

Parametric concept and its applications in interior design and furniture

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Abstract

The concept of parametric design has many meanings, there are those who knew him as a border design, modeling design or standard design, which can be defined as "variable design", that the parametric design based on geometric foundations and concepts of mathematical logic inspired by nature, he also introduced a modern malleable and flexible tool enabled the designer to deal with the models, particularly with complex structure that it was impossible to realize its previously and track its structural.

Parametric design, which now relies on computer software used for engineering, allows for adjustments in any part of the design that automatically appear in the rest of the parts, a brief time and effort.

A search will be recognized on the basics of parametric design features and its importance as well as its applications in interior design and furniture through all activities such as residential, administrative and commercial.

The research aims

Access the concept of interior design parametric through its applications and its impact in interior design and furniture, taking into account its disadvantages and to benefit from its advantages available from the reality of the questionnaire.

The research problem

Try to access a specific concept of interior design and parametric determine the extent of the importance of its utilization and applications in interior design and furniture processors.

Research methodology:

Find descriptive analytical method as well as methods for the use of the curriculum Questionnaire polled by specialists and access to their knowledge and their knowledge of the concept and delivery of its advantages and disadvantages through the questionnaire.

Some parametric design characteristics:

1. Has the ability to deal with the models and to understand the structural regulations, especially with complex structure.
2. Parametric design allows for adjustments in any part of the design parts that automatically appear in the rest of the parts, a brief time and effort.
3. Has great variety in texture and raw materials, movement and flow



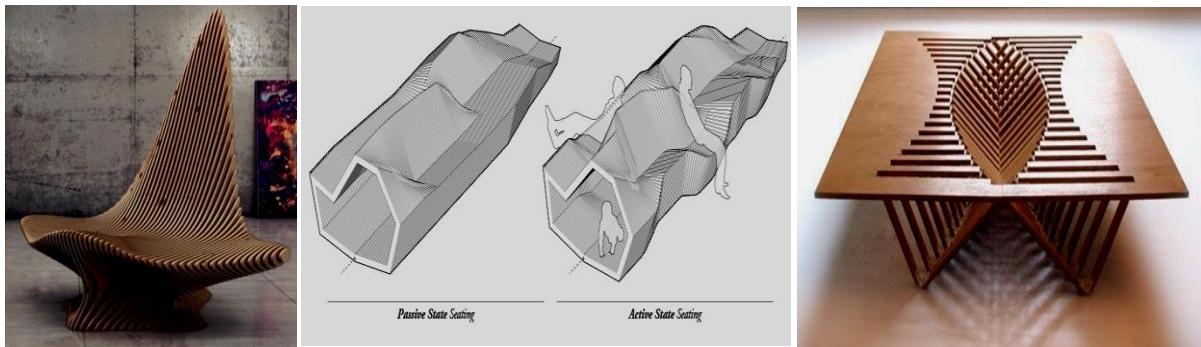
Parametric applications in (Parks , coverage and pavilions):



Parametric applications in interiors and coatings:



Parametric applications in furniture design:



Search has questionnaire on a sample of architects and interior designers (specialists in the field of design) is composed of 50 individual so as to reach to the extent of their knowledge and their impressions of parametric concept as a new concept in line with modern trends on the highly complex designs and closest to the membership to employ these concepts in an impressive extremely designs in complexity adapted to now.

Some of the positives of parametric design in interior design through questionnaire;

- 1- Possibility of achieving diversity with harmony and rhythm using the unit, making it is applied in an integrated standards design.
- 2- Possibility of adding a fourth dimension (movement) by controlling the configuration.
- 3- The possibility of an amendment to the part of the design and then apply automatically to the rest of the design.

Some cons of parametric design in interior design questionnaire:

- 1- Non- turnout lot of designers largely because of the exit of the change and the need for training.
- 2- Parametric design compatible with modern designs, while not compatible only in a very narrow range with the old models and popular traditions.
- 3- Needs to highly skilled in the use of designated programs.

Through the questionnaire and by seeing specialists and the agreement between the most of respondents was reached to the following results

Search results:

- 1- Parametric design achieves smooth flow and quality in the conduct of the design process when conducting change on the part of the design is applied automatically to the rest of the .
- 2- Parametric design succeeded in the design of many of the activities, such as administrative and commercial places and tourist facilities also showed high success in use in foreign coverage, exhibitions and garden furniture.
- 3- parametric design expresses the technical evolution of the shape and style of the design in accordance with the principle of sustainability through the principle of re-use.

Recommendations:

- 1- The need for designers to use new concepts through the use of new 3D programs
Like Maya, [Rhinoceros 3D](#) and [Grasshopper 3D](#).
- 2- The need to apply modern design programs as an integral part of the educational system in specialized colleges such as engineering and applied arts to keep students pace with modern technology and the requirements of the labor market .

Conclusion :

Parametric concept is a new technique developed in the design using computer programs through the Maya and, [Rhinoceros 3D](#) and [Grasshopper 3D](#). Programs, IT is a new model and an important appear

after modernity. It takes care of finding a suitable design for the various areas that was taking them, ranging from architecture, interior design, and through furniture and more accurate treatments details which features distinctive characteristics through its dependence on units (Proto type) to make it flexible and diverse, and that any amendment to the part of the design is adjusted to the rest of the whole design automatically which saves time and effort and it Handles smoothly with complex blocks and systems of building to employ these concepts in an impressive extremely designs in complexity adapted to The present time, as characterized by the possibility of getting him on the dynamic design as well as sustainable design through the principle of re-employment and the use of raw materials, which it is almost an integrated design.

Some references:

- 1- Wang, J., Li, J., & Chen, X.. *Parametric design based on building information modeling for sustainable buildings*, presented at the IEEE 2010 International Conference on Challenges in Environmental Science and Computer Engineering, 236-239.
 - 2- <http://www.laurenceking.com/en/parametric-design-for-architecture>
 - 3- <http://www.parametricdesign.net>.
 - 4- http://www.proz.com/kudoz/english_to_arabic/education_pedagogy/1501300-nonparametric_item_response_theory_irt.html.
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Questionnaire

A questionnaire on a sample of architects and interior designers (specialists in the field of the questionnaire) is made up of 50 people so as to reach to the extent of their knowledge and their impressions of parametric as a new concept in line with modern trends on the highly complex designs to employ these concepts in an impressive extremely designs in complexity adapted to the era.

A) What is your knowledge of the concept parametric design?

1. I have good information.
2. I have simple information.
3. I do not have any information about this concept.

B) Through the following designs of Parametric Architecture What is your impression of the design?

1–Good.

2– Acceptable.

3– Unacceptable.



C)By the following photos Can you as a designer adopt the concept of parametric and then use it in designs?

1. Yes.
- 2 – No.
3. Maybe yes after we can identify the concept and its mechanisms.



D) through the above and your point of view what are the pros and cons of the parametric design?

1. Pros:

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1. Cons:

.....

E) by the following photos, Is parametric furniture design added aesthetic and functional values different from the usual design? If yes please explain what they are.

1-Yes



2- No



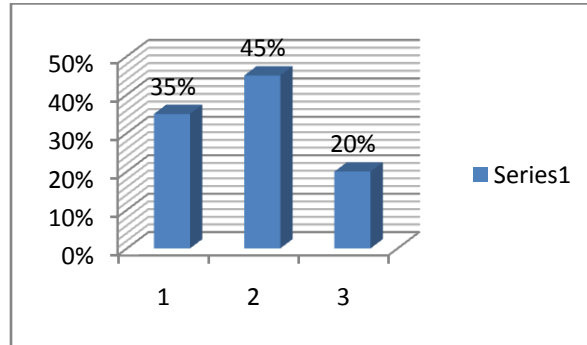
F) Through simple information by questionnaire, have you been adding information about the concept of parametric? And to what extent?

1-Yes

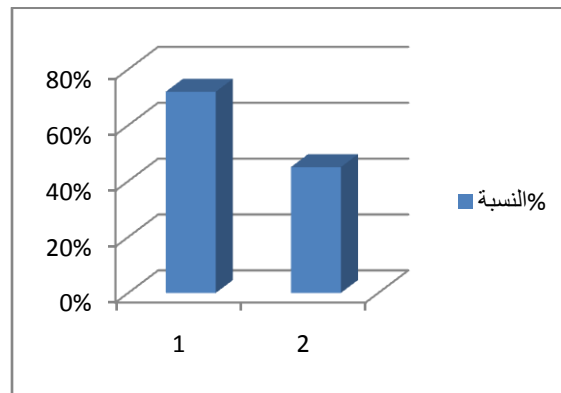
2- No

The results of the questionnaire

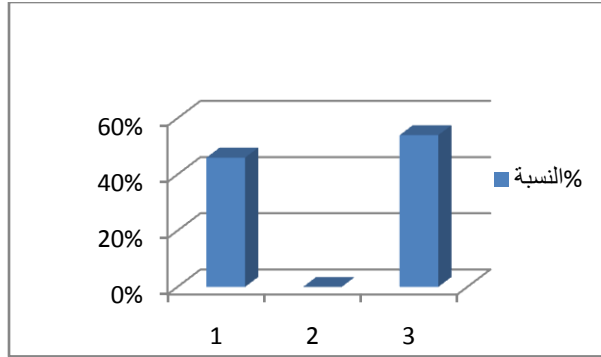
(A) Through the proposed sample shows that 35% of respondents have good information on the concept of parametric, while 45% of the sample has simple information, while 20% of respondents did not have any information about this concept.



(B) Through the sample shows that 72% of the sample has a good impression of parametric design, while 28% of respondents had the acceptable impression, while 0% had an unacceptable impression.

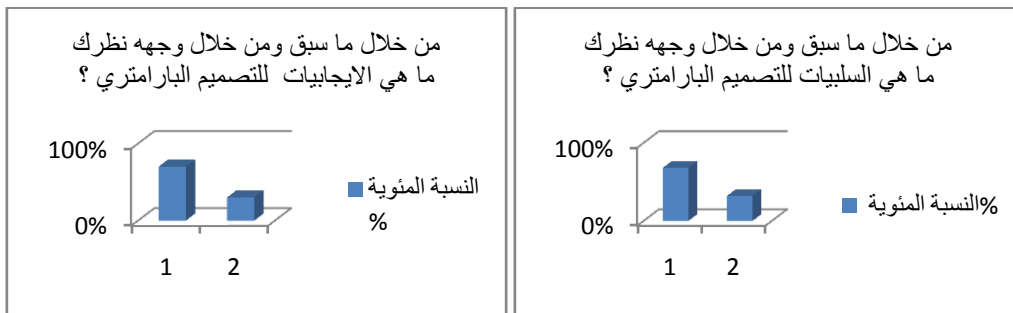


(C) Through the proposed sample shows that 46% of respondents could adopt the concept of parametric design in his designs, and 0% of the sample refused to embrace the concept in his designs, while 54% of respondents postponed until identifying the mechanisms used.

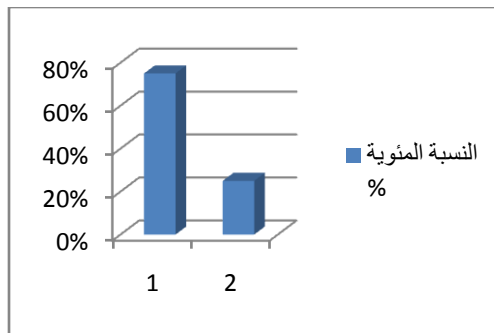


(C) Through the proposed sample shows that 70% of the sample he could identify specific positives for the use of parametric design while 30% of respondents did not identify the positives of the lack of full knowledge of the concept and its determinants and its problems.

-As that 68% of the sample he could identify specific disadvantages to the use of parametric design while 32% of respondents did not specify the cons for not full knowledge of the concept.

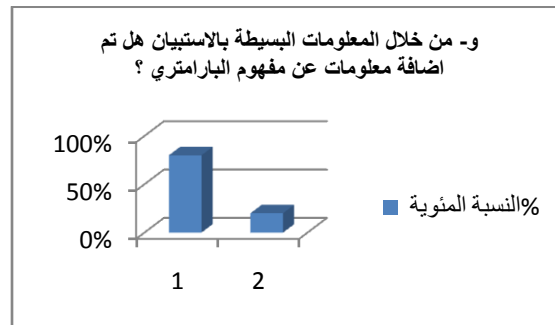


(C) Through the proposed sample shows that 75% of respondents support to furniture parametric gave aesthetic and functional values differ from the ordinary furniture, while 25% of respondents did not support it.



(D) Through the proposed sample shows that 80% of respondents supported the questionnaire added to them information about the concept of parametric and can survey confirms that some

of his information about the concept, while 20% of respondents have not added the questionnaire information.



Through the questionnaire it has been inferred group pros and cons by professionals as follows:

Parametric design features:

- 1- The concept of parametric showed a flexible solutions of design problems in spaces in different environments.
- 2- The possibility of the development of blocks and shapes using simple units.
- 3- Giving intimation of movement and the breadth of the place as a result of repetition and extension.
- 4- The design is characterized by flexibility and cruise and achieve aesthetic values.
- 5- Harmonize of parametric design with the desired function with maintaining the flow and flexibility.
- 6- Ease of implementation and manufacturing due to the use of units iterative (Proto type).
- 7- Possibility of achieving diversity, harmony and rhythm using the unit, making it the applied design standards.
- 8- Possibility of adding a fourth dimension (movement) by controlling the configuration.
- 9- Integration between the various elements of the project to achieve the unit configuration.
- 10- Reduce production time as a result of (unit repeatability) is the basis of the configuration, helping to increase productivity.

- 11- In the long run through the spread of programs using the concept of the scope and wide can to go down the design and production cost.
- 12- The possibility of development and change to match the standards continuously.
- 13- The possibility of an amendment to the part of the design and then apply automatically to the rest of the design.
- 14- Possibility of controlling the space and lighting and ventilation by controlling the number of closed and empty units.
- 15- The possibility of using parametric design as a kind of entertainment of old-affected areas of the re-finished to give it a new addition to the functional and color values.
- 16- Harmony of parametric design with the use of the principle of consensus through recycling and reuse principle.

Parametric design cons:

- 1- Needs to highly skilled in the use of designated programs.
- 2- Not fit for all functional purposes, Using parametric design suggests movement and activity in place, which may not suit some activities like sleep and hospitalization where it may not achieve visual comfort and calm.
- 3- Needs to the high cost of implementation due to the use of automated cutting and the use of many raw materials.
- 4- The need for a skilled labor trained to assemble the units very nicely and speed in performance.
- 5- Parametric design in line with modern designs
- 6- Difficulty of dealing with the relevant programs by those who do not have the background and experience in the areas of design by compute
- 7- Rely on software design alone loses designer manual innovative capacity.

Conclusion:

- Parametric concept is a new technique developed in the design using computer programs through the Maya, Rhinoceros 3D and Grasshopper 3D. and other programs, a new model and an important afternoon after modernity. It takes care of finding a suitable design for the various areas that was taking them, ranging from architecture, interior design, and through furniture and more accurate treatments details which features distinctive characteristics through its dependence on units Proto type to make it flexible and diverse, and that any amendment to the part of the design is adjusted to the rest of the design the whole automatically which saves time and effort and is unique to his handling of the smooth with complex blocks and systems of building very complex to employ these concepts in an impressive extremely designs in complexity adapted to the era, as characterized by the possibility of getting him on the dynamic design as well as sustainable design through the principle of re-employment and the use of raw materials, which it is almost an integrated design....
- From the above it can be defined the concept of **parametric interior design**

It is the technical new novel in interior design programs using a computer through the Maya, Rhinoceros 3D and Grasshopper 3D. and relies on the use of design repeating units (Proto type), which takes care of finding a suitable design for the various fields of interior design and through furniture and more accurate internal processors details to produce impressive extremely designs in complexity adapted to the times and saving time and effort, as is characterized by the possibility of getting him on the dynamic design as well as sustainable design.