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Authors: Bujar Q. Bajčinovci
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Biophilia is the innately emotional affiliation of human beings to other living organisms. Biophilia, like other patterns of complex behavior, is likely to be mediated by rules of prepared and counter prepared learning. The significance of biophilia in human biology is potentially profound, even if it exists solely as weak learning rules. It is relevant to our thinking about nature, about the landscape, the arts. The biophilic design is not only the aesthetic perception, but those experiences may also be indicative of mental calmness and indirectly influence spiritually. The biophilic design focuses on human adaptations to the natural world. Featuring the natural organic structure, which transforms the perception and understanding of architectural buildings from exceptional one, into an honest and natural blend architecture, respectively, architectural biophilic design emphasizes the 'genius loci' an emotional attachment to particular settings and places.
Cover Photo. Santorini Village of Oia 2, Greece

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Biomimicry and Biophilic Design: Multiple Architectural Precepts

*Bujar Bajcinovci¹**

¹ *University of Prishtina, Faculty of Civil Engineering and Architecture, Kosovo.*

Email: bujar.bajcinovci@uni-pr.edu

Abstract:

Biophilia is the innately emotional affiliation of human beings to other living organisms. Biophilia, like other patterns of complex behavior, is likely to be mediated by rules of prepared and counter prepared learning. The significance of biophilia in human biology is potentially profound, even if it exists solely as weak learning rules. It is relevant to our thinking about nature, about the landscape, the arts. The biophilic design is not only the aesthetic perception, those experiences may be indicative of mental calmness and indirectly influence spiritually. Biophilic design focuses on human adaptations to the natural world. Featuring the natural organic structure, which transforms the perception and understanding of architectural buildings from exceptional one, into an honest and natural blend architecture, respectively, architectural biophilic design emphasizes the ‘genius loci’ an emotional attachment to particular surroundings and ambience.

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INTRODUCTION

“Biophilia, if it exists, and I believe it exists, is the innately emotional affiliation of human beings to other living organisms. Innate means hereditary and hence part of ultimate human nature. Biophilia, like other patterns of complex behavior, is likely to be mediated by rules of prepared and counter prepared learning” [1]. “The significance of biophilia in human biology is potentially profound, even if it exists solely as weak learning rules. It is relevant to our thinking about nature, about the landscape, the arts, and mythopoeia, and it invites us to take a new look at environmental ethic.” [1]. According to the Architect Frank Lloyd Wright, as it believed once said: “I go to nature every day for inspiration in the day’s work. I follow in building the principles which nature has used in its domain.” Therefore, these features and multiple architectural precepts are precisely the



ethics of biophilic design. Moreover, the biophilic design is not only the aesthetic perception, but also those experiences may be indicative of mental calmness and indirectly influence spiritually. Hence, implementing those principles of biomimicry and biophilic design in architecture considerably invigorate the key design concepts of the Organic Architecture, and surely these principles should be respected for all those who are interested in architectural design [2].

MATERIALS and METHODS

This paper, present the overview of the biomimicry and biophilic progressive design precepts, focusing on the framework of the contemporary architecture. The research method consists of the nature observation, and literature review. Study were investigated through literature review, technology advancements, documentations and conceptual drawings. The collected data also include implementing the principles in the art media, fractal design, composition of the urban morphology, environment, and mobility. Nowadays, a contemporary architect should understand the sustainability, environment, and space in relation to the interdependently systems of nature and human development. The concept of biomimicry and biophilic design is based largely on the demands of healthy living, and natural prosperity. Moreover, this unlimited area of creative possibilities continues to develop its multi-dimensional identity, presenting more innovative solutions in the visual architectural perception, strengthened with continuously advanced technology, firstly aimed to the increase of the quality of life and various new life style requirements [3,4]. Biomimicry studies acknowledge further nature models, and assent enthusiasm from these nature designs to work out human development. Surely biomimicry is a new perception of exploring, respecting, and valuing nature. Biomimicry in Architecture introduces a precept of shapes, volumes, and whole functional natural systems, thus, implementing the different established and complementary design rules. Therefore, the percept of biophilic progressive design should be highlighted as an architecture of evolutionary relations between nature and society. In this context, it is necessary to understand the urban development and the transdisciplinary interaction accomplished between ecology, architecture, human adaptations to the natural world.



DISCUSSION

The dynamism of contemporary cities results in changing rapidly the space and spatial conditions. This professional phenomenon creates a new momentum, a concept and a new architecture [3]. According to the Stephen Kellert, “Biophilic design is about creating good habitat for people as a biological organism in the modern buildings and constructions that advance people’s health, fitness and wellbeing. The successful application of biophilic design requires consistently adhering to a number of basic objectives or principles. These principles represent fundamental conditions for the effective practice of biophilic design” [5]. They include:

1. “Biophilic design requires repeated and sustained engagement with nature.
2. Biophilic design focuses on human adaptations to the natural world that over evolutionary time have advanced people’s health and fitness.
3. Biophilic design emphasizes an emotional attachment to particular settings and places.
4. Biophilic design promotes positive interactions between people and nature that expand our understanding of community to include both humans and nature.
5. Biophilic design encourages ecologically connected, mutual reinforcing, and integrated design solutions” [Excerpt, 5].

In recent decades, we evidently recognize a particular interest of architects in designing with biomimicry in mind, reflecting with nature, thus, providing the urbanites with the ability to appreciate certain health environments, strengthened and accomplished by the high-tech technology. Hence, as stated by Janine Benyus; “When I introduce biomimicry to architects, designers, and engineers in workshops, it feels like a remembering of something long lost. As I spread seashells and feathers and bones before them, they fall quickly under a spell, exploring life’s designs with the eyes of that child under the maple” [6].

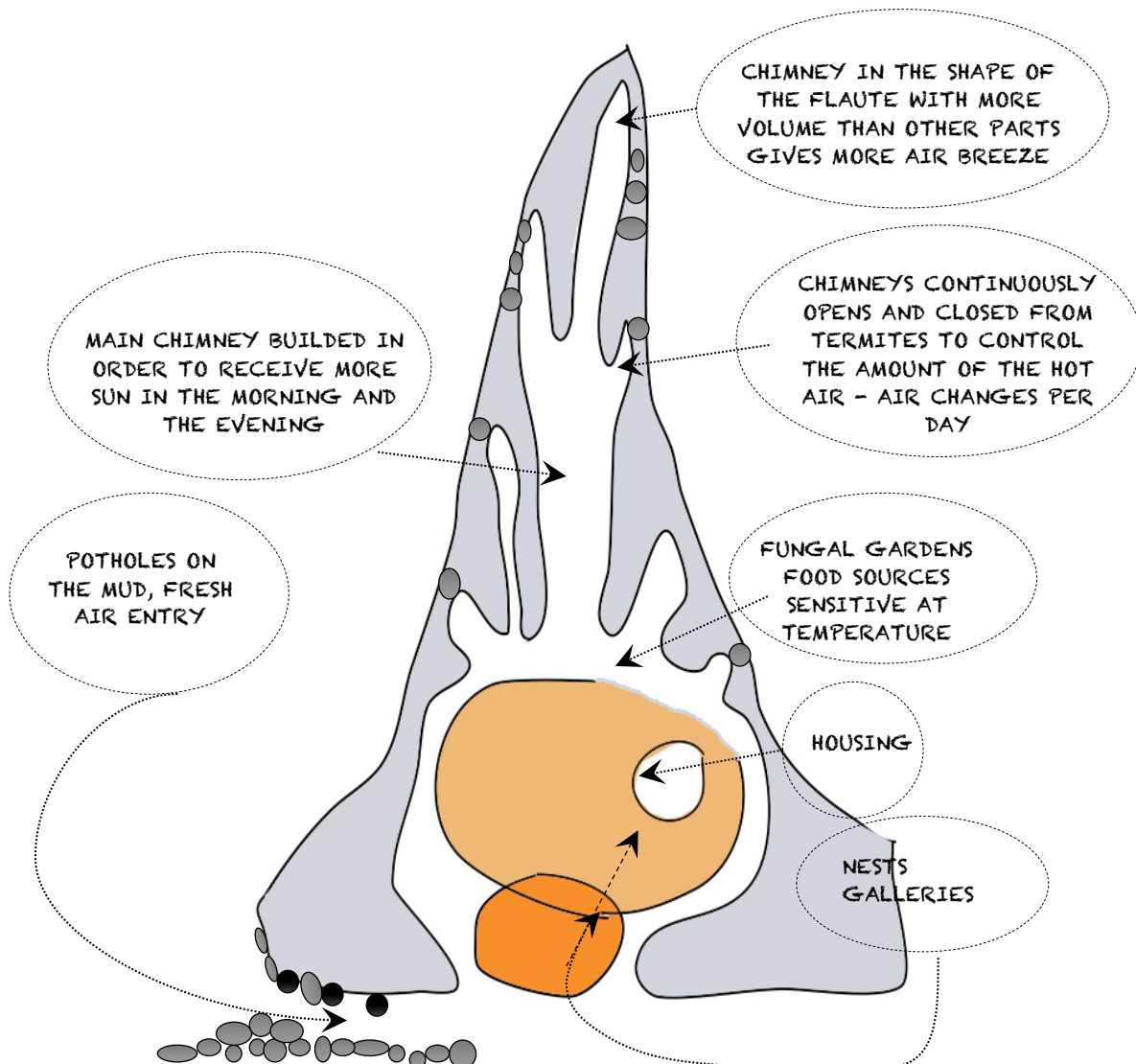


Figure 1. Biomimicry, 'super-organisms'- termite communities.

“Termite communities have co-evolved for millions of years into ‘super-organisms’... Strictly speaking a superorganism is an organism that is composed of other organisms. A superorganism is any aggregate of individual organisms that behaves like a unified organism. Members of a superorganism have highly specialized social cooperative instincts, divisions of labor, and are unable to survive away from their superorganism for very long” [7].

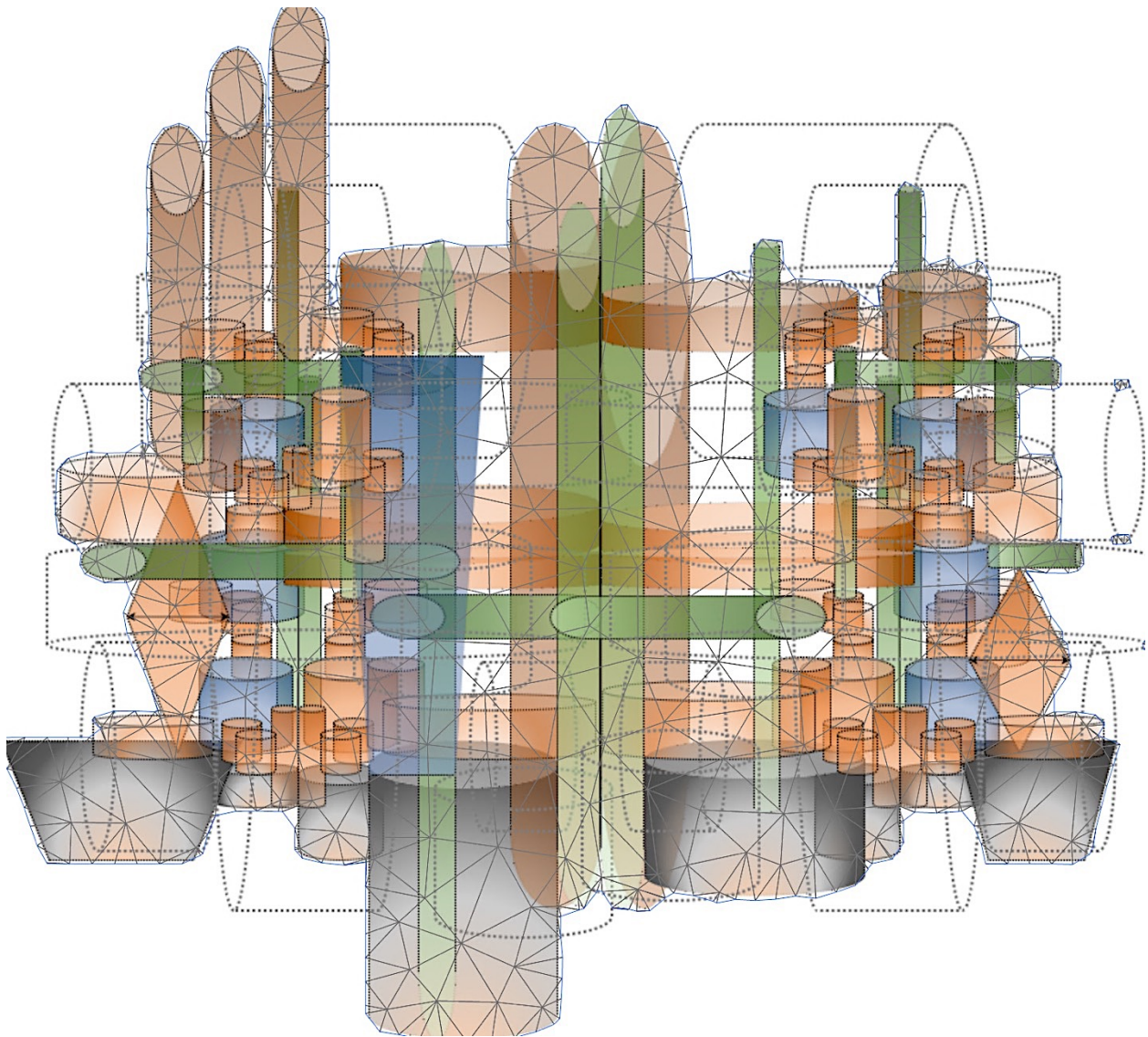


Figure 2. Computer generated Biomimicry, termite communities.

“The time and space relationship in these virtual environments emphasize the understanding of the imaginary of the ‘super-organisms’ in relation to: configurations, space, time, and interactive actions to control the system. However, imagination is a very creative and complex act, especially when used for artistic aspiration. In the understanding of nowadays architects, digital interpretation of imagination represents the framework mechanism to deny the previous traditional archetypes, in the favor of a futuristic and interactive architecture. Of course, all these contradictions in the



process of architectural creation represent an interesting challenge, and motivation to explore further” [3,8].



Figure 3. Santorini Village of Oia 2, Greece.
Source: Bruce Harlick, 2012. Flickr, Attribution 2.0 Generic (CC BY 2.0)



Figure 4. Ulcinj, Montenegro.

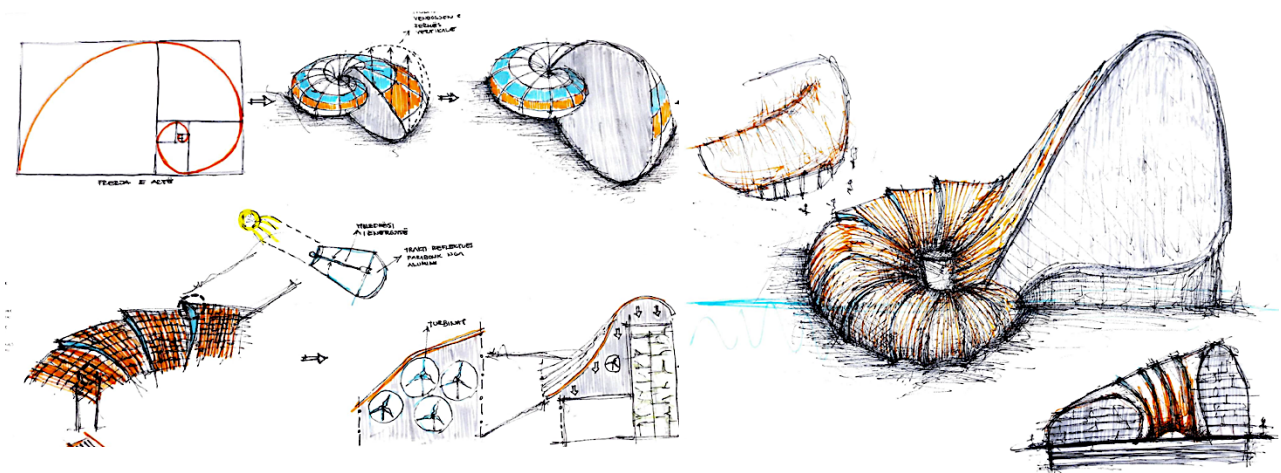


Figure 5. Vertical Farm, Biomimicry Analysis.
Students: Nita Hasimja and Nita Llonçari, 2018. Course: Architectural Design 5.
University of Prishtina, Department of Architecture. Kosovo

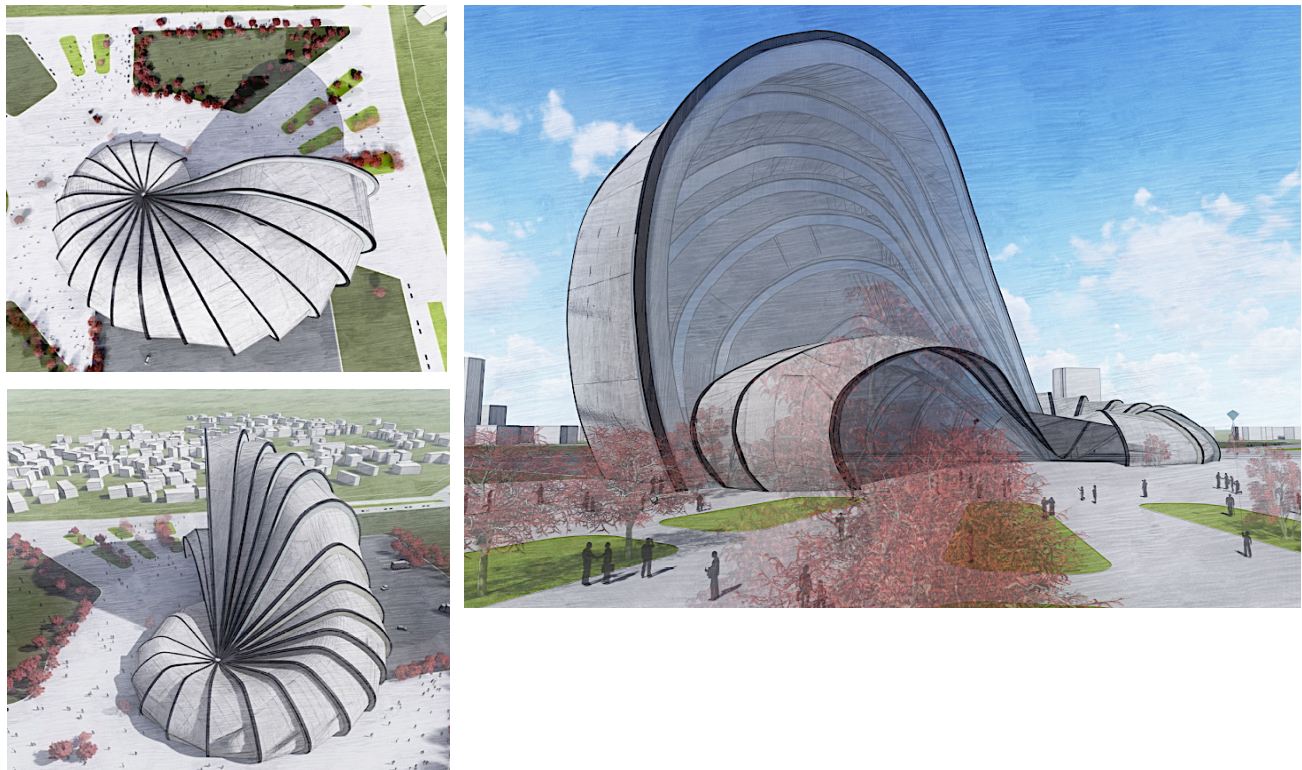


Figure 6. Vertical Farm, Architectural Visualisations.
Students: Nita Hasimja and Nita Llonçari, 2018. Course: Architectural Design 5.
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CONCLUSION

Biophilic design requires repeated and sustained engagement with nature, hence, design focuses on human adaptations to the natural world. Featuring the natural organic structure, which transforms the perception and understanding of architectural buildings from exceptional one, into an honest and natural blend architecture, respectively, architectural biophilic design emphasizes the ‘genius loci’ an emotional attachment to particular surroundings and ambience.

REFERENCES

- [1] Kellert, R. S and Wilson, O. E. (1993). *The Biophilia Hypothesis*. Island Press/Shearwater Books. Washington, D.C, Covelo, California. USA.
- [2] Demara, K. (2018). TerraMai.com, <https://www.cognitivestudios.org/space-design> [Accessed:10 February 2019].
- [3] Bajçinovci, B et al. (2019). *Interactive Kinetic Architecture: Progressive Design Principles*. Journal of Science, Humanities and Arts. Freiburg, Germany. DOI: 10.17160/josha.6.2.535
- [4] 4dSPACE: Architectural Design, Interactive Architecture, Vol 75, No 1 Jan/Feb 2005. Published in Great Britain in 2005 by Wiley- Academy, a division of John Wiley & Sons Ltd Copyright © 2005, John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex PO19 8SQ, England.
- [5] Kellert, S. ((2015). *Nature by Design: The Practice of Biophilic Design*. <https://blog.interface.com/nature-by-design-the-practice-of-biophilic-design/> [Accessed:10 February 2019].
- [6] Eds: Kellert, S., Heerwagen, J., Mador, M. (2008). *Biophilic Design. The Theory, Science, and Practice of Bringing Buildings to Life*. 3 Chapter: *A Good Place to Settle: Biomimicry, Biophilia, and the Return of Nature’s Inspiration to Architecture*, by Janine Benyus. John Wiley & Sons Ltd, New Jersey.
- [7] J.R.J. French and B.M. Ahmed (Shiday) (2011). *Biomimicry of Termite Social Cohesion and Design to Inspire and Create Sustainable Systems*, On *Biomimetics*, Dr. Lilyana Pramatarova (Ed.), DOI: 10.5772/19350, ISBN: 978-953-307-271-5, InTech, Available from:<https://www.intechopen.com/books/on-biomimetics/biomimicry-of-termite-social-cohesion-and-design-to-inspire-and-create-sustainable-systems>. [Accessed:10 February 2019]
- [8] Eds: Friedrich von Borries, Steffen P. Walz, Matthias Böttger. *Space Time Play. Computer Games, Architecture and Urbanism: The Next Level*. Birkhäuser Verlag AG 2007. Basel, Switzerland.