

The Effect of Computational and Digital Programming on interior design and Architecture Technology's Development

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Abstract:

The Technological progress that began with the industrial revolution during the 18th century was “the modern design epoch (1890:1850)”, that has had a direct impact on schools of architectural design, down to the contemporary digital age of the 1980 to the present.

Computational/ Digital Design is an application of computational strategies for the design process. While the designer relies on intuition and considerable experience in solving design problems, so digital design aims to reinforce that the process by encoding the designer's decisions using the language of computing. So The Digital design is a far-reaching term that starts from a design creation process to a design automation process, so using a suitable visual programming tool serves as a common line between design and execution, given the ability to simulate a design and performance by providing a means for evaluating a design to similar standards for a design environment.

As the trend towards complex buildings increased, the form creation strategy was considered to be one of the most important strategies for finding suitable solutions for the design of these structures, so the construction systems had to be developed based on analogue instruments for simulating the mono constant influence of gravity. These tools then allowed the manipulation of parameter equations to develop these strategies for models influenced by several different and heterogeneous variables such as geometry, dynamic forces, environment and social conditions.

So the Research Problem is: deducing the effect of computing and digital programming on the design process and implementation technology. This role did not stop with the design process, but continued with the production, manufacturing, and digital implementation process, but eventually came to merge the design, production, manufacturing, and implementation process.

Key words:

(Digital Programming - Simulation – Design – Applied Forces).

Introduction:

As the trend towards complex buildings increased, the form creation strategy was regarded as one of the most important strategies for finding suitable solutions for the design of these structures, the construction systems had to be developed based on analogue instruments for simulating the mono constant influence of gravity. These tools then allowed the manipulation of parameters to develop these strategies to create models influenced by several different and heterogeneous variables such as geometry, dynamics, environment and social requirements.

The concept of improving results and achieving optimization was introduced to the architecture world as a tool for achieving better performance with the highest efficiency and lowest possible cost by studying the performance of buildings through a variety of characteristics (structural factors, acoustics, lighting, energy, Spaces, etc.). The genetic algorithm addressed some of the architectural problems and building performance standards by reviewing a number of suggested solutions for selecting the best results using the parameters to be achieved to solve, improve or research the problems. Design and structural improvements to buildings were used to reduce overall weight and load, thereby reducing the cost of building materials. You can add other parameters like manufacturing methods and lots of other parameters. There should be a distinction between shapes while maintaining consistency of formations. This distinction can also be intelligent. It can be adapted to achieve certain determinants to be followed, such as project mass formation to avoid sunlight, leading to distinctions in masses, flats, and lines. When confronted with the computational design term, we have a number of related terms, such as a Parametric design, Algorithmic design, and a Generative design.

The Problem of the Research:

- The extent to which computerization and digital programming affect the design process and implementation technology.
- How do we blend the design, production, manufacturing, and implementation processes together?

The importance of the research:

- To raise awareness of the importance of computerization and digital programming in the evolution of design and implementation technology.
- The importance of understanding the characteristics and rules of forms and curves so as to facilitate digital representations in the design and operational process.

Research objectives:

- To raise awareness of the importance of using and utilizing digital programming in the development of materials and technology to keep pace with developments in design and global implementation.
- Identification of some materials and interactive systems used in interior design and architecture field.

Some Samples of the search:

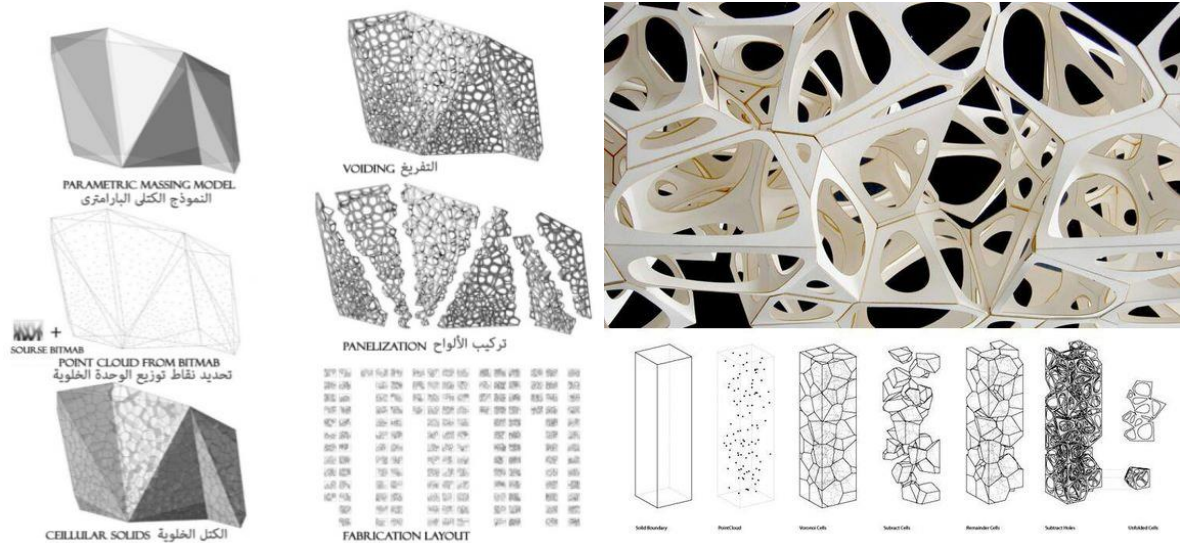


Figure (1) the steps to assemble the panels through permutations and matches using architectural Programming and giving alternatives to the designer.



Phase of implementation of the guggenheim museum in Spain using steel. Figure (2)



Figure (3) evolution in the use of reinforced concrete in architecture at the holocaust memorial in Ottawa, Canada, and the conflynns lake park.

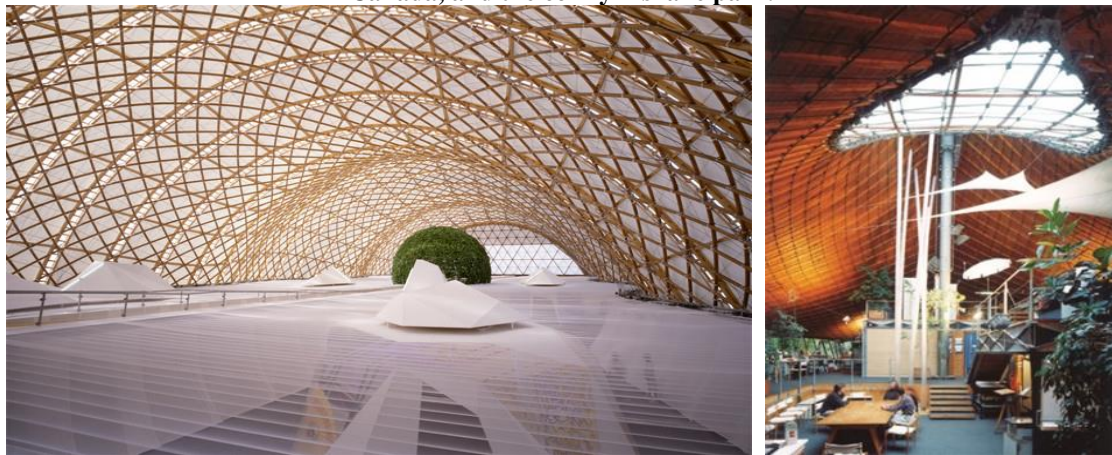


Figure (4) The pavilion of Japan at the Hannover fair in Germany was designed by ligero pan as a cardboard port.

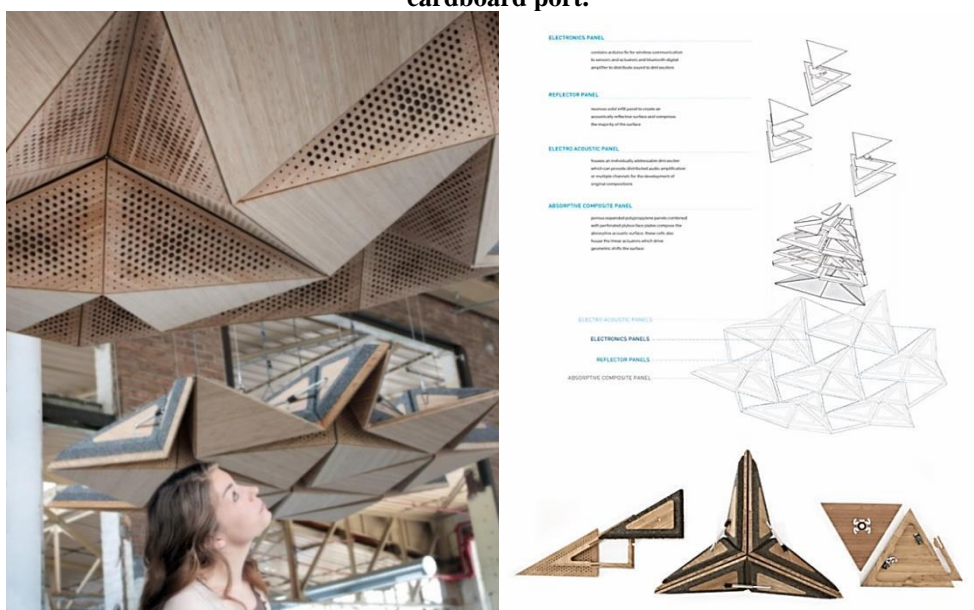


Figure (5) The origami perforated structure of Mosaic covered Resonant chamber rvtr rooms and optimized panel arrangement.

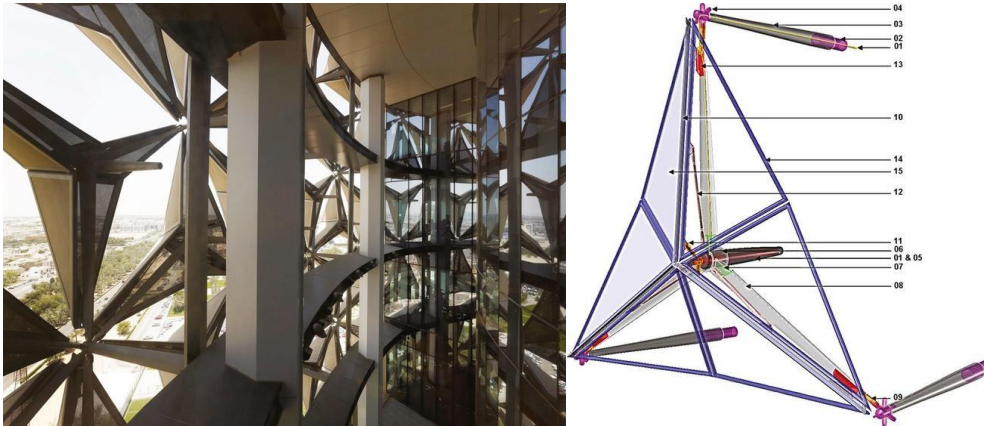


Figure (6) The floppy anti-flare interface at a distance from the outside of the building was fitted to a separate frame.

Search Results:

- 1- Technology and digital programming significantly affected the design process in architecture and interior design from the outset to the implementation phase.
- 2- Computational and digital programming play an important role in helping the architect and the interior to produce the final form and speed of implementation that limits the creativity of the designer.
- 3- A review of some of the materials and systems used in their design and implementation for digital programming and their applicability in architectural and internal design, to name a few.

Research Recommendations:

This paper recommends the need and importance of perfecting digital programming programs such as (3ds Max- Maya- Rhino – Dynamo- Grasshopper- Marionette- Flux), and using them locally to produce innovative and technologically advanced digital designs in interior design and architecture.

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