

# THE EMOTIONAL FLEXIBILITY OF SCULPTURAL STRUCTURES

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## Abstract:

The contemporary architecture was designed to look at the structure of the originator as the essence and the first crossing, and by the relentless directions to get out of the original structure away from the classical frames of the design, this was sought by looking at it as a sculpture approaching in its flexible forms of nature and living and imitating the natural living hand against the influences, The research problem is "structural sculpture and its role in providing structural spatial structures with emotional flexibility" To support the research hypothesis that reflects the structure of the structural sculpture is support flexibility at the two-level context and function. The research methodology is analytical descriptive consist of three steps, first: exploring research problem, second: about sculpture structures making, it Emotional Flexibility and its type. Third: practical study (building measurement identify case study samples), drive findings and conclusions. After reach to some result the most important one is the literal generation of the constructor structure differs from one project to another in order to acquire the sculptural nature with its different structure that establishing theoretical framework, to reach the most important conclusions that the structure is based on the sculptural structure on contextual metaphors of the body of organisms as a form and supporting reactions of structural actions against any influential in addition to Supporting the formal nature that exit the building to other frameworks and make it Acquires the living nature.

**Keywords:** context, emotional flexibility, sculpture, structure, natural supporting.

## I INTRODUCTION

Many of the previous studies have been looking at the structural structure so far from the functional side has added to it in the contemporary time expressive side, which reached the last approach to the structural form of living natural forms of what is known as biological nature. Contemporary structural architecture and its role in the expression of the expression of the building In order to enhance the role of the former structure in maintaining the stability of the building it was necessary to look at this expressive role has close to the living nature with flexible reactions to external influences, a reflection of the flexibility of God Live to eat, especially when the structure embodies the metaphor of the living nature of the

creativity of the Creator, so I figured the research problem is "structural sculpture and its role in providing structural spatial structures with emotional flexibility "To reach the desired goal the role of structural expression in the flexible performance of Sculpture structure, both at the level of context or at the level of structural functionalism It was therefore necessary to develop a research hypothesis of the following the structure of the structural sculpture is support flexibility at the two-level context and function. The descriptive analytical method was adopted for a set of research samples represented by projects that reflect the structural sculptural expression(X1-X2....Xn) To try to prove that sculptural structural expression has reactions that deal with function or

context, due to structural flexibility, which may be embodied in the structural movement that responds to natural influences in the functional side or structural formalism, which is called flexible emotion.

## II DEFINITION

*3.3. Structural structure:* The resistant part of the building is the result of architectural construction processes based on the use of building materials and methods, showing the functional aspects of mechanical, aesthetic, symbolic and environmental, and is based on the identification of architectural spaces in addition to security and protection, the nature of the formal choice and the type used is related to the nature of the function, loads and architectural form required to reach Especially when the structure expresses the architectural form of the building clearly to be associated with the processes of the formal creation of contemporary architecture [1] There are several types of structures but one of the most important types of **sculptural structure** expression embodied a flexible emotional structure on several levels, including structural dynamics or achieved by hyper-embodiment "hyper" Which is based on the combination of multiple system creators, Which adopts a method of directing forces and leading structural features [2] Based on a combination of many structural systems such as the framework (space frameworks) and concrete structures treated with Nano, which enter the structural technology [3].

*3.3.3. Emotional Flexibility:* The definition of conventional in the literature under the name of emotional equilibrium and linked to the behaviors of living organisms and more than the psychologists. Where he knew Rayan in his study is a state of calm and emotional flexibility towards different emotional attitudes, which in psychology referred to emotions that direct the feeling of the person [4]. It is associated with the concept of confronting the familiar and uncommon situations

that either led to adapting to the surrounding or producing new ones which ARE the core of the compatibility process [3]. Where the level of buildings emotional flexibility is in the ability of the building to face external influences, whether in the case of dynamism or static [2].

*3.3.3.3. Flexibility:* Define flexibility as an attribute is all that relates to physics, efficiency, productivity, change, energy and objects in the case of motion whether fixed or dynamically moving. It also embodies a clear expression of energy [5] In psychology and sociology define as The ability to call as many different and varied responses associated with a given situation as automatic flexibility [6] their nature and type depend on the emotion type and nature [4]

## III PREVIOUS STUDIES

### *4.4. J.L.Humar, book, "Dynamic structures"[6]*

This book helps engineers and scientists to understand the dynamic response of structures and to analytical tools required for determining such response. Also Attempts to explain the mathematical basis for this concept , but the essential steps in the dynamic analysis of structural systems are: a) mathematical modeling which depend on technique of the structural system in modeling that refer to the mass of structure ,that manner called ( parameter system ) which ether be regular or irregular like a network of point called( continuous or distributed ) and that kind of structure is the better to represent the behavior of a flexible dynamic system . The study explains that the building structure's deformation cause when it does not construct in shape and technic to make it flexible agents outer effects and load. The dynamic response involving connecting with nature, as a rule, takes the shape of life and its ways to stay also the study explain the the shape any structure depends on its environment and the vibrations that the structure Exposed to it.

The study foxed on dynamic responded to

structure and the type of system which makes it like parameter system, that type can make structure have the rule of nature by shape or response and the sculptural nature with flexible motor efficiency.

#### 4.4.4. Allen, L., Borden, L. Ollare, N Bartlett Design: *Speculating with Architecture* [7]

The study referred to John Frazer's 2008 evolutionary architecture Which achieves the formal generation of architecture in parallel with the extensive scientific research of natural morphology in the world, which considers nature as a source of inspiration and a powerful model for the generation of architectural form and natural structural structures can make similar architectural structures through simulations of stereotypes and creativity; These are products that respond to environmental changes and adapt to nature. They are called biometric models that make the building has a structure similar to the structural composition of organisms and similar reactions (Biometric Architecture) this is the result of the structure of the living industry corresponding to the natural world, the principles of modulation and the living genetic code, the repetition and the knowledge. The goal of an evolutionary architecture is to verify the environment, which leads to a product of interesting and interesting structural forms of inquiry. The study also introduces digital techniques and techniques that reflect the organic composition and illustrious animations such as nuisance, circumference, extension, and spacing. Allen pointed out the concept of kinetic dynamics of the constructional structures. The realization of dazzling can be achieved by possessing structural flexibility capable of generating strikingly expressive forms and the extent to which they achieve expressive excitement varies depending on the degree of flexibility, Generative forms of creative.

**The study refers to the role of the formal creation of the structures of the living nature in**

**the structure of the sculptor, creating a sculptural body with the possibility of adaptive formality with flexible reactions to the external influences, similar to the reactions of the living creatures.**

#### 4.4.4.4. Rene Motro *Art and Structural Engineering-Art of Structural Engineering*, [8].

The study pointed to the compatibility between art and engineering in many cases, so that they cannot be separated, where the artists had an impact on structural engineering, which opened the way to complex surfaces and structural structure, which is recognized as a piece of art such as the Eiffel Tower and the bridge of Mayo, In the early twentieth century, the engineering construction of space and technology engineering moved towards the organization of construction works and the establishment of building structures. The Russian engineer like Vladimir Chekhov is one of the first constructors to achieve a number of impressive products in the construction and formation of metal structures and he studied the development of the shape of the structures in a curved direction by employing a strategy of structural deviation, The reference is the curved lines generated by the straight lines and their sudden deviation, expressing the excessive structures, and may lead to the emergence of structures with formative expressions embody a type of structural fractures with sudden discontinuities formal structure as in [8, Fig.1] The term "sudden jump" was introduced to levels of organization of structures with high paths and organization that translated the theory of complexity. The realization of the physical translation of a specific object is manifested by the sculptural expressionism which attests to the fusion of art with the structure. It is called the spiritual architecture, whose structures are distinguished by the unique creative body reflecting the new ways of thinking through the sudden jump to levels of organization of structures with high paths and

organization the study also adopted the principle of borrowing from the living nature and its streamlined structure. The principle of aesthetic growth, which is based on inspiration from cosmic phenomena, was presented by the study, in addition to highlighting the role of technology in design, implementation and structural calculations [8, Fig.2]

The study refers to the role of formal inspiration from the living nature organized on the basis of survival and responsiveness to the environment. The constructor structures gain a sculptural body with flexible reflexes that reflect the natural

structural flow

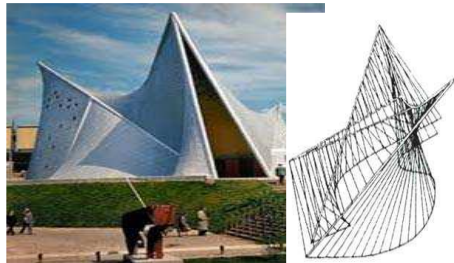


Fig.1.Pavilion Philips [8] Fig.2. A) Harvard Art Museum, Cambridge B) Gallery of Wind shape(URAL1)

#### 4.4.4.4. Pedersen Louise and Jonas Taljsten "Structure as Architecture" [9]

The study adopted the methods of cooperation between the architect and the structural and the parameters of cooperation and the presentation of the stages of generation of the structure of the originator using the best methods that lead the originator to the nature of a unique form and efficient in terms of support and support, which leads to complex structural structures Which requires a number of structural solutions and processors that are based on the existence of a number of elements that integrate with the context to produce a unique structure, its formal formality leads and regulates functionalism The study presented the style of parametric [1] design as a type that gives the structure a sculptural expression. The role of the technical evaluator, in particular, digital and computer modeling, was also presented in the design, operational and functional

calculations The study also studied the sources of inspiration for the structures of originality that can be gained by sculptural nature by employing the laws of nature and thought that deal with it to protect its forms and how it deals with external influences. Inspiration is based on understanding the laws of descent, proportionality, balancing and bending. Figure through mechanical analysis of structural stability and motion by material recruitment As well as the structural design based on the study of structural dynamics by practical models of testing and have a sculptural body .this is called "finding the form" [9, fig.3]

The study presented the idea of looking for the model and the sculptural formative alternatives of the structure that it deals with as a matrix and transformation consisting of the contextual nature by employing the technology that generates the structural structure of the context



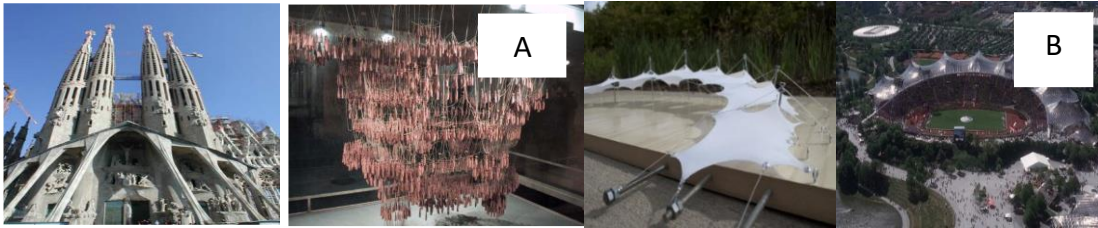


Fig.3. A/Model upside down [9] B/the Olympic stadium of Munich (URL2)

4.4.4.4.4. *Shahad raad hameed Majid,"*  
*Sublimity in contemporary Architectural*  
*structures" [1]*

The study dealt with the definition of the structure of the unique and dazzling constructs and how to express the architectural form and presented the most important structural systems achieved, in particular the introduction of the concept of combining the systems of originals and structures processed in order to reach the forms of a flexible form of structure. She also addressed the introduction of methods of generation of contemporary sculptural structure. Through the introduction of a number of studies in this regard, she discussed the most important sources of generation of the structure of the sculptural and the foundations on which to put forward a number of mechanisms and strategies for the generation of structural dazzling, which is the structure of the sculptural one of the expression of the unusual shape and performance of the unique by the smoothness and flexibility of the structure. Where she presented the most important methods of the tweed of the emotional structure with the formal and contextual nature and presented the concept of structural art, which looks at the structure and completely frank as a grant. It also dealt with the structural dynamics and the possibility of the structure's response to the various environmental influences and their emotion-based on those influences. And the possibility of the structure as an environmental response to the surrounding influences in order to achieve the manual comfort

of the building.

The study presented coverage of the most important strategies and mechanisms for the generation of unusual structures that often give expression to sculptural as well as their emotions about the context and environmental influences surrounding the addition of the near formal form of living naturally.

#### IV THEORETICAL FRAMEWORK

##### 5.5. *The basis of the processes of creating the sculptural structure*

Contemporary architecture is based on discrimination, in particular, the structural system of the structural structure, which is the basis for giving architecture its form and trying to come out with all new in terms of responsiveness to the environment and resistance to loads placed on the building in a unique manner. Where the structures of excessive nature and formal expressions carved by the method of exaggeration of structural details and the "relationship of part to all" [7]. Where the most important means of structural sculpting is borrowing from the fields of art or nature, which is based on the use of a number of methods as a hybrid of the systems of originality, selectivity, and symbolism [1]. As the study suggests a number of generating mechanisms have been introduced for the sculptural structure that acquires elasticity and organic expression by employing technology. It is a drag and pulls. The body is considered a rubber band that has the ability to give a variety of shapes, bending, folding and twisting to make structures

with a hybrid expression. Embodies the possibility of generating free forms based on the power to subjugate the materials used in the creation of the originaive structure which called (rubber plate geometry) [10] The Hummer study also pointed to the nature of the existing forces that affect skeletal structural emotion by Referring to Dynamic force acting on structure may result from one or more of number different causes like rotating, wind blast, earthquake ,Also it may be classified according to the nature of variation with time as periodic, non-periodic or random , all these force want structure able to deal with it by making it characteristic the shape of structure," be the structure more flexible to have different time and different effect on it" all the exciting forces are related with the rise of building and the rigidity of structure [6]

#### 5.5.5. Production of flexible sculptural structure

The emergence of the sculptural structure is based on the liberation of the relationship between the concept of form and the concept of meaning enrichment, which is based on the adoption of new methods of combining structural structures and introducing new structural elements by adopting methods based on the breach of the usual aesthetic and organizational codes of the constructor [1] The generation of the flexible sculptural structure is accomplished by several stages that emerge from the foundations of classical structural design [9] Choose the appropriate generator structure type

- 1- Studying the efficiency of the constructor structure to achieve the function and expression of the building
- 2- Selection of structural materials suitable for the structure
- 3- Choose the efficiency of moving loads and resistance to external influences flexibly.
- 4- An attempt to break the familiarity of the

structural nature of the structural structure, which leads to the uniqueness of the structure structural structure and form a sculptural form through the manipulation of structural elements and forms within the limits of the full knowledge of the function of each part for all to integrate the aesthetics of structural sculpture with the functional function of structural loads and resistance to external influences where the installation Structural formality and organizational nature have an active role in career performance. This is seen as a clear answer to **why that flexibility?** Question, That flexibility which Appears in the structure by movement to make building more reacted with the external effect environment and by sculpture the structure building in the way that making it has the same shape to living nature which designed to face any effect also by make structure adopted the system life of nature like make him deal with the nature.

#### 5.5.5.5. Type of structure with a sculptural expression

Studies have been conducted on the types of structural structures, like:

1) *Biometric structure* which rely on the simulation of living natural systems in form or through the laws of their work, where the modified nature generates similar sensory reactions of living organisms It was also called the evolutionary architecture that achieves formal generation in parallel with scientific research to produce models that respond to environmental changes, adapt to nature and sometimes have lively reactions. The structures are like curves and has a structural structure similar to the structural composition of organisms and similar reactions [7] the example of this Insect-Wing-Inspired Design Wins Moscow Circus School Competition



A structure inspired by the insect  
(URL3)

2) *Dynamic structures* Was related to the concept of movement and transformation and change and represent the forces that affect the interaction and relations of the elements of originality or the structure as a whole, Hadid pointed out that contemporary structural structures are not limited to stability, but rather to dynamic dynamics [11] Structural dynamics are at two levels: a) the form level of interrelated structural elements (repetitive rhythmic structural regulation) by equal movements of equal times Which gives the structure a flexible flexibility that regulates itself with the change of external influences b) the functional level associated with environmental function due to the dynamic structure response to daily changes such as temperature, direction of the wind and the sun such as (movement towers) [1] 3) **Hybrid structures** It is an informal form of sculptural sculpture through the use of digital technology to make this form. Where the design of these structures follows the imagination of the designer, such as the sculptor during the sculpted design by use, they violate the formal rules of the classical structural design. Its structural image

gives three-dimensional and four-dimensional impressions, it use of the mechanism of theft and grafting and dismantling and the combination of systems and integration between them, which leads to complexity [12] Which embodies the impressive structural sculptural aspects that Engel has classified in writing by defining general categories of structural systems of material adaptation to certain materials [2](fig.4) 4) **parametric structure** Embodies a new appearance in the construction industry of today's constructional structures that is based on the installation, development, and exchange of digital information architecture that called algorithm structures. The parametric design employs the so-called morphogenetic strategy, which uses the methodical repetition mechanism of the constructor elements, thus generating many outputs and alternatives for the formalized production of the structural elements of the structural system which leads to creativity and structural innovation [9](figure.5)

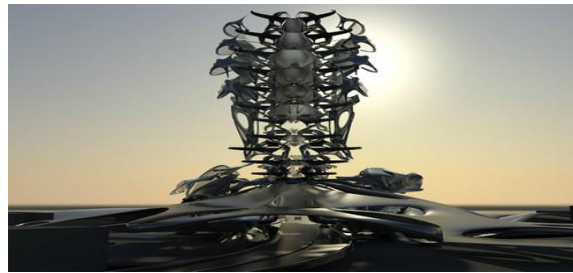


Fig.4. Nexus Media Center project embodies the architecture of the future  
(URL4)

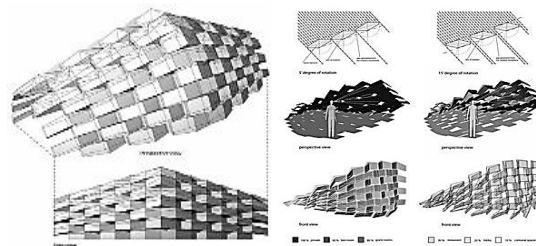


Fig.5. Structures made of parametric elements  
(URL5)

#### 5.5.5.5. Structural Art

Structural art is one of the most important descriptive terms of structural sculpture. The sculpture is one of the arts. The structure acquires lightness, aesthetic expression, formality, and stability. It expresses the freedom of the designer in structural expression such as the sculptor [1] It does not meet the standards of safety and durability, but has the advantage of systematic analysis of the structural design of a fixed structure that is unique as a sculpture or moving in dynamic movements repeated and within the studied style as in the structures of bridges and high dynamic buildings and cortical structures consisting of a set of points and structures are not efficient But only to achieve the rules and conditions of career [13].

#### 5.5.5.5.5. Elements of Generating Flexible Structure

Generating the flexible sculptural structure provides a number of supporting elements like: 1) Function Where the formal development of the  
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structural structure should be so as not to impede the performance of the job, but to improve it and try to make structural beauty is reflected in the effectiveness of functional performance, which embodies the loads and external influences, as in the sculptural structure of the bridges and sculpture embodied by the movement towers [8] 2) **Technology** Such as design and application, in particular with regard to the development of the structure of the constructors and the materials and technologies and methods of generation of the unique structure similar to the grant or to give the flexible structural dynamics by digital technology and materials treated technologically by other materials or combining more than one material [1] 3) **creativity** Which is associated with all that is unusual and new unique to the hierarchical classic structural design and is linked to the wheel of thought and evolution, [7] but not all new creative creator is what is the behavior and the impact of visual and actual influential in the mind. Structural creativity is formalized by delivering a technical



message that makes it describe as a sculptural work4) **Context** Is linked to two aspects: the first is the departure from the usual context of the classical standards of structural design to a standard that looks at the structure as a grant [1] The second is the access to the sculptural form with curved expressions and the structural shifts from the design of the natural structures and the attempt to imitate the mechanical hand with external influences and to be characterized by flexibility similar to the flexibility of living organisms [11].

### V THE VOCABULARY OF THE THEORETICAL FRAMEWORK

After the introduction of prior knowledge about the concept of structural and structural sculptural emotion and the means to achieve it, four main terms of the concept were identified the first concerns in the function of the sculptural structure, the second Features of the sculptural structure, the third in Sources of sculptural structures, the fourth in Dimensions of the structure of the sculptural structure and, finally the fifth one Mechanisms of Generating a Craft Structure.

### VI PRACTICAL PROCEDURES

The purpose of this section is to identify the basic principles and requirements of the application, namely the methodology of research, the standards of testing the research sample, and the measurement tool, where the following hypothesis was put to test the extent of achievement within the application side, namely: the structure of the structural sculpture is support flexibility at the two-level context and function.

### VII MEASURING METHOD AND TOOLS

The method of qualitative analysis was applied to the five main vocabulary of the theoretical

framework with its indicators that include possible values distributed among the above values. This was achieved by applying the vocabulary to the selected projects. Measurement X1-X2.....X44. And give each symbol its value is the following equation, and each value depends on the descriptive analysis of Annex (2)

Sum for all X1, X2....X44 100%

Indicator weight =100/44=2.27%

We give all indicators three scales

Degree is clear =2.72%

Less obviously =1.36%

Not found =0%

### VIII RESEARCH SAMPLES

Two main determinants have been adopted for the sample of the first and fourth elected projects adopted by a structure reflecting the entry of technology into the translation of the structure of the originators of nature and the second and third structure reflects a structural transformation that reflects the possibility of expressing the structure from a natural sculptural emotion with the environment and the context.

### IX SELECTED PROJECTS

Two projects were elected for the purpose of implementation, namely the first project is: SOLAR-POWERED 3D PRINTED TOWER, Design By: Qiu Song, Kang Pengfei, Bai Ying, Ren Nuoya, & Guo Shen, 2014. The second is: Re-imagining the Hoover Dam, Design by: Yheu-Shen Chua, 2011, In United Kingdom. (Annex-1). Hydra the third one Skyscraper Design by : Milos Vlastic, Vuk Djordjevic, Ana Lazovic, Milica Stankovic, in Serbia,2011 finally Fourth Project Rotating Skyscappers Design by : David Fisher, 2020,in Dubi

Table 1

Vocabulary of the theoretical framework and coding, source / preparation of the researcher

The main concept	Secondary vocabulary		Possible values		symbol
Function of the sculptural structure	Mechanical	Levels	All		X1
			Parts		X2
		Achieve	Link elements and their relationship with some		X3
	Aesthetics	Reverse form expressions	Manipulation of the aesthetic code of structure		X4
	Symbolism	Reverse Creative Significance	Visual enrichment	Structural redesign	X5
		Create a visual snap	Distraction	Strengthening the unit and reference	X6
Features of the sculptural structure	Environmental	Achieving social requirements, known as structural art			X7
	Protection and safety	Show balance			X8
		Balance through non-equilibrium			X9
	Singularity	Excellence and difference			X10
	Expression Structure	Structure and relationship in form	Match		X11
			Mismatch		X12
		A systematic relationship with irregular forms			X13
Irregular relationship		Out of tradition and use of craft by design		X14	
Sources of sculptural structures	Normal	Recruiting and borrowing the laws of nature			X15
		The mechanism of the work of natural structures and their architectural reversal			X16
		Inspiration of formal nature			X17
	Manufactured	Making structures according to formal nature			X18
Dimensions of the structure of the sculptural structure	Technology	Design and build			X19
		Materials Technology			X20
	Contextual	Biomass structures	Flexible organic structures		X21
			Contextual textile structures		X22
			Local and positional placement		X23
deviation			X24		

			<b>Over processors</b>	<b>distortion</b>	<b>X25</b>
	<b>Non-contextual</b>	<b>Manipulation of the sculptural origin</b>	<b>Jamming</b>	<b>Overlay does not prevail over one another</b>	<b>X26</b>
				<b>Interference in relationships</b>	<b>X27</b>
				<b>Hide some items</b>	<b>X28</b>
			<b>Organization of the structure in a sculptural style</b>		<b>X29</b>
	<b>creativity</b>	<b>Excessive structure</b>	<b>With formal fractures</b>		<b>X30</b>
			<b>Jumping (bending)</b>		<b>X31</b>
			<b>Edit the relationship between form and enrich meaning</b>		<b>X32</b>
		<b>Curved lines</b>	<b>Flex winding</b>		<b>X33</b>
			<b>Craft for classical structural rules</b>		<b>X34</b>
	<b>Mechanisms of Generating a Craft Structure</b>	<b>parametric</b>	<b>Manipulation of parameters</b>	<b>Location of the components</b>	
<b>Manipulation of structural grid points</b>				<b>X36</b>	
<b>Disconnection and separation</b>		<b>Constant dynamic structure</b>			<b>X37</b>
		<b>A space between the text and the contrary</b>			<b>X38</b>
		<b>Out of tradition</b>			<b>X39</b>
<b>Craft</b>		<b>Exaggeration and amplification</b>			<b>X40</b>
		<b>Fragmentation</b>			<b>X41</b>
		<b>The demarcation of the boundary</b>			<b>X42</b>
		<b>Distortion and distortion</b>			<b>X43</b>
		<b>Rubber bands</b>	<b>Curving, folding, or twisting</b>		<b>X44</b>

## X RESULTS

After applying the measurement table to the selected models of the projects, the following

A-

sample I	sample II	Sample III	Sample IV
97.28%	93.84%	81.6%	57.12%

The results show that the first, second and third  
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results for each of the vocabulary of the theoretical framework are explained as follows:

projects embody a clear sculptural expression with

contextual emotions resulting from the formal influence of the structure, while the fourth project is the sculpture acquired from the act of kinetic dynamics that is in response to the surrounding environmental influences are the same sculptural embodiment, if structures with sculptural expressions whether static Or animated reactions adapted to function and context

B- Results related to the first vocabulary (**Function of the sculptural structure**): The composition of the structural elements at the level of the part (as in the project of the first and fourth elect) or the whole (as in the second and third chosen project), which earns a mechanic reflecting a sculptural embodiment, as well as an aesthetic expression that embodies the alignment with the context and its inspiration as one of the elements of the structure of the sculptural structure. Despite the reflective dynamic of the sculptural nature of the design.

C- Results related to the second vocabulary(**Features of the sculptural structure**): The structure shows a clear match between the relationship of the structural elements to the expressive form of expression (shown in the first and third elected project more clearly than the second and fourth elected project), and the structural system reflects a systemic structure that integrates contextual flexibility to reflect a flexible reaction to the living expression inspired by nature The second structure reflects the structure of the two projects, a clear embodiment of formal emotional flexibility as a complement to the context and functional flexibility of the environment as a response to environmental changes and adaptation within them.

D- Results related to the third vocabulary (**Sources of sculptural structures**) The

first three projects reflect a metaphor for the nature of the area. Structure of the ant house in the first project and the dynamics that give a sculptural expression in the fourth project

E- Results related to the fourth vocabulary (**Dimensions of the structure of the sculptural structure**) the embodiment of the contextual dimension is evident in the first three projects in structural expression. Context differentiation is also evident by the nature of attachment to structural elements, the disintegration of one another, structural confusion (as in the first and third elected project), and sometimes the abstract expression of structural organization (as in the second and fourth elected project). The technological dimension at the level of design, construction and materials that acquire the structure reflects a flexible emotional nature, to incorporate all of the above to embody creativity as a dimension to generate sculptural structures through the application of structural mechanics illustrated by curved lines and repetitions of elements and the sudden disintegration of the formal structure of the structure that emerges from the structure of classical frameworks. Project II and IV over I and II)

F- Results related to the fifth vocabulary(**Mechanisms of Generating a Craft Structure**) The literal generation of the constructor structure differs from one project to another in order to acquire the sculptural nature with its different structure, such as the first and four project, solubility, smoothness and structural flexibility, as in the second and third project Which gives the integration of structural content, context, and the nature from which it is borrowed and the exogenous origin of the structural expression.



## XI CONCLUSION

- Sculpture architecture is one of the forms of evolutionary architecture that achieves formal generation in parallel with scientific research to produce models that respond to environmental changes, adapt to the context and respond to external influences with reactions of actions supported by the formal body structure.
- Sculptural structures are hierarchical structures that combine more than one constructor system in order to acquire the unusual formality and perform its construction function in the desired manner.
- Dynamic structures are one of the forms of sculptural architecture as they achieve various formative expressions and give structural alternatives that are designed to respond to the environment or to resist external influences in a flexible manner
- The hybrid structure is one of the most prominent structures of the sculptural structure, which consists of points of structural values of the structural net, which earns the sculptural form and each point on which a part of the structural load is built, which is at its main points to resist the external influences flexibly.
- The hybrid structure gives forms that are wrapped and of a flexible formality, which are related to the context. They are similar to the natural structures and are characterized by their distinct grace as being outside the classics of the structural design.
- Structural art embodies the most descriptive expressions of structural sculpture that produce a flexible structure that is formal and flexible in terms of functionalism
- The tradition of the mechanics and the survival mechanism of living beings and their structural reversal the structure acquires a formative expression that resembles a grant and a flexible structural performance.
- Distraction One of the effects of structural sculpture and its impact on symbolic symbols as

one of the methods of creating the visual surprise obtained by the diversity of the source and reference to the sculptured structural embodiment and the multiplicity of details and parts.

- The sculptural structure is a synthesis based on contextual metaphors of the structural body of organisms as a form and causality, which is the response of the structural acts to any effect, in addition to the flexible formal nature supporting the exit of the building into the frames of the natural.
- The sculpted structure achieves the visual appeal of the aesthetic cipher relating to the context.
- The total components of the sculptural structure contribute to the attribution of the visual and reflective dynamic of the nature of a formalized reaction to the context.
- The pseudo-grammatical expression of a formal organic formality may be a role in the damaged function of the structure with environmental influences, making it close to the natural functionalism of nature from which it was borrowed
- Structural Dynamic Flexibility The structural tension of the sculptural structures responding to the modality reflects periodically, non-cyclically or randomly depending on the nature of the environmental impact and the degree of design of the structure to respond to it, which makes the structure designed in a formality that is sometimes rubbery.
- The sculptural structures come in line with the context or are characterized within it by the structural lines that form the general structure of the building, most of which are contextual by the mechanisms of structural generation make them distinctive within the context to varying degrees.

- The literal generation of the original structure differs from one project to the other in order to acquire the sculptural nature in its different form, such as the melodic repetition of the structural elements and the sudden jump in order of the structural elements to create an incarnated structure, entering the literal and morphological character of the structure as visual impression and emotional flexibility that makes the structure responsive to environmental changes.

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