Digital Mophogenesis Design Using on Evolution Algorithm

Cheol-Jin KWON, M. Arch Course, Graduate School of Techno Design, Kook min University, Seoul Korea
Yong-Seong KIM, Ph.D, Prof, Graduate School of Techno Design, Kook min University, Seoul Korea

Abstract : Digital media utilization can provide new methodology of space composition and form generation which was not possible in modern age architectural designer. The study is intended to look into the formation method using new paradigms, digital media and analyze the unlimited possibility to interpret the process itself and the principles of forming the evolution algorithm with a more complex logic of formation than any simplified formation logic, to create a new formation design.

Key Word : Evolution Algorithm, Digital Media, Mophogenesis

1. Introduction

As a result of increased ideological architecture and the loss of architects’ power of expression in postwar days, they encountered a uniform, dreary and monotonous environment. The paradigm of modern architecture has showed the unquestionable limits, in which architects required a new consciousness and a new architectural paradigm. In late 20th century and since 1990’s, western architectural designs has been converted to the reliance on scientific technology and formative systemization as new natural sciences, philosophy and digital media were rapidly spread. Especially, they went into formation and new methods as emphasizing on the recognition on the organism characteristics of the nature.

This study is intended to look into the formation method using new paradigms, digital media and analyze the unlimited possibility to interpret the process itself and the principles of forming the evolution algorithm with a more complex logic of formation than any simplified formation logic, creating a new formation design, which would be by adding a new component. The study focused on analyzing cases of architects who worked on architecture with digital method as a creative motive and were willing to introduce digital technologies as constructing the unique architecture in cyberspace.

Best of all, it showed the possibility that digital media influence on modern architecture through considering the media concepts and analyzed how they have been utilized in architecture, on which I have analyzed the process of creating the formation based on evolution algorithm among the formation methods using digital media, consequently how the algorithm is related to architecture.

2. The Theoretical Consideration of Digital Media

2.1 The Digital Media Concept

Appearing as computer technology, semiconductor technology and IT were rapidly developed in the late 20th century, the digital media are based on digital technology meaning an innovative development as information is processed, transmitted and stored in a new physical environment comprising a number of combinations of 0 and 1, so called, the digital signal system. Digital media relaxed the limitation of time and space and opened new ways to understand things with various opportunities to acquire information. The media also showed a truth that they are not fixed but varies themselves continuously as the development of cultures and technologies.

In addition, it shows unlimited possibility for the architect’s intent to express, which seemed to be restricted in modern architecture since the active utilization of digital media in architectural formation methods.

2.2 The Features of Digital Media and How to Utilize Them in Architectural Design

Digital media features accessibility, temporariness, decentralization and virtual reality, and how to utilize them architecturally has been shown variously in applying the features of digital media for architectural designs. In the meantime, the digital media brought out innovative changes in architecture design and contents and created a new understanding and experience for design activities and its education as a new information system. The paragraph is to search for the formation methods using the current digital media.

2.3 Formation Method Utilizing Digital Media

Analyze and arrange to character of formation creation methods utilizing digital media is shows to the table II - 1 in the design working process of the architectural designer.
3.2 The Process of the Evolution Algorithm

Each cell begins developing from a unit cell with hereditary information handed down from the ancestor. And each cell contains characteristic genes and is, based on its new individual cells with same gene information, gene code scripts and environmental factors, divided and reproduced repetitively. They then continue to evolve by the development process of a respective family member consisting three parts; the growth of protoplasm, materialism and gene search. Consequently, a model is repeated by a certain main computer and unlimitedly developed by allowing it for itself.

4. Conclusion

This study is intended to look into the unquestionable limits that showed the paradigm of modern architecture and look into the process of forming formation based on the evolution algorithm among the formation method using the digital media.

1) The mass production of building in modern architecture and the loss for the architect's intent to express, which showed the unlimited possibility for the architect's intent to express since the active utilization of digital media.

2) We known that new individual cells with gene information through the process of forming formation on development algorithm are evolves by gene code scripts and environmental factors. They then show the possibility of unlimited formation in adaptable model at all environment.

Hereafter, the study is then, using by how to way about gene code scripts that showed through the process of forming formation in development algorithm and environmental factor, Further study needs about how to reaction and development when applying to the data of real environmental factor.

5. References

1. Peter Collins / Changing Ideals in Modern Architecture/2001 /Tae Rim Cultural History
2. Peter Blake/ Why modern architecture is failure? / 1999 /Gi Mon Dang

<table>
<thead>
<tr>
<th>Character of Design</th>
<th>content</th>
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</thead>
<tbody>
<tr>
<td>ALGORITHM APPROACH</td>
<td>The formation organization by design algorithm completes by change but has been used for a component to stimulate the creative inspiration of an architect.</td>
</tr>
<tr>
<td>LIQUEFACTION</td>
<td>It refers to the disassembly or dissolution of a gas or solid.</td>
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<tr>
<td>ORGANISM CONCEPT</td>
<td>It describes the concept as an organism is featured by its intrinsic patterns in it.</td>
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<tr>
<td>HYPERSURFACE</td>
<td>In cyber architecture, its surface is not fixed permanently but continuously varies, expressing the abstractness of spatial components.</td>
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<tr>
<td>TOPOLOGICAL CONCEPT</td>
<td>By continuously transforming locations of figures and the connection methods through proving the topological characteristics of figures, it is used for seeing the discontinuous properties or examining the transformation.</td>
</tr>
<tr>
<td>FORMATIVE CHANGE CONCEPT</td>
<td>It’s the concept to seek for shaping but continuously follow the changing process of a shape, not continuous snap-shots.</td>
</tr>
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</table>

Table II-2 character of formation creation methods utilizing digital media

3. Form Creation Methodology Using Evolution Algorithm

The chapter is to analyze the significance, features and the process to create a form of evolution algorithm, which is used for a form creation method and to see how the evolution algorithm relates with architectural design.

3.1 The Significance and Features of the Evolution Algorithm

As one of exploration methods based on the principle of evolution in the biological world, the fundamental is attributable to the natural adaptation system, which, in other words, means that organisms evolve by generations to adapt themselves in a given environment. The evolution algorithm features that the searching space has the continuity of a problem, a limit of correlating with knowledge, unlimited possibility to interpret the process and a more complex logic of formation than any simplified formation logic.