

"Symbiotic Architecture: Symbiotic as a Strategy in the Production of Contemporary Architectural Text"

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Abstract - Architecture varies in its ability to live from time to time based on several introductions that give architecture its ability to reach a cosmic architecture that responds to the demands of the age of the world by adapting it to the cosmology which play a great role in the response of architecture to the human requirements and thus meet the cultural and spiritual needs of the age, so product architecture based on the new view of science that thought and culture are compatible concepts. Several concepts of cosmic architecture emerged, the most important of which was the concept of symbioses as one of the twentieth-century concepts. through many of the architectural ideas that explore the symbiotic of the cosmic architecture, these ideas examined the concept in various aspects, including the concept of Symbiotic as a design approach to relations contrasting and binaries, including the study of symbiotic between the nature forms of and built forms, including the emphasis on the types of co-design and mutual reinforcement between the built-in elements, and the other examined the concept through the correspondence and symmetry of the existing diodes in nature and the simulation of systems. Explanation Symbiotic as a design strategy in terms of the relationship of form to meaning, form to structure so to reach a harmonious structure reflecting the cosmic language of this time, so this study aims to scientific and practical study to clarify the "Symbiotic in cosmic architecture" and its nature and its role in architecture.

Keywords: Intellectual symbiotic, Formal integration, functional integration, Symbioses cosmic architecture.

1. INTRODUCTION:

The aim of research is to reveal the nature and characteristics of the symbiotic of cosmic architecture and Solution the problem of research: (the existence of knowledge deficits on the exploitation of the concepts of cosmology in their new language to reflect the cultural and spiritual level of the living age and thus the principles of symbiotic architecture). As well explain the effect of cosmology on the Symbiotic of buildings and thus giving them the capacity through formal integration and functional integration with the environment. To be followed by the applied procedures for Symbiotic in the cosmic architecture to represent the most important elements of the measurement of Symbiotic in cosmic architecture, which consists of three main cases (Formal integration - functional integration - dynamic balance) and the formation of a

comprehensive vision on the concept, and to determine the hypotheses of the research consists of two hypotheses, (Buildings vary dependent on the degree of integration of their construction systems with the surrounding environment). While the hypothesis of secondary research: (The impact of formal systems integrated with the surrounding environment to enhance the identity of symbiotic architecture.

1.1 Symbiotic, dimensions and concepts:

Symbiotic is one of the strategies based on the modern science of the twenty-first century, where Symbiotic is one of the most important characteristics of cosmology in the existence of reciprocal relations between what exists in nature , many studies have been interested in studying the concept of Symbiotic as one of the most prominent science in cosmology or biological sciences as well as The most important is to harness this strategy in the production of a cosmic architecture based on the holistic view of the universe, which is based on the cosmic concept based on the natural sciences, the trial of plants and animals .

1.2 The concept of Symbiotic:

Symbiotic is one of the most universal attributes of many cosmic characteristics of systems, where Symbiotic refers to the interrelationships between two or more aspects of life that are useful or depend on one another directly or indirectly, and refer symbiotic is defined as the interaction between the different living organisms Living in a coherent physical environment.

1.2.1 Symbiotic / Language:

Symbiotic: A source of symbiotic (Symbiotic between people of different denominations or religions or between countries of different principles). First appeared in biology (ie, mutual depend between living organisms, plant or animal, on food, growth, and aid).

1.2.2 Symbiotic / terminology:

The term "Symbiotic" describes the relationship between members of two different types whose relationship has benefits to one or both, It is a pseudonym of biological life sciences, Takaful is defined as living together of two or more types in a long-term intimate environmental relationship,

Symbiotic refers not only to the Symbiotic or harmony of two objects but to the mutually beneficial aspect or to the enhancement of their relationship, examples of this type of relationship exist in various natural forms. (Vivian Ann Workman, 2005). (Show Figure 1).



Fig -1: The appearance of Symbiotic between living organisms.

1.2.3 Types of symbiosis in biology:

Takaful consists of four types of ecological interactions:

Table -1: Types of symbiosis in biology

Mutualism	Mutualism involves both living organisms, each of which benefits from interactions
Predation or parasitism,	Involvement involves a single organism that benefits from this relationship or symbiotic while harming the other.
Conspiracy	Conspiracy is when one organism benefits from interaction without damaging the other.
Reproductive health.	Is where one organism is damaged while the other is unaffected.

Mutualism is the kind of Symbiotic in which participants benefit from interaction and therefore Mutualism is desirable in comparison with other types of interdependence, mutualism involves both organisms that benefit from interactions (Figure 1). In nature for example, there are symbiotic relationships between different organisms yet both benefit from and are not affected by this interaction.

Architecture should support a mutually coexisting approach rather than any other type of symbiotic relationship, conspiracy architecture is undesirable because only one element benefits from this relationship and there is no positive interaction (Figure 2), intercultural interaction is the interaction that gives architecture its power and vitality,

and the absence of such interaction becomes mere construction without any capacity to live.

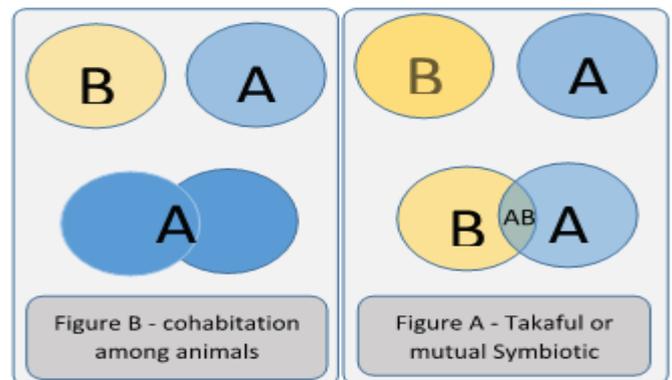


Fig -2: Types of symbiotic relationships.

In architecture it is possible to achieve Symbiotic between the building and the surrounding environment (the reciprocal relations between the building form and the industrial form and the physical external environment. (Kurokawa, Kisho, 1991)

2. Symbiotic in the intelligent balanced cosmic unity:

The cosmology has several characteristics or characteristics which made them have a universal language resulting from the process of the unification of that universal vocabulary and depends on the language of universal and sustainable ideologies arising from the process of balancing among its components to produce the so-called balanced cosmic intelligent unit, and that balanced unit exists in all what is alive or non-living , and one of the most important of those existing cosmic features is the concept or property of cosmic symbiotic.

This balanced unit can be observed in the universe through the presence of (DNA) in all living organisms with cosmic characteristics and features, it can also be distinguished by the cosmic vortex that exists in all physical objects such as planets and others. (Alrawi . Osama, 2010).

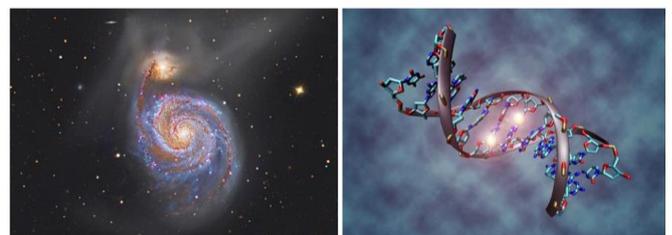


Fig -3: forms of cosmic unity in the universe (DNA) and cosmic spiral.

The new interpretation of the universe goes to the existence of a universal language containing codes explain the dynamics of the universe in the outside world, which is

characterized by the characteristics of cosmic systems and this language makes the universe more open to each other.

Thus, the cosmic unit forms the intellectual basis for the formation of the structure of the universe through the existence of DNA (the acid-cosmic revolution) found in the yellow assets to the largest, which works to give a formal image of the product or what is known as (the morphology) resulting from that cosmic unit that needs a certain time to achievement and space to contain that phenomenon.

This unit is the basis of knowledge based in existence through which the existence of the external form, where the unit forms the mold or body that shows the living and non-living assets and thus works to determine the perceptions of architecture as part of the cosmic world and depends on the elements of that cosmic unit.

2.1 Symbiotic and sustainable cosmology ideologies:

Through the study of cosmology, we find that there are specific ideologies of the universe constitute the intellectual basis of these systems and these cosmic ideologies are divided into three categories:

- A. Knowledge: Studying cognitive design methods.
- B. Behavior: study the practice of design process.
- C. Phenomenon: study the shape and composition of phenomena.

The three fundamental elements that make up this balanced intelligent unit in the universe also expand algorithmically through time and knowledge processes.

The cosmology is reflected in architecture through its cosmic origins, structure, components, system and laws, it is present in three main phenomena (**space, shape and energy**), as we will explain in the following paragraphs through cosmic unity and architecture.

2.2 Intelligent balanced cosmic unity:

After we have shown the characteristics and ideologies of the cosmic unity of the universe, and that the cosmic unity is reflected in the universe through its main elements that work on the formation of the structure of the cosmic form. These elements exist in three main phenomena (space, shape, and energy). Where this trinity exists in everything that exists in this world and is the basis of the intellectual form of everything from corn to galaxies, and since the architecture is subject to the cosmic systems, it is therefore based on those tripartite cosmic.

2.2.1 Elements of the Balanced Intelligent Module Element of Balanced Intelligent Unity:

After we have shown the most important characteristics and attributes of the cosmic unity and the balance of the most

important curriculum and cosmic ideologies sustainable, where the strategies or cosmic approaches to that unit revolves around the three components of the component and thus we will explain in the next paragraph the three basic elements with the details of each: -

- a. Space
- b. Form
- c. Energy

3. Symbiotic in Architecture:

The most important vocabulary of architecture is the integration of multiple systems to reach the symbiotic architecture by responding to the changes of the new era and its many requirements and therefore reflect the cosmic architecture of contemporary complexity science in its comprehensive view of the post-modern (pluralism Inclusive), and thus contain the plurality of concepts And the requirements through a balanced, cosmic, cosmic unity that works to give a unified formula to those governing systems through the process of mutual "symbiotic" which is between the contradictory systems to function as one integrated and mutually reinforcing system. Thus, the most important dimensions of symbiotic in architectural thought can be found in the following paragraphs:

3.1: Intellectual and temporal Symbiotic:

In order to create a symbiotic environment in our designs, there must be a transitional phase of Symbiotic between the living elements, here the common understanding and the relationship between the conflicting elements is achieved, allowing a vague and creative dynamic of the environment surrounding the elements, this intermediate exchange space serves as a catalyst for reformation and the cycle of life, as in natural examples where the eggs of the gates in the birds or the larva when they turn into a butterfly, to form a symbiotic architecture, you must achieve pairing with the past to achieve current and future architecture, and strengthen it and associate it with each time period. Architecture must also be able to transform itself over time, ie blending the architecture of the past and permitting it to be consistently transformed into the future. We conclude that one of the most important principles of symbiosis is the union of spirit and matter, and this corresponds to the form and meaning of architecture. Takaful architecture is an expression of the spirit of the times and buildings must be part of the cultural heritage of future generations.

3.2 Vocabulary of symbiotic design approach:

After we have highlighted the most important concepts related to the first axis related to the concept of Symbiotic and how to invest those cosmic systems in the Symbiotic of architecture with the age of the pension we come in this axis

to the statement of the most important vocabulary of cosmic architecture coexist to reach the goal of research by the impact of cosmic systems on the Symbiotic of buildings and thus give it the eligibility of Through formal integration, functional integration and moral-spiritual balance within the living environment of the building.

3.2.1: Mutual Symbiotic in cosmic systems:

The Symbiotic of the elements of the cosmology around us allows for the changing dynamics and the constant balance between the opposing elements, this allows for the sudden mutations and the continuation of life through the reciprocal relations between the elements to produce the whole, one of the most important approaches to cosmic Symbiotic is the reciprocal relationship between the elements that we will demonstrate through the following.

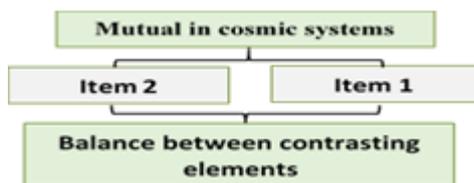


Fig -4: Mutual in cosmic systems

3.2.1.1 (Mutualism): the language of symbiotic architecture:

Mutual architecture is a mixture of vocabulary from architecture, landscapes, science, and environmental concerns. Mutual architecture is not exclusive but includes these disciplines. The design with Mutualism as a goal leads one to consider all these aspects in order to achieve the full desired, this is effective in breaking the constituent parts of the mutual architecture. The theory of theory and the use of art charts have developed a clear picture of the diagram to represent mutual architecture patterns.

We conclude that: Mutualism is an approach to architecture, a method that allows itself to explore the idea of integration among all, it is by no means a recipe for success but rather a point of view or method of examination. Recipes, as such for architecture, can lead to fixed and non-original design solutions, it's not a style that has an aesthetic expression but a process that can interfere with the project, this leads to the development of the most important elements of the integrated design

3.2.1.2 Adaptive symbiotic design and new forms:

To establish good design principles in architecture and create more creative, coherent and cohesive forms, we must review our ideas in contemporary architecture by studying theories of complementarity and belief in inclusiveness, and

aspire to coexist with more cultures and thus create a richer environment.

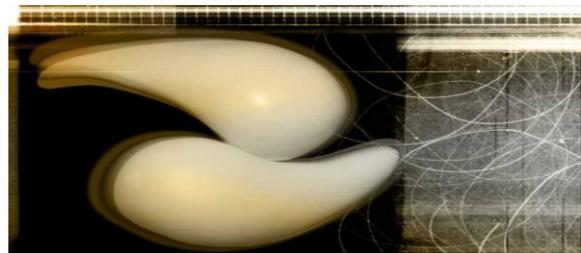


Fig -5: Symbiotic of genes in biology

Takaful Relations Symbiotic can, like our senses that take in more than they want, should be pursued and active simultaneously. There is no ideal architecture and no one has the right order. Thus architecture does not express a single system of values, it is a mixture of many systems with different values and many different elements as formal architectural media expression, so symbols and labels produce a multiplicative and contradictory meaning. We conclude from the above that the co-existent approach allows giving the capacity to produce and thus the ability of one element to represent more than one thing at a time. A symbiotic relationship creates multiple interpretations of experience and at the same time creates special historical significance.

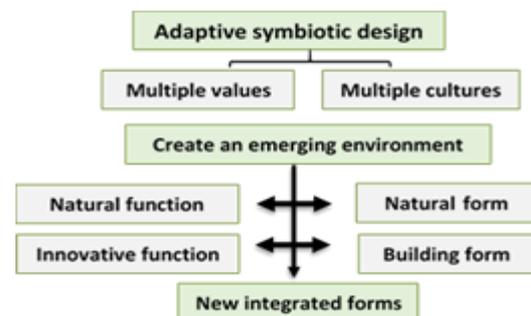


Fig -6: The new form of reciprocal relations

And thus reach new forms that combine more than one idea or (cultural environment) contradictory through the symbiotic design, which combines these contradictions through the integration of formal systems produced from multiple cultures to produce a building in forms compatible with the living environment and thus give it through integration and integration

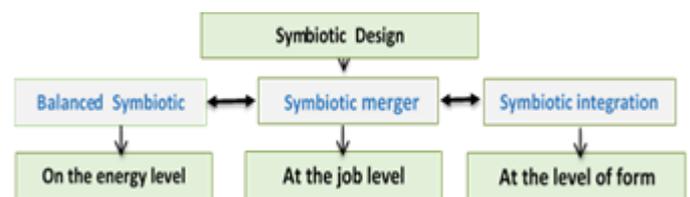


Fig -7: symbiotic design

3.2.1.3 The symbiotic architecture:

Architecture is a complex system of relationships, embodied in architecture are ideas regarding the structure and nature and how these two types of interaction interact to produce a harmonious architecture, a shape without a natural shape is a building. Natural form without construction is landscape, mutualism is a process through which it interacts as two entities seemingly in a way that benefits each other, through this approach, architecture can aspire to be more than just a building. The reciprocal architecture is a comprehensive system with everything greater than the sum of its parts, individual parts alone do not constitute architecture, having demonstrated the concept of Symbiotic in the biological field we have reached the most important vocabulary of symbiotic, which is to achieve the interrelationship between the conflicting elements to achieve the comprehensive integration between the compatible parts within the surrounding environment and achieve the idea of cultural integration with the age of the pension and thus achieve the idea of cosmic architecture, The nature of the solution of human problems and therefore architecture, we will show the most important studies that touched on the concepts of cosmic architecture coexisting to give the theoretical side of the uniqueness of Symbiotic and use it to enhance the practical aspect of research .

4. Symbiotic as a strategy in the production of architectural text:

Symbiotic strategy is one of the strategies based on the modern sciences of the 21st century as one of the branches of cosmic science where symbiotic is one of the important characteristics of cosmology, namely the existence of reciprocal relations between what exists in nature and many studies have studied Symbiotic as one of the prominent sciences at present in cosmology, as well as morphology based on algorithm systems, but most important of all is to harness this strategy in the production of a cosmic architecture based on the holistic view of the universe, which depends on the cosmic concept of governance based on Nature refers to the trial of plants and animals. Symbiotic refers to the interrelationship between two or more aspects of life, which are useful or depend on one another directly, indirectly, visually or interpretively, these benefits or dependencies may be metaphorical or physical in nature or philosophical interpretations of how two systems in our environment depend on one another for existence.

4.1 Symbiotic of the Language of Cosmic Sustainable Architecture

We can use the language of the cosmic architecture which is based on the modern sciences of the age to contain the many requirements of the universe through the adoption of the language that emphasizes the holistic view of the

contemporary intellectual aspect, this can be achieved through the adoption of the language of design found in biological biology as one of the most important cosmologies of existence that has a number of cosmic characteristics of the unified universal language.

Thus, the important characteristic of the cosmic biological systems is the symbiotic strategy, which is one of the most important design languages in which we aim to reach the practical strategic dimension of research, because it is the language through which the contradictions or pluralism of the elements of balanced cosmic unity Which is reflected in the architecture through (space - shape - energy) on the way of combining the past, present and future, as well as intellectual Symbiotic between what is local and what is universal to reach the main intellectual plan responsible for intellectual construction in the production of architectural cosmic text , This is what the research aspires and therefore we will discuss in the next paragraph the most important elements of the cosmic unity balanced through the biological dimension and how the concept of Symbiotic affects the tripartite universe.

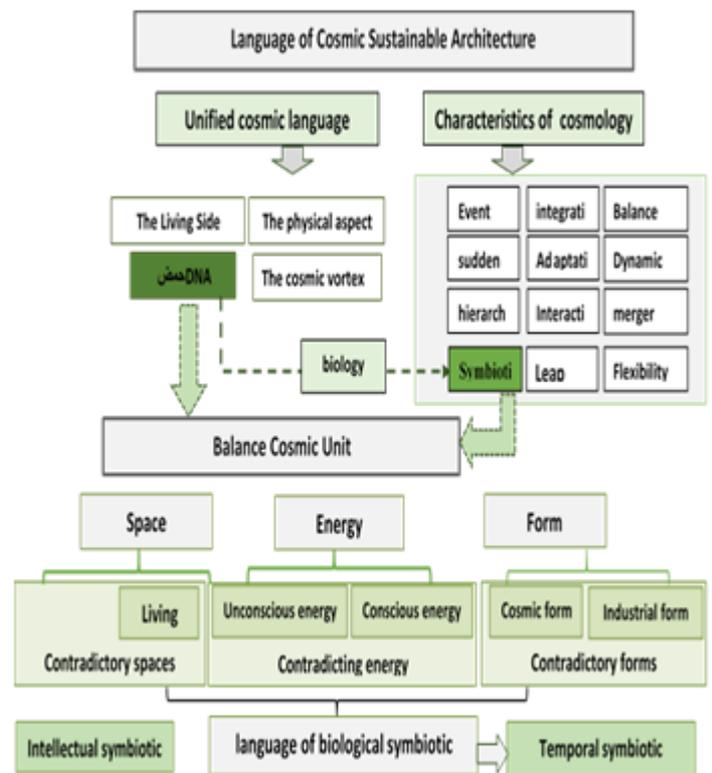


Fig -8: The language of cosmic architecture.

Thus, we derive from the above that the intelligent balanced cosmic unity in all cosmic systems, whether living or non-living, is the intellectual basis that contains all the vocabulary of the various cosmology (such as balance, dynamism, etc., as explained above)

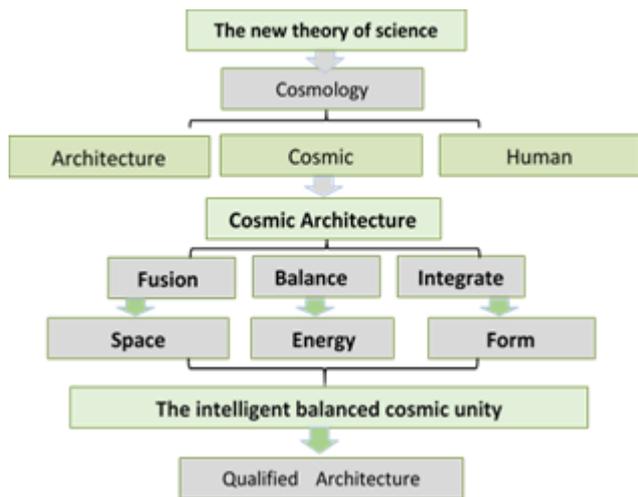


Fig -9: The intellectual basis for the production of cosmic unity.

And therefore the importance of cosmic systems in achieving adaptation to the environment and Symbiotic desired with the language of the current era and cultural linkage with the local environment. After we have demonstrated the concept of cosmic architecture, we come in the next axis to demonstrate the concept of cosmic unity based on the interactive relations between the contradictory parts to form an integrated whole to identify their properties and how this reflects on architecture to produce a cosmic architecture capable of responding to the requirements of the age of the pension.

4.1.1 Space

One of the most important elements of cosmic unity where one can actually see the design and planning of the Earth area in the region is to arrange furniture from a room and organize space for different purposes and according to different rules reflecting the needs, values and desires of groups or individuals in designing space and representing congruence (or lack thereof) Between social and physical space.

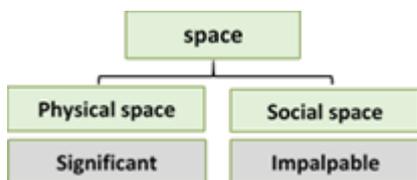


Fig -10: Dimensions of the symbiotic architectural space.

This dimension of space does not deny the importance of shape, proportions and sensory quality of space as well as its symbolic meaning, but all this occurs within the spatial framework of spaces as in the space dimension of biomes containing the genome. Thus these relationships and space organization is the main and most useful element for

comparing environments and studying the rules of their organization.

When we recall - the genome - we deal with the built environment as a series of relationships between spatial elements. The built environment has a structure rather than a random assembly. It reflects the relationships and transactions between people and the material elements of the world. These relationships in the physical environment are primarily spatial - essentially objects and people are connected by separation in space, (Rapoport, 1997).

While the space organization does not express the meaning and its characteristics of communication and symbolism, the meaning is often expressed through signs, materials, colors, shapes, landscapes and the like, through the famous aspects of the built environment. Thus, the meaning may coincide with the organization of space or may be a separate asynchronous symbolic system in which different environments become an indicator of social status and a way of asserting a social identity to oneself and others. This means, of course, that physical elements in the environment take different meanings, their impact, their importance, their impact on behavior, and change accordingly (Rapoport, 1997). Spatial experiments can be divided into three categories:

- A. Space practice to "groups" an attribute of each social composition and interaction.
- B. The perceived representations of space refer to space as an "encoded reality" or the conceptual impression of scientists, architects, urban planners, and social engineers.
- C. Understandable and representative spaces or spaces as they are and describe them in symbols and associated images.

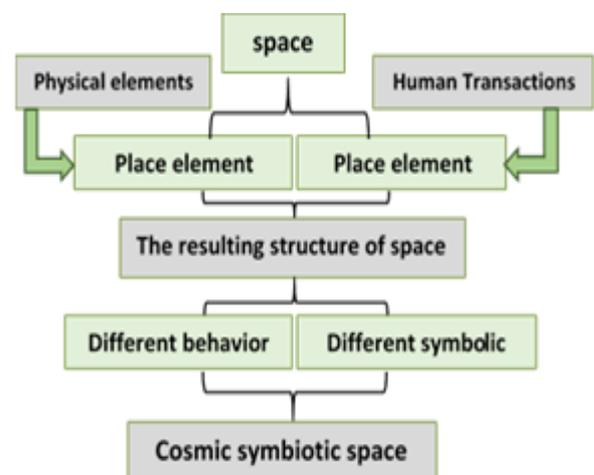


Fig -11: The components of the Symbiotic architectural space.

4.1.2 Form:

The form is the second element of the cosmic unity, where the cosmic system is conceived by the spatial organization, and the attributes are symbolized by the formal expression. The qualities are more intangible than the natural "objects" and spatial relationships, demanding special attention from the construction. In fact, its composition presupposes the language of symbolic forms (style). This language consists of the basic elements that can be combined in different ways (Norberg-Schulz, 1985).

4.1.2.1 Types of Formation in Being There are two types of forms in this world:

- A. Building form
- B. Natural form

Before talking about the two types, the shape must be defined in general: Form, It is the main way that we process an object identity. It is how the characteristics of a given space are defined. There are many properties that can be used to describe a form such as symmetry, geometry, complexity, harmony, and balance. These characteristics serve as the basis of language forms.

After showing the concept of Natty form to the statement of the most important types of form.

A- Building form (man-made)

Is a man-made building. It is usually the geometric expression of the expressed volume through the use of materials. There is no evidence of this man-made universal idea. Building model should not be the most powerful design principle, however. To do this is to neglect the natural domain and its qualities. A form without a perception of the world around it.

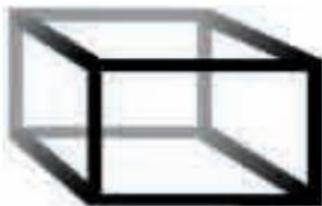


Fig -12: The industrial form by man.

B- The natural form (cosmic)

Is a form based on a series of complex processes and these forms appear to be highly complicated by these processes. Something as simple as a snowflake can carry the same system, complexity, symmetry, balance, harmony and engineering accuracy required in architecture. Each snowflake is different, there is complexity in its final form

yet it is based on a hexagonal shape. They are not chaotic. Snow contains a triangular pattern which is repeated twelve times. There is complexity in the natural form. The theory of complexity explains how complexity in nature leads to more order in this particular system.



Fig -13: The cosmic form

C- Symbiotic Cosmic Form:

It is a form that emerges from a series of processes. By rejecting the concept of a static "style", "mutual architecture is free to pay attention to larger issues of how patterns of natural and constructed form interact." The shape is the quality of the emergent and the beauty will result in the synthesis of the state and the resulting ideas. The beauty of a reciprocal architecture is the result of the expressed system, the integrated architecture will not have the same look at all sites. It can be the same and include unique powers at work in a particular location.



Fig -14: Complexity cosmic form

Interactive architecture embraces complexity. It can be a simple system because there are a lot of processes in the work and called a simple system is to ignore this as in the figure above. It is essential for architecture to adopt the complexity, diversity, and uniqueness of the built and natural form.

We conclude that architecture and cities always change. The structures should be open, and the relationship between architecture and nature is renewed when there is a lot of focus on substance and the issue of life becomes absolute. Human relations need to be free and open, not limited to any single society, class or religious group without another. Thus, culture is like architecture and must be able to change, grow, renew, and allow to rebuild itself, to take advantage of scientific, technological and economic successes.

Symbiotic creates a dynamic relationship between two elements while allowing them to survive. Through symbiotic

we can preserve the identity of the local culture and the nature of the individual's relationship with the place. Thus the Symbiotic of different cultures can be offered as possible. The buildings must be designed to be the result of this Symbiotic. The relationship between architecture and its environment, as well as the relationship between the distinct spaces within the work of architecture, will produce meaning and therefore the buildings have the capacity to live.

4.1.3 Energy:

All vital functions are based on interactions at different levels of energy (perceived or unconscious). The relationships that occur at energy levels are in fact the hidden dimension behind all the physiological functions that we realize, in all vital elements, that health is achieved by balancing energy any imbalance in this balance results in either an increase or decrease in energy activity which is thus reflected over time in the form of a health problem.

The role of energy is not limited to achieving health and balance of the body, but rather is a common element that resonates in nature with all its elements and achieves among them a kind of resonance that supports the coherence and balance of the laws of the universe. It is the basis of the processes of formation, creation and cosmic creativity, which is the reason for achieving harmony between the energy building of all systems Cosmic, and it achieves a balance between all forms of energies of all cosmic systems, Energy is the main factor that connects all elements of the universe to each other and understands them. We reach the starting point for a deeper understanding of the nature and basis of the various cosmic elements, which play a key role in achieving universal unity.

Energy is the third element of a balanced cosmic unit. Energy exists in six elements: the basic conditions of the matter:

- A. Motion (time, rhythm)
- B. Light (color)
- C. the sound
- D. Wind
- E. temperature
- F. And water

Thus, after we have shown the most important vocabulary of the cosmic intelligent unit in which the characteristics of cosmology are combined, it has been found that the exploration of the most important design patterns and conceptual methods of design based on the cosmic view of the design and the language of the cosmic architecture which assumes the existence of cosmic unity resulting from the integration of the cosmic elements of the three - energy) through the holistic approach to the curriculum. The three elements of the architectural structure (function - form - meaning), and thus the production of a cosmopolitan architecture based on that view, based on the cosmic co-

determination that imposes Combine the contradictions of that cosmic trigonometry and produce each balanced.

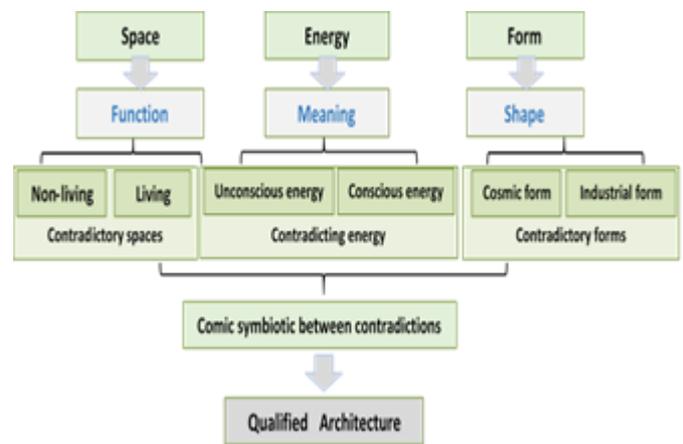


Fig -15: Symbiotic between the three systems (space - form - energy).

The research leads to a new vision for the development of the design process through the language of collaborative design, an environmental strategy that facilitates natural experimentation and behavior change towards a culture of conscious, environmental and intellectual design and is one of the sources of sustainable design thought. Thus we will discuss in the next axis the theoretical dimension of that cosmic language design to identify this concept and how to harness it in architecture and its dealings with the cosmic trinity to reach the cosmic mass.

4.2 The strategic dimension in the production of the cosmic architectural text

In the preceding paragraphs, we see how cosmic characteristics work on the diversity of design patterns of architecture and thus can produce a universal unity of these qualities which is the universal character of all that exists in the universe. We have called it the cosmic unity of the triad (space - form - energy) In the formulation of contemporary architectural thought in accordance with the methodology of holistic design, which depends on the universal language and this research leads to provide a new vision for the development of the design process by adopting environmental education strategies that facilitate natural experimentation and change behavior towards a culture of conscious design environment and be sucking Get access to contemporary cosmic design thought. Through the statement of the strategic dimension in the production of the cosmic text derived from those cosmic qualities that can be employed in architecture and this is what we explain in the next chapter.

4.3 Symbiotic as a strategy in the production of cosmic architectural text: symbioses in architecture

The Symbiotic strategy is one of the strategies based on the modern sciences of the 21st century as one of the branches of cosmic science where cosmic Symbiotic is one of the most important characteristics of cosmic systems, namely, the existence of reciprocal relations between what exists in nature and so many architectural studies have studied the concept of Symbiotic as one of the most prominent sciences at present Whether in cosmology or bioscience, as well as morphology based on algorithm systems, but most importantly, harnessing this strategy to produce a cosmopolitan architecture based on the holistic view of the universe, which is based on the cosmic concept of governance Based on the science governing nature of plants and animals,. Thus, we will explain in the paragraph the most important techniques or mechanisms used in the strategy of Symbiotic, which is one of the most important characteristics of the cosmic systems and thus the definition of the strategic dimension of Symbiotic.

Table -2: Mechanisms used in the strategy of symbiotic

Technical dimension of mechanisms					Mechanism in the strategy of symbiotic
Break symmetry (asymmetry)		Dynamic balance		Dynamic	
Transformations					
Hierarchy		Repeatability		SELF-SIMILARITY	
The Cosmic Leap		Unbalanced balance		NONLINEARITY	
Repetition		Periodic	Contradiction	WAVES AND TWISTS	
Self-symmetry	Sudden change	The surprise	Formal transformations	Folding	
Sudden transformations		Event		Sudden onset	
Repetition		pheasant		Hierarchy	
Complexity	Integrated fabric	Pluralism	Containment	UNIT	
Interconnection	Construction and Real Estate		counterpoint	SUPERPOSITION	
Formal change		Dynamic	Development	Edge of Chaos	

Repetition	transformations		Complexity
Self-regulation		Sensitivity to conditions	
Participation	overlap	correspond	Integration
superposition	adhesion	union	COUPLING

4.3.1 The most important mechanisms used in the strategy of Symbiotic: symbioses in architecture

After we have highlighted the most important aspects of the strategy of Symbiotic in the previous chapter shows that Symbiotic is a cosmic design approach through which to obtain an environmental strategy instruction can be through to develop the design process and obtain new forms following the mechanisms related to synonyms of cosmic systems, which we mentioned earlier and thus access to new forms It combines more than one contradictory idea (or cultural environment) through the symbiotic symbiotic design that combines these contradictions through the integration of multiple formal systems produced from multiple cultures and the integration of multiple space organizations to Realize this within the dynamic balance supposed between multiple energy systems to produce a building in a form compatible with the living environment and thus give it through integration, integration and dynamic.

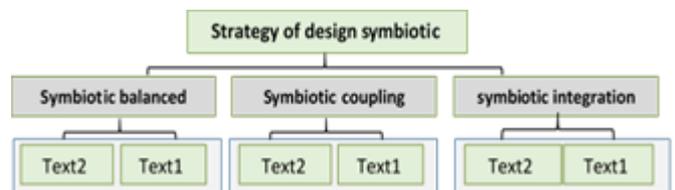


Fig -16: symbiotic design

Thus, in the following paragraphs, we will identify the most important of these mechanisms after we have demonstrated the characteristics of the symbiotic architecture. We come to the most important methods of co-operative design, ie, formal integration, space integration, and dynamic energy balance. The applied samples are concerned with giving a comprehensive description of the selected research samples for the practical study mentioned previously, based on the various sources, which gives a visualization and enrichment of the sample before starting the application as follows:

Through a general description of the project with a comprehensive view on the mechanisms used within the strategy of cosmic Symbiotic and the most important cosmic concepts governing the influential in shaping and shaping the architectural thought of that building. According to the following table:

Table -3: Information collection form

Information collection form				
				project name
				The company designed
				Project Description
1-	2-	3-	4-	Mechanisms in the symbiotic strategy
The concept of moral rule	Automated Ruling Concept	The concept of natural ruler		Symbiotic concepts governing the formulation of architectural thought of the building
	Text 1	Formal system		The tripartite system in achieving the symbiotic of the building
	Text 2			
	Text 1	Space system		
	Text 2			
	Text 1	The energy system		
	Text 2			



Fig -17: University of Florida - Calatrava

5.2 Design Idea:

The main building of the Polytechnic University covers an area of 200,000 square feet divided into two floors, with a design that incorporates all the factors that lead to its sustainability. Polytechnic's external structure resembles the birds' cage from the outside, due to the lightweight aluminum truss over the concrete and glass structure, which gives a beautiful shape and contributes 30% solar energy



Fig -18: University of Florida – Calatrava

5.3 Symbiotic and design thought of the architecture of Calatrava

Calatrava's role in designing the building is not only about the structure and shape but about directing the use of the building in which it was located. His goal was to design a collaborative environment where students and faculty were encouraged to interact and coexist from the architecture itself. , ie, one of the faculty offices and the Student Center and the Virtual Library. Each office is directly accessible to students, a matter of feet away from the common study hall in the middle. The offices of faculty members themselves are quite small and almost certainly there is room for a faculty member and student, as the collection is encouraged in group meeting rooms directly across the hall. Private offices, but for the limited expansion of these offices are not closed from the above, which allows to implement and encourages the use of quiet by each occupant. In this design is a philosophical match of the same subject. Here students study nanotechnology, automated learning, and large data analytics and electronic games. As for the site, they are exploring practical applications of the latest technologies in hands-on environments. There are arrays of 3D Makerbot printers in one room, and there on the IBM supercomputer

5. Selected samples for application

Applied Project : the University of Florida Polytechnic at Lake Land / Santiago Calatrava 2014

5.1 General description of the project

The project was inaugurated in 2014 by architect Santiago Calatrava. It is the first specialized central building for science, technology, engineering and mathematics in Florida and on the northern edge of the central lake, which offers a fantastic panoramic view of the project on the outer site. The area is 201,000 square meters and is composed of the building consists of classrooms, public laboratories, and research to meet the requirements and functionalities of the project and helps to achieve the vision of a sophisticated university in the center of the state of Florida.

in another - one of only two public institutions in Florida. Students are learning techniques tomorrow in a building that seems to have arrived from the future. It is an inspirational learning environment, and this deliberate design decision was made by Santiago Calatrava

5.3.1 The Symbiotic of the space system of the building

Calatrava inscribed the grand study hall into a circle of higher-level faculty offices. Unlike the lower level, the walls of the study hall are lined with vertical ribbed vertical panels that operate both acoustic barrier and optical guard element. The nature of the auditory sound of these walls keeps echoes to a minimum, allowing students to talk at normal levels without disturbing others. The natural color of the wood and the above shading shade creates a peaceful, relaxed and warm environment for study. It is inherently sectarian, inviting students to the group along with easy access to external faculty counselors in the room.



Fig -19: Co-operation of the University of Florida - Calatrava 2014

11,000 square feet, there is a multi-purpose public room: public library, study and study space with roof this large room with high ceiling is the site of the electronic library/study area mentioned above, which does not show any concrete books but directs students to e-books and other digital resources Available. The swinging geometry on this room is both soothing and inspiring, pointing out that a complex system of 94 aluminum hubs on its surface that rises and falls to provide the most effective degree of shading but still allows plenty of natural light.

5.3.2 symbiotic of the energy system of the building

Natural light is controlled to enter the IST building by a group of "wings" that stand on top of the structure. These wings are flying and turning throughout the day, as a grand curtain over the building. They move with the sun throughout the day, as one large plate rises in the morning facing the east, then moves to the west as the sun completes the daily circuit. At dusk every day, these wings fall to their lowest level, standing as a church tower of some sort in the center of the building.

In broad daylight, the construction of IST is much more part of its environment. The sun rises on its head, highlights and shadows climb through the inner walls like a camouflaged sundial. Almost all public places are fully lit by ambient light during the day, a measure of cost savings that also plays a role in the emotional appearance of the building.

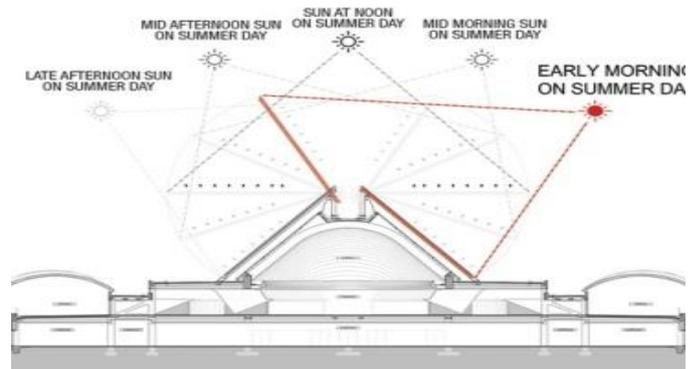


Fig -20: Lighting entry into the corridors of the University of Florida - Calatrava 2014

In the evening, artificial light provides a different view of architecture, interior and the building of the Iraqi Special Tribunal. The progressive future of the design becomes more pronounced, and the surrounding environment disappears in the dark. The new mood is appropriate given the purpose of the building, as students see only the complex, rigid mathematics behind the shape of the building.

The capes, which control the acquisition of solar heat and regulate light levels, have been designed to eventually absorb the optical tape system to generate power for the campus, Skanska says. According to the architect Lorino, the operating system of the ISI is almost double the size of Calatrava and one designed for the Milwaukee Art Museum. When the arms are a fully upright skylight, the Florida building measures two floors 130 feet from the bottom up. Originally, the executive engineer proposed a dual system of components consisting of structural steel replica of 47 weapons each moving separately by hydraulic equipment located at each end.

5.3.3 symbiotic of the form system of the building

The Santiago Calatrava University of Florida developed a polytechnic with repeated skeleton shape, with a clasp envelope stretched across a series of curved ribs. The large project culminates with a high-scalable roof that can be adapted to regulate the required amount of direct light required in response to the daily movement of the sun. A formal arrangement consists of the construction of four pedestrian bridges connecting a two-story building with the surrounding development.



Fig -21: The exterior of the building inspired by the biological form - Calatrava 2014

The origin consists of a repeated series of columns and curved surfaces designed to reduce the heat gain of the building by 30%. Inside the building, Calatrava added a first-floor meeting space, known as "The Commons", located directly under the vaulted celestial opening. The open canopy of above 46 panels can be hydraulically ventilated to the sun's position, helping to shade the space from Direct and strong sunlight.

Table -4: Information collection form

Information collection form				
Florida Polytechnic University at Lake Land 2014				project name
Santiago Calatrava				company designed
A specialized central building for science, technology, engineering and mathematics in Florida				Project Description
counterpoint	Dynamic	integration	transformation	Mechanism in the symbiotic strategy
The concept of moral rule	Automated Ruling Concept	The concept of natural ruler		Symbiotic concepts governing the formulation of architectural thought of the building
	✓	✓		
Natural (bird)	Text 1	Formal system		tripartite system in achieving the
Industrial	Text 2			

(structure)			symbiotic of the building
Educational space	Text 1	Space system	
Entertainment space	Text 2		
Spiritual Meaning (Energy for Learning)	Text 1	The energy system	
Recognized Energy (Smart Environment Processors)	Text 2		

After realizing the characteristics and characteristics of cosmopolitan architecture and how to invest the concept and idea of cosmic Symbiotic as a strategy to reach a harmonious architecture that responds to the requirements of the age of the pension and thus to give the architectural character by the application of formal integration and functional integration and balance of spiritual energy of meaning, and thus share all the determinants of intellectual, Of the architectural output and thus the sustainability of the production

6. CONCLUSIONS

Cosmic architecture is an architecture resulting from the generation or formal derivation of the repetitive systems of morphological formations and the adoption of fractional indicators. This event is the memory that enters into the identification of that community and thus the cosmic interpretation of the modern scientific outlook has a clear effect in the formation of modern human architecture based on interaction with the ocean to produce a true architecture centered on man. Biomimicry the most important rules of cosmic systems, which can be used to quote the most important methods and mechanisms used to solve the problems and needs in the process of architectural design.

The most important vocabulary of cosmic architecture is the integration of systems to reach a living structure and thus how science responds to the changes of the new age and its many requirements and thus reflects the cosmic architecture. One of the most important characteristics of cosmic architecture is the process of symbiotic of cosmic systems, which are among the contradictory systems to function as an integrated unit system that supports each other. The Symbiotic of the various elements in our environment allows for the changing dynamics and the constant balance between the opposing elements, allowing for sudden mutations and the life of life.

In order to create a symbiotic environment in our designs, there must be a transitional phase of Symbiotic between the living elements. Here the common understanding and the relationship between the opposing elements are achieved. A mutualism is an approach to architecture, a method that allows itself to explore the idea of integration among all. Takaful architecture is a view of architecture and an expression of the spirit of the times and buildings designed to be part of the cultural heritage of future generations.

The co-operative symbiotic approach allows the product to be eligible to accommodate the requirements of the current annuity, and thus the ability of one element to represent more than one thing at a time. And therefore the existence of a symbiotic relationship creates multiple interpretations of experience and thus abstract geometry constitutes a common cosmic knowledge of different cultures while creating a special historical significance.

The new forms are brought together by more than one idea or a contradictory cultural environment through the symbiotic design that combines these contradictions through the integration of multiple formal systems produced from multiple cultures to produce a structure that is compatible with the living environment and thus During integration and integration.

REFERENCES

- [1] Robert M. Augros, George N. Stanciu **The New Story of Science**, 1984
- [2] Charles Jencks, **The Architecture of the Jumping Universe**, 1997 .
- [3] Akkach, Samer, **Cosmology, and Architecture in Premodern Islam**, an Architectural Reading of Mystical Ideas: 2005.
- [4] Janine Benyus, **Biomimicry Innovation Inspired by Nature**, 1997.
- [5] Alrawi.Osama, **Cosmology as a Source of Sustainable Design Ideologies**, Alazhar University, Cairo, Egypt 2010.
- [6] Simon Gekeler, **Bionic Optimization in Structural Design**. 2016.
- [7] Foote, Brian. Yoder, Joseph **Symbiosis and Architecture**. (1995).
- [8] Pearson, David, **New Organic Architecture: The Breaking wave** 2001.
- [9] Alexander, C. (**The Nature of Order**), 2000
- [10] Paul William, **Mutually Reinforcing Design & Symbiosis: An Architectural Design Thesis** Murdoch Ryerson University 2000.
- [11] Pierre Lahaye MDS Architecture explains his view of symbiosis and architecture.
- [12] Hedayat Shahbazi - **Recognition Nature Related Concepts in Bionic Architecture and their Effects on Contemporary Architecture**.2016.

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