Technological development and its role in the development of landscape

Prof. Mohamed Mohamed Ali Shahen
Professor, Department of Sculpture and Architectural formation - Faculty of Applied Art- Helwan University
mohamed_shahen01@a-arts.helwan.edu.eg
Dr. Tarek Mostafa Sobhy
Teacher, Department of Architecture - Faculty of Engineering- Helwan University
tsobhy@oekoplan.com
Assist. Lect. Omnia Salah El Den Abd El Rahman Attia
Assestant teacher, Department of Sculpture and Architectural formation - Faculty of Applied Arts Helwan University
omnia_attia@a-arts.helwan.edu.eg
Researcher. Mohamed Ali Ibrahim El Belkasy
Master's Researcher, Department of Sculpture and Architectural formation - Faculty of Applied Arts- Helwan University
mohamed_Ali@a-arts.helwan.edu.eg

Abstract

Global reality in recent decades has witnessed more technological development in several fields in an integrated manner, and landscaping field was not far from this development in the various stages of design and implementation .

Starting with raising the project details and dimensions, laser imaging and 3D Scanner techniques came to monitor the smallest details of the topography of the earth, or those programs for drawing the contour of the earth and its levels using satellites, integrated with them are ladybug, honey blowguns programs inside the Grasshopper blowgun (which work to link the structural details of the site to factors such as the different climatic conditions, and monitoring their impact on it, such as: (rain - wind - sun directions - humidity - temperature) throughout the

year. In the design stage, parametric design techniques come to help develop the design by making design motifs using natural logarithms, in the form of equations, as a source of inspiration, away from colors and external decorations only, but extended to the structural composition of living organisms, or monitoring the formation of groups or swarms, and other techniques that measure the suitability of design to environmental factors that have also been integrated with it.

The implementation phase has also received a large share of technological development as information simulation techniques such as the construction, which provided the designer with many information related to the implementation as information: (Ergonomics - plants and their needs (water, the spaces needed for each plant, the lighting and the extent of its diversity and use) and other information that was difficult for the designer to collect, and itbhas an important role in the quality of the design.

DOI: 10.21608/jsos.2021.104810.1106

key words:

BIM Design ,Parametric Design ,Landscape Design, Nature Inspiration, Fabrication Digital , CNC .

Introduction :

Technology in its abstract sense is a set of the means and methods available in the present era. To achieve certain purposes in the various branches of scientific life; To provide everything necessary for human living and well-being. The field of landscaping - which is the art specialized in designing and implementing gardens – has a great luck in the field of technological development; This is due to its importance from various environmental and aesthetic aspects, as well as its great connection to the field of architecture, emphasizing its lines and linking them to the surrounding space .

Therefore, the research came to monitor those multiple technological aspects in the field of garden design; To serve as a cognitive entrance for landscape designers to inspire new design vocabulary that is able to simulate aesthetic vocabularies different from the usual ones in terms of design or implementation .

The research problem:

Study the impact of technological development on the development of the landscape field.

Importance of the research :

The importance of the research is due to taking advantage of the impact of technological development on the field of landscape in designing modern gardens that correspond to the direction of the Egyptian state to establish new cities with a modern architectural character .

The aim of the research:

To shed light on many new technological aspects in the field of garden design and their implementation; To create awareness among workers in this field; To develop the local situation in the design and implementation of gardens, as well as take advantage of some parametric design patterns in creating a design reality different from previous templates in this field, through designs characterized by validity and development in the executive aspect as well .

The research hypothesis :

Modern technology in the fields of design and implementation has a significant impact on changing the local reality in the design and implementation of landscaping to keep pace with its global counterpart .

Research Methodology :

The research follows the descriptive analytical method.

Research results :

Through the study, the importance of modern technology in developing the field of garden design and coordination in its various aspects was confirmed. Implementation, and the research results were as follows :

- Design and Inspiration from nature using technology have enriched the aesthetic diversity of garden design by devising new motifs using Parametric Design.
- The use of Grasshopper's techniques plays an important role in mimicking nature to create designs more adapted to it .
- BIM Design has an important role in organizing various design information .
- The impact of architectural development on the development of the field of landscaping
- Technological development has caused the emergence of many complex designs of light .
- The use of CNC machines has the advantage of using many materials in an easy way .

Conclusion :

The technological development taking place in the global reality has an impact on the design and implementation of landscaping, and the research monitors the various aspects of technological development; From observing information that helps the designer to issue the appropriate design, to creating motifs using the barometric design inspired by the aesthetics of nature, and ending with the development in the field of digital manufacturing, which has the ability to implement the most difficult and complex designs with great accuracy avoiding any possibility of error .

English references:

1. **Mackey, Carl Mitcham&Robert. 1983.** *Philosophy and Technology.* new york : Macmillan publishing, 1983.

Websites:

2. **PETRY, JOHN. 2015.** Mountain Bike Trail Building Tools Guide. *oldglorymtb.* [Online]
3. 7 Axis YA | Yamaha Robotics. [Online] https://cheaper.discountshopping2021.ru/content?c=7%20axis%20robot&id=2.
4. **architect, glory. 2019.** UNIQUE SEATING IDEAS . *glory architect.* [Online] 2 21, 2019. https://gloryarchitecture.blogspot.com/2019/02/blog-post_21.html.
5. *fOUNDATIONS THE GRASSHOPPER PRIMER THIRD EDITION.*
6. grasshopper. [Online] https://www.grasshopper3d.com/page/download-1.
7. **kit, Press. 2019.** MIRO GRAVITATIONAL PAVILION. *lignocam.com.* [Online] 12 16, 2019. https://lignocam.com/miro-gravitational-pavilion/?lang=en.
8. land fx. .*landfx.com.* [Online] https://www.landfx.com/.
9. Spiral Walkway. *reddit.* [Online] https://www.reddit.com/r/oddlysatisfying/comments/9o63nz/spiral_walkway/.

10. **Vianney, Loing. 2019.** Stéréotomie et vision artificielle pour la construction robotisée de structures maçonnées complexes. [Online] 1 1, 2019. https://www.researchgate.net/publication/337655296_Stereotomie_et_vision_artificielle_pour_la_construction_robotisee_de_structures_maconnees_complexes.
11. 3 19, 2015. https://oldglorymtb.com/mountain-bike-trail-building-tools-guide/.