generation based on their approach to the design issue and how to deal with it. The first generation of objectivity believed in and was committed to external objective components, but the third generation relied on the designer's own mental structures [30].

2.5. Methods of idea creation and design in architecture

Due to the importance of this issue, several theories have been presented regarding the methods of creating ideas in architecture. The examination of these theories shows that, although there are differences between these theories and in each period of time, due to the prevalence of design styles and ideas, the focus on a certain area has increased, but in a general view, these methods can be divided into four areas of analogical, Paradigm ,logically and theoretically methods.

In many texts, analogy and metaphor have been considered as the most creative method of design. Analogy seeks to create an objective and metaphorical relationship, a mental and abstract relationship between phenomena. Based on William Gordon's classification, analogy can be divided into four types: symbolic, direct, personal and fantasy analogy [17]. In the symbolic analogy, the architect seeks inspiration from the external form. In the method of direct comparison, the architect uses events, behavior and relationships between components for comparison (such as the California Academy of Sciences, by Renzo Piano). In personal quotations, the designer puts himself in the place of the subject or the background of the design (such as the Berlin Parliament building, by Norman Foster). In analogy, fantasy allows dreams in the architect's mind to be implemented by using technology (such as the Arab Institute in Paris, by Jean Nouvel).

Fig 1. In order from the right: 1.Symbolic analogy in the Museum of Science and Technology, 2.Direct analogy in the California Academy of Sciences, 3.Personal analogy in the Berlin parliament building, 4.Fantasy analogy in the Arab Institute.

In the Paradigm method, by studying the history and background of the existing architecture in each field, it recognizes the patterns, and these patterns, which are sometimes known as species, models, or "archetypes", will be the primary generator for the formation of architecture. It is because of the identification and application of patterns in this method that the word pattern can be chosen for it. At the end of the 18th century, Durand, using evolutionary theories, stated that buildings are divided into a large number of types and infinite changes can be made in each type [13]. Contrary to Durand's formal typology, Quatermeer de Conci makes a difference between the two words species and model. In terms of Decency, it is not an image that can be copied or completely imitated to make a model. Rather, it is a symbolic idea or concept that lies in these elements [34].

Memarian and Tabarsa also use the words genotype and phenotype in describing the formal and semantic approaches. Genotype or biological pattern refers to the abstract laws (social relations) hidden in a spatial form. The appearance or existing body is the phenotype. Phenotype can be changed in various forms, while it is possible to have one type of genotype in these various forms [25]. In picture 2, some examples of using pattern method in design are shown.

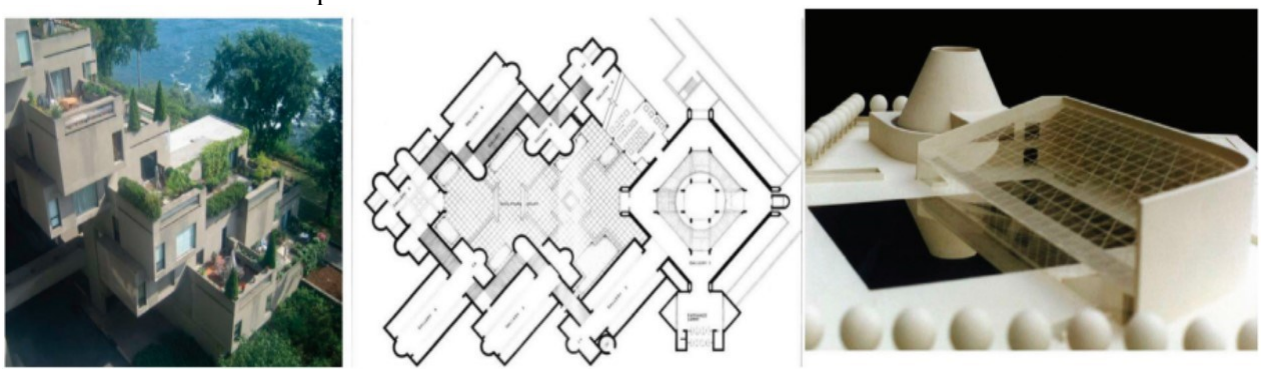

Fig 2. From the right side: 1.Using the pattern of old refrigerators in the Rafsanjan sports complex (by Hadi Mirmiran); 2. The use of the pattern of the central courtyard in the Tehran Museum of Contemporary Arts (by Kamran Diba); 3. Paying attention to the social pattern and way of life in the Hepitat collection (by Moshe Safadi).

The logical method (Fig 3) is another method that has received a lot of attention especially after the modern era. In this method, resources such as program, site and climate are used as the primary generators of the formation of the effect. This method is designed based on trial and error, design studies and using analytical diagrams. Climatic attitude and contextualism and regionalism (reaction to the site) are subsets of this method. What Jenks and Jormaka call data visualization is a logical method. This design method, which is the creator of the MVRDV group, creates different models based on different assumptions and data using a computer [19].

Fig 3. Expo 2000 in the Netherlands (by MVRDV Group)

The theoretical method also includes two subgroups of design based on the rules of geometry and mathematics and design based on the rules of philosophy. Geometric design can be divided into two categories: design based on geometry (Euclidean and non.Euclidean) and design based on shape variability.

In explaining the philosophical theories that structure the minds of architects, it should be mentioned that after the modern era, the theories used by designers expand. Keith Nesbit explains postmodern trends in terms of five paradigms: phenomenology, transcendental aesthetics, semiotics, Marxism, and feminism. Phenomenology deals with the interaction between the body and its surroundings. The technical aspects of architecture and especially objective details, attention to sensory qualities of materials and materials, light, color, symbolic importance and correctness of connections and joints play an important role in this type of architecture [29]. Aesthetics of the sublime is an interpretation that differentiates between beauty and the sublime and considers the sublime to be related to ambiguous matters [29]. Marxist approaches that were used in the reevaluation of cities and their institutions raise issues about the relationship between class conflicts and architecture. In this architecture, concepts such as Utopia and Hetropia enter the field of architecture. The paradigm of feminism also deals with the role of gender, race and side positions of humans in loosening architecture [29]. In Fig 4, examples of theoretical design are presented.

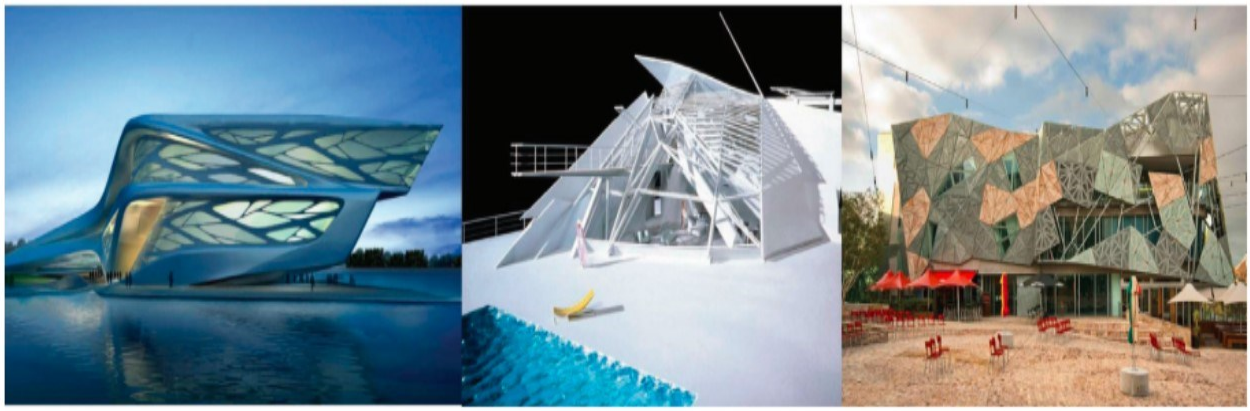

Fig 4. from left to right: 1. Parametric design in the performing arts center in Abu Dhabi (by Zaha Hadid), 2. Design using the method of accident and by chance in an open house (by Perry and Swiczynska from Koop Himmelballo group)), 3. Metacatal geometry in Melbourne's Federation Square (by Elaibi Studio)

5.3. Concept production and stages

In terms of concept extraction and derivation, Taura & Nagai [42] classified concept

generation into two main phases, i.e. problem.oriented and internal sense.oriented phases. In this regard, Cross [7] described the relationship between the two stages by defining concept emergence as a perceptual act that leads to a creative leap or as a bridge between the design problem and its solution. Taura & Nagai [42] based their classification on two factors, namely, the basis of concept generation and the ability that enables concept generation to continue. This classification is similar to that presented by Sternberg &Lubart [41]. has been In addition, when Taura & Nagai [42] studied creative concept generation in design, they also analyzed patterns in the process that led to creative design ideas. These patterns represent explicit and implicit concepts that, when consistently interwoven at an abstract level, form an effective thought process that leads to creative design concepts. In addition, Pressman [32] also proposed a design cycle that has three main stages with the titles: inspiration, ideation and execution, linking concept generation with design processing. Among these steps, ideation is mainly concerned with concept derivation as a link between inspiration and execution.

Snyder and Catanese divides concepts into five categories: analogical concept, metaphorical concept, essence concept, programmatic concept, and idealist concept [39]. More recent studies that have been done in this regard, this It confirms the five categories. Therefore, each of the design issues can be the basis for the formation of the concept, and therefore, it can include everything from building codes and regulations to executive and structural issues or even sometimes formal and symbolic issues. In Figure 5, two examples of concepts taken from design problems are shown.

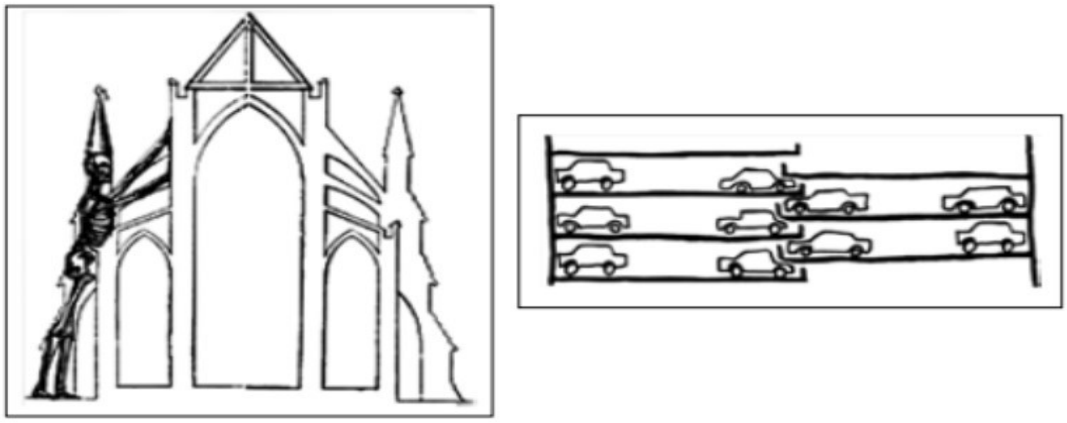

Fig 5. Programmatic.functional concepts to solve the parking problem in a small land [6], and analogical.structural concept to solve the static problem in Gothic churches [40].

In addition to the design issues, the concept can also originate from the inner sense of the designer. Taura & Nagai believe that it is possible to achieve the concept in two stages, which are: 1. The stage affected by the design problem: in this stage, the concept is presented as a solution to the design problem. 2. The stage influenced by the inner sense of the designer: in this stage, the designer's opinions and his worldview give direction to the concept creation process.

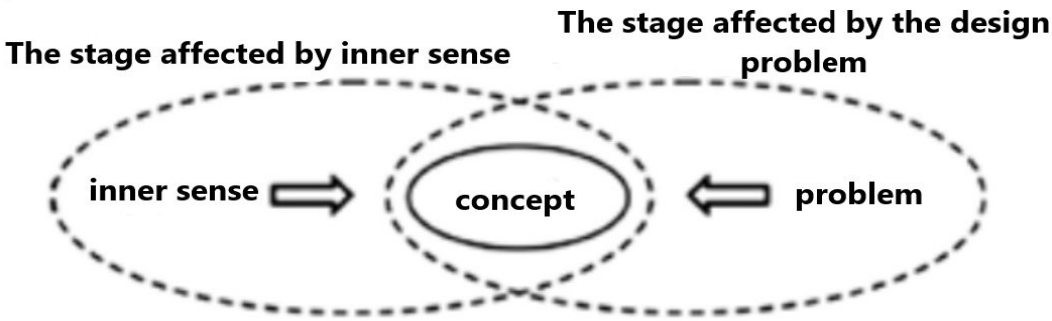

Fig 6. Concept acquisition steps [42]

The concept can be shown in different ways. But usually it is shown with the help of the organization diagram of the floor plan of a building or by the implicit concepts, that is, the aesthetic and experimental sensitivities that exist in it. According to Frederick, the concept is derived from thoughts that are non.experimental and conceptual rather than architectural; Therefore, before the formation of the architectural form, it should be modified [15]. Therefore, the product concept is an evolutionary process; A process that has gone through various stages of growth, modification and disambiguation. Concepts are often the result of sparks in the designer's thinking during this process. Since the basis of architectural work is artistic creativity, the architectural concept is considered the most valuable part of architectural work and is considered the main criterion for evaluating the strength and weakness of architecture in the world today [48].

5.4.Concept processing framework in the design process

Basically, choosing a concept for a specific design is a difficult decision. This affects several important subsequent decisions that affect not only the resulting product, but also the entire design process. Therefore, in university, such a choice is increasingly difficult for students who have not yet developed their methods or styles.

To help systematically start concept generation and its processing, the approach of solving design problems and stimulating innovative ideas can be introduced and developed as an important framework. This framework includes an approach, a process, a technique, methods, steps and stations as shown in Fig 7. In this approach, referred to as "exploration and sequencing," each step expands horizontally to traverse alternatives and exhaust other alternatives. The horizontal exploration phase used to explore details is followed by a vertical phase that collects the results of the previous phase to provide the output that becomes the input for the next cycle. This last step is used to develop a detailed sequence of phases in the management process. The technique presented in this approach is "aggregation and disaggregation", which is based on alternating cycles of convergence and divergence. This process consists of eight stages, each of which represents a part of a cycle and is characterized by divergence or convergence. Each of the main divergent phases consists of eight components that describe methods, channels, or layers, as illustrated by the highlighted process phases in Figure 7. It diverges to explore options, while wide rectangles represent resources that need to be aggregated to form the main output stations [14].

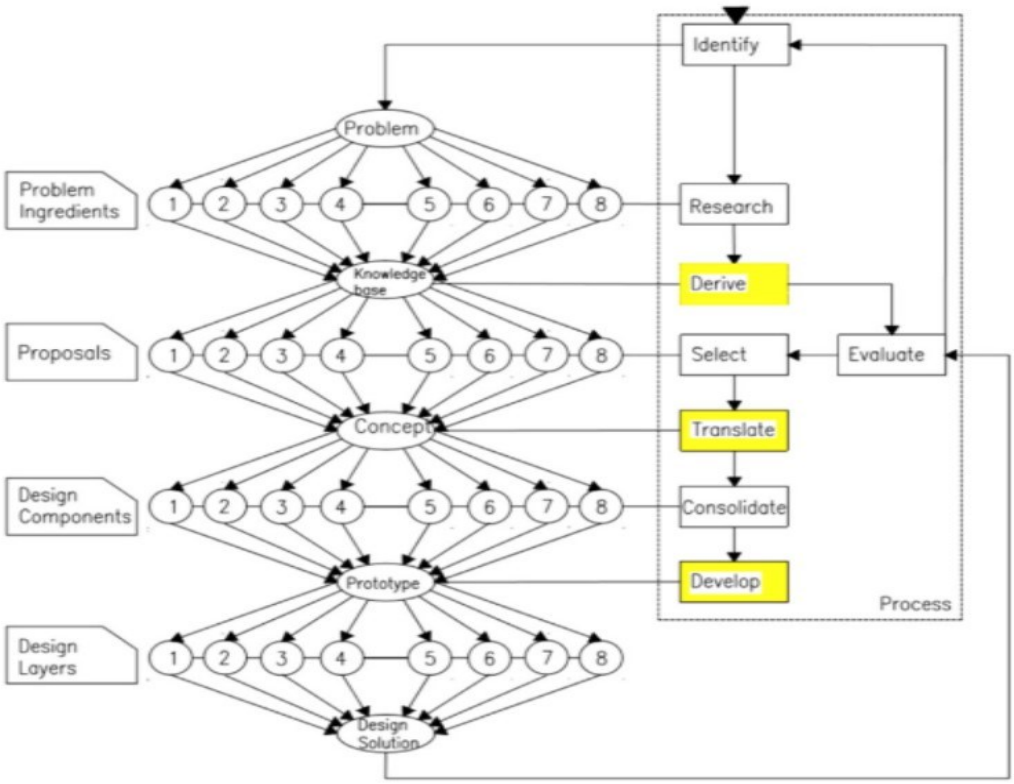

Fig 7. Overall structure of the octonary framework of concept evolution in the design [14]

5.5.Concept extraction methods

Basically, the production of a design concept represents the main motivation that guides the entire design process and affects the different aspects and stages of the design. A concept may be extracted using one or more of its eight main methods, namely: theme, analogy, metaphor, experience, symbolism, context, Scheme, scenario [14], which is shown in Fig 8.

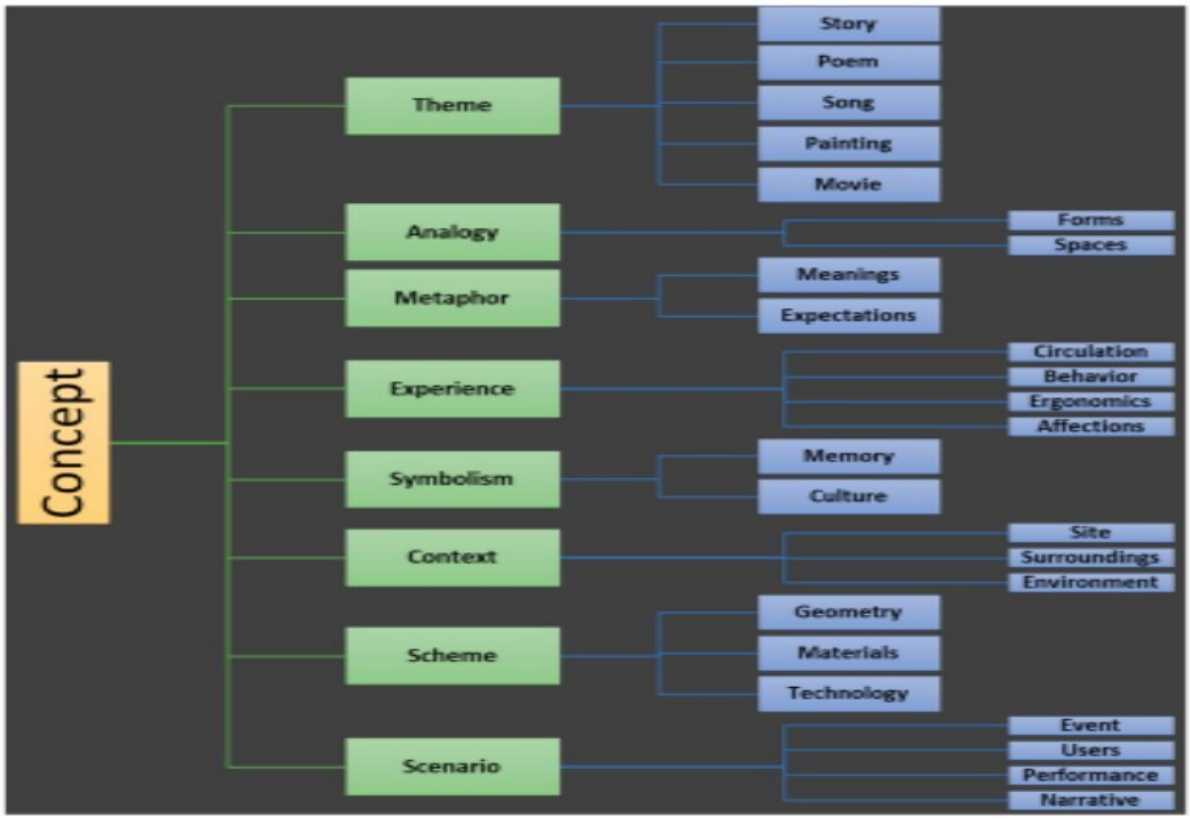

Fig 8. Concept extraction methods [14]

5.6. Problems of designing and creating concepts in architecture

According to Box [4], in architecture a concept becomes stronger every time it is mentioned or experienced and remains in the designer's mind. For this reason, it is important for the designer to consciously and carefully choose the concept that will be used, interpreted or supported in another way. The content of the design and concept created by the designer; Under the influence of many reasons, it can lead to many problems. Uraz [46] classifies the created problems into two main groups. In the first group; There are problems related to the goals of the employer, user and regulations, but in the second group; There will be the designer's experiences, dreams, beliefs, obsessions and the designer's own worldview. The physical, social and psychological characteristics of the artificial and natural environment in which the design is carried out, the materials used in the construction, the technology and the functions that must be performed by the product are also effective in creating problems. Therefore, while the problems can form the essence of the design, the cultural background, the manufacturing system and the designer's mindset also affect the designed product and can guarantee its development.

When looking for data that inspires design, the first thing to consider is what kinds of problems are waiting to be solved so that we can focus on them. Considering that the object is designed independently of its environment and context is an incomplete or harmful behavior and leads the designer to a self.centered approach with an overly expressionistic approach.

A problem, or a set of problems waiting to be solved, can sometimes be very dominant and be the starting point that determines the image of the design, but depending on the situation, it can remain in the background of concept design and production. Therefore, the designer; It has the task to analyze the problems that arise spontaneously and understand which problem is dominant or needs to be solved in the

background. However, when it comes to how one perceives these problems and how one deals with them, one's own characteristics come into play. Which of these two types of data sets will be more prominent will vary from person to person and depending on the design problems they face.

[5] citing the opinions of some architects, states that the design language changes depending on the way the problem is presented. If the concept is introduced by the designer, the designer's mental language is related to the concept itself, but if the concept is presented by someone else, the designer's mental language parallels the designer's understanding of the given concept.

On the other hand, the concepts that are caused by the problem of the design itself can be defined as concepts within the design. He considered other concepts created independently of design as non.design concepts. According to Gurer [18], several factors that play a role in the formation of design and concept show their influence as two main components. One of these components is the factors outside the designer, and the other is the creative and constructive power of the person who carries out the design. Factors outside of the designer require the design to be parallel with design development issues. Therefore, while abstracting the issues presented in the design, the designer combines and interprets them in his own way. The designer himself determines the occurrence of the problem he will create. In a sense; Design issues cannot be interpreted independently of the influence of the designer's qualifications. On the other hand, it can be said that the reason for revealing the data that the designer's qualification will bring is the problems in the design. These two data groups are in constant interaction [1]. Basically, the problems created by the designer also cover areas outside the field of design. The designer transforms some concepts borrowed from these fields into concepts that can be adapted to today's design environment.

Therefore, according to the stated content, the problems that arise can be divided into two main groups of problems outside the designer (design problems) and problems related to the designer (problems created by the designer).

5.6.1. Problems outside the designer (design problems)

Basically, approaches that see design as a mental activity see the phenomenon of design as defining a problem, limiting it, and finding a solution rather than simply solving problems. Therefore, the problem of designing and creating a concept does not have a predefined result. In this context, selecting, evaluating and questioning the most important aspect of the problem by the designer is the first priority in order to produce a solution [44]. The process begins with a designer who mentally evaluates information from the outside world, understands and interprets it, shapes it in his inner world, and re.presents it. Therefore, it continues by introducing the work that exists as a source of information as a new external data to the world of design [43]. Therefore, while designing the problems that are given to him, the designer must analyze the context in which the object should be considered in order to understand which of the subjects it is related. Understanding the data of the problem not only helps the designer to find what points to focus on, but also gives clues as to which domains the independent problems that should be generated in relation to them relate.

Basically, design is a type of problem that does not fall into the class of well.defined problems, but has characteristics that can even be classified as vaguely defined or ill.defined, which mainly defines itself by developing the process. Therefore, first the designer must determine the problem or problems required by the design subject. What is given to the designer as a problem is usually not a problem, but the subject or objects to be designed. This issue or "design problem" which is mainly just based on need, does not constitute the core of the problem. The specific parameters of the problem are not specified. The goal of the problem is not defined sufficiently outside the general framework. Since the problem structure and element relationships are not specified in the data text, the problem is mostly based on the designer's interpretation and redefinition of the problem. Since a "well.defined" problem is not provided with the subject or the parameters of the

problem are not sufficiently specified, this task, the function of finding the problem, falls to the designer. The design solution that the designer will provide is closely related to finding the problem. Since problem finding is at the individual level, it is highly dependent on the competence of the designer [43].

Starting from this point; It can be said that the analysis of design problems and the definition of problems is the first step that starts the concept search in the design process. The concept development process may focus on design problems or depending on the competence of the designer. However, under any circumstances, the group of data that should be primarily examined and analyzed is the existing design problems. In spatial design, we generally have data on design problems that can be a starting point. to create four separate groups for the designer. These groups can be divided as environmental and physical context, social and cultural context, user needs and goals, technical and material data [43].

Therefore, the area where the desired object will be designed and its scale in this area is often the first dimension of problems in a design process that should be considered. Therefore, the physical environment in which the design product exists will undoubtedly be an important criterion in any design process [3]. According to [47], the social and cultural context of design will also play an important role in creating problems. Ideology and interpretation of the world as a whole by a wide or limited group of people or a society and their attitude towards ordering the whole life can connect nature, man, society, history and culture. Every ideology helps people to build and shape themselves and their environment, their present and their future. The art of architecture is the most important reflection of social ideologies and the influences of the past or our era from a social and cultural point of view. If the design problem under consideration has social consequences, such as a museum or a historical monument design area, establishing a relationship between it and historical and social events will be appropriate and even necessary [3].

5.6.2. Problems related to the designer

Problems in space design are generally problems that belong to others, but even if someone else defines the problem, the designer who solves these problems will inevitably add his own interpretation and define and develop the problem in his own way. . According to De Bakleer [9]; Just as each style, period or movement has a general conceptual characteristic resulting from its unique worldview, each designer also has an individual conceptual language that plays a role in understanding and communicating this worldview. This main language, that is, the mental language of design, is the semantic image of the concepts that the designer has developed in a given line.

According to Turuthan [45], the designer sometimes looks for ideas and concepts to create form, outside of the issues to be analyzed. Therefore, what we want to express through the form here are comments and messages that belong to the designer, such as an opinion about the product and the meaning that is supposed to be presented. In principle, the problems presented in the design may sometimes not be defined well enough or may not be considered important enough to influence the focus. Apart from these, it is also possible that the designer wants to include himself more in the design. Therefore, at this stage, consciously or unconsciously, he will look for other problems and pursue other concepts.

Witkin [49] shows that the way people perceive the world and themselves varies from person to person. People who consider the organization to be effective and decisive, combine and shape the parts with the whole, will have a better performance and understanding of solving problems. On the other hand, it is clear that those who consider the parts apart from the whole, make perceptions independent of the field. Drak [12] have also pointed out that Witkin has provided a lot of evidence that shows that people with this quality are more successful than others in solving problems that require separating an element from the environment and reintroducing it through new relationships.

Since the design problem is not initially so obvious in all its aspects, it becomes more difficult to decide which of these aspects to

emphasize and which to ignore. Only thanks to the ability of field.independent perception, the designer can choose from among these different aspects of the problem, the one that is effective in creating form, that is, simplifying the complex problem. The ability to understand independently of the field is also important for a non.designer to correctly understand and know the environment in which he lives. In the perception of a shape or a thing, the effect of its background, that is, others and its surroundings, or what reminds a person, is very important. If these effects are understood, many features that were previously overlooked will be noticed again [45].

It should be said here that different groups of problems like design problems affect the problems created by the designer. Some of the most important of them; Under the headings: physical and cultural experiences of the designer, personal characteristics of the designer, style and approaches of the designer can be mentioned. The designer's physical and cultural experiences are among the things that can cause problems. Since a person's ability to understand and perceive people is based on their past experiences and knowledge, it is natural that someone who has never seen a statue or a sculptor will understand and design the statue very differently. Therefore, people involuntarily approach all kinds of events based on their past experiences and with their knowledge and experience. According to Morgan [26], images, like all forms of thinking, are abstractions left over from experience. Therefore, at this stage, the influence of a designer's past experiences will be visible in his approach to the design process, which can cause certain problems. Therefore, a person's ability to understand him will be based on his past experiences and knowledge, and therefore, if someone who has never seen a statue or a sculptor, will definitely understand the statue very differently. People involuntarily approach all kinds of events based on their past experiences and with their knowledge and experience. Therefore, past experiences not only influence the structure of the designer's perception on a variety of topics, but also constitute an important conceptual data group, because it has gathered his knowledge and interactions from the environment.

The designer's personal characteristics also appear according to the situations and affect the designer's desire to express his thoughts. Therefore, the designer can reflect his very subjective feelings about the design. The reasons that reveal these subjective feelings may be related to design problems or may be the result of a purely personal desire, and as design moves away from scientific understanding and closer to artistic understanding, problems in this group are clearly In addition to personal characteristics, a person's interests form the biggest data that can be the starting point of design. Most designers draw inspiration from their interests and situations and objects that affect them, which can bring problems with them. Therefore, the designer is obliged to stand behind the ideas and thoughts he puts forth. However, it is important not to be in conflicting situations with other problems in this process and to establish good relationships.

Le Corbusier [22] was very interested in machines and their highly functional structures, undeniably influenced by his industrial age. Combining his passion for cars with the space system, the designer turned his personal impressions into a new manifesto. Thus, he clearly reflects to the audience clues about his point of view in the designs he creates with this in mind.

Fig 9. Le Corbusier's sources of inspiration: airplanes, ships and automobiles [22]

Even as Le Corbusier moves from the urban scale to the individual element, the automobile maintains its place as the central subject. Corbusier expressed these ideas for the first time during his residence at Citroën, which was named after a car brand: "If the problem of housing were studied like a car chassis, we would see change and improvement. We went home quickly. "If houses were serially produced, like chassis, we could quickly see unexpected but healthy and defensible shapes" [20].

The designer's style and approach, which can be defined as how to express and shape the special characteristics of a certain artist or a certain era, are sometimes the primary determining factors in the concept development process. Therefore, the competence of the designers as well as their past experiences and the whole The training and development system they receive is effective. In this process, design education stands out in particular. While design education provides one with the necessary knowledge, it also enables one to know oneself and develop oneself in this respect. Along with the guidance in his training, the individual begins to compose his own personality and create his own design style. This means that person is now approaching a variety of designs with a similar style. The designer's style language automatically creates a starting point in this process. The stronger the designer's style based on the education he received, the stronger his conceptual vision will be [45].

Therefore, style and approaches; They can form issues that reflect the designer's unique identity more, so that even other features of the design product can sometimes remain in the background. Basically, problems and other data in design are placed together in relation to the designer's style, and in every design that arises, there are always different solutions with the same approach and in a way that refers to the same formalization language. Achieved. Although this feature is not like this in every designer, it is seen more in some designers.

5.7. Discussion and conclusion

The process of creating an architectural work is a subject that has confused architects today due to the wide range of concepts arising from multiple perspectives. Since the 1980s, when design was introduced as a coherent field in architecture, the process of designing and producing ideas and concepts has been specially evaluated and considered as one of the main parts of this process. The review of the theoretical literature of this topic showed that there are many theories related to the methods of creating ideas in architecture, and according to the differences between these theories, in a general view, these methods can be categorized into four analogical, paradigmatic, logical and theoretical methods. The results of this research show that today, due to the multiplicity of factors affecting it, design is considered as the solution to the problem and it is unlikely that all aspects of the design problem are known at the beginning of the process. It has been witnessed that in the form of three generations, methods of analysis.combination, participation and

design.test methods have been introduced. Due to the importance of this issue, several theories have been presented regarding the methods of creating ideas in architecture. The examination of these theories shows that, although there are differences between these theories and in each period of time due to the prevalence of design styles and ideas, the focus on a certain area has increased, but in a general view, these methods can be divided into four areas of comparative methods. , categorized logically and theoretically.

Basically, the concept in the discussion of architecture is the primary generator of design and is similar to the nucleus or seed of a plant, which stores all the information related to the shape characteristics and growth stages of that plant as a whole unit, which is divided into five analogical categories. Metaphors are divided into substantive, problem.solving and statistical metaphors. In addition to the design issues, the concept can also originate from the inner sense of the designer. Achieving the concept can be possible in two stages, respectively, the stage is affected by the design problem and the stage is affected by the designer's inner sense, in which the designer's opinions and his worldview give direction to the concept creation process. Surveys show that people use different patterns for the process of designing and creating ideas and concepts. Therefore, a concept may be extracted using one of the eight main methods: topic, analogy, metaphor, experience, symbolism, context, plan and map, scenario.

When looking for data to inspire design, the first thing to consider is what kinds of problems are waiting to be solved for us to focus on. In a general summary, the problems that arise during the design and production of the concept can be divided into two main groups. Problems outside the designer (design problems) which are influenced by components such as: environmental and physical context, social and cultural context, user needs and goals, technical and material data, and problems related to the designer (problems created by the designer) which are under The influence of physical and cultural experiences of the designer, personal characteristics of the designer, style and approaches of the designer is placed.

Therefore, the problematic areas that designers look for starting points when starting the design process can be investigated in these two groups. Of course, in addition to the topics in these groups, data can also be obtained as a starting point for the designer in other fields. Of course, it should be noted that the designer should not focus on one point when starting the process, but should analyze all the data fields at hand. However, some designs need to address obvious problems, while some designs require reinterpretation with data provided by the designer. What should be noted here is that only one single data field is often not enough in a design, and every designer approaches the design problem with different interpretations, and every design problem and problem is different and will require different interpretations and solutions.

In conclusion, this study contributes to the existing body of knowledge by providing a comprehensive framework of approaches and factors involved in the concept creation process in architecture. It aligns with previous research in its emphasis on the significance of concept creation in architecture and complements existing findings by highlighting the importance of considering both design problems and the designer's inner intuition in the concept development process. The study's emphasis on the dynamic nature of the design process and the need for a flexible approach that accommodates diverse perspectives and problem.solving strategies aligns with contemporary design practices. The study's recommendations for data analysis and problem identification provide practical guidance for designers seeking inspiration and effectively addressing design challenges.

Based on the findings of this study, the following recommendations are proposed to identify and address the challenges and problems faced in the implementation of architectural design and concept creation:

1.Comprehensive and continuous training:

. Improving educational programs in architecture schools to focus more on the idea and concept creation process, emphasizing diverse methods and creative problem solving approaches.

.Holding workshops and specialized seminars for active architects and designers, with the aim of updating their knowledge and skills in the field of new conceptualization and ideation techniques.

.Encouraging the exchange of ideas and discussions between architects and professionals from different disciplines to enrich the creative process and benefit from diverse perspectives.

2. Research and development:

. Supporting basic and applied research in the field of idea and concept creation process in architecture, focusing on specific challenges and different cultural contexts

. Encouraging the use of new research methods, such as case studies, simulations and data analysis for a deeper understanding of the factors influencing the success or failure of architectural projects.

.Encouraging design competitions and festivals that emphasize creativity and innovation in architectural conceptualization and ideation.

3. Attention to the background and context:

.Emphasis on a deep understanding of the context of architectural projects, including cultural, social, economic and environmental factors in the process of concept creation and ideation.

. Encouraging location.sensitive designs that are compatible with the specific characteristics and needs of their context and respect local identity and culture.

.Using local knowledge and traditional experiences in design, according to the climatic conditions and special needs of each region.

. Supporting young and creative architects to present innovative ideas and test new approaches in design.

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