

The Thesis of the Ph.D. dissertation

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**The Interpretations of Natural Features in Contemporary
Landscape Design**

Ph.D. Dissertation

by

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1. Introduction

Throughout the history of landscape design, landscape architects drew inspiration from different sources, as a mean to convey their ideas, and help them create open spaces that serve their purpose and contribute to the benefit of society. The sources of inspiration varied and were influenced by the circumstances of each period of time.

For example, some styles found inspiration in cultural references that helped the designer highlighting identity, values, society, the history of a certain area, or reviving a historical style, such as the Renaissance style in the 15th and 16th centuries, which found inspiration in the aesthetics of antiquity by reproducing classical order structures. Another example is the work of modernist landscape architects in the 20th century, who found a different source of inspiration. They created designs marked mainly for their use of abstract geometry, irregular forms, and asymmetry, as they were very influenced by the powerful modernist thinking in fine art and in architecture. Landscape architects drew direct inspiration from Art Deco, Cubism, and Surrealism abstract paintings (Thompson, 2014).

On another hand, there are archetypes that are recurring elements in landscape architecture. These timeless references to stylistic typologies appear in many representational elements. An example of which is the amphitheatre. This recurring object in landscape architecture, derived from the Ancient Roman and Greek amphitheatres, is a popular element that could survive the test of time for the cultural and social values it adds to the open space.

Furthermore, and in our contemporary era, there are significant developments and concerns influencing the field of design. The new tools and digital technologies, along with a worldwide focus on achieving sustainable solutions and mitigating climate change are the main drivers behind new design trends. Contemporary landscape architects are finding inspiration in evidence-based and smart solutions that answer to pressing environmental issues. New design trends that rely on the innovations of the digital age are appearing, an example is the growth of evidence-based design (Brwon & Corry, 2011), which relies on tools and technologies in early concept design, allowing designers to see the impact of their choices instantly. This trend's main focus is meeting the physical, biological, social and cultural needs of humanity and the world (Brwon & Corry, 2020). A most recent trend is generating designs relying on artificial intelligence, a trend that can test and analyze to inform a better design.

However, there is a source of inspiration that has been a constant throughout the history of landscape design and is still present in our contemporary era, and that is nature. Over the years, we have witnessed many examples where natural features were used as allegories and manifested in manmade landscapes and gardens, such as the popular artificial grottoes introduced in the Mannerist style to Italian and French gardens of the mid-16th century, or the utilized natural elements in the historical Japanese gardens such as ponds, streams, islands and hills which aim was to create miniature reproductions of natural scenery, and many other examples. These interpretations of landscape features have developed with time, with each style over the course of history having its own language and vocabulary ranging from symbolizing and abstraction to straightforward interpretations.

Nowadays, this naturalistic design approach is still taking place among the new contemporary trends, as contemporary landscape architects are drawing inspiration from natural features and have their own methods and tools to create their interpretations. The new technologies and digital tools allow the designers to experience the natural world with less limits than in previous times, and therefore, designers are able to recognize new attributes of natural features and utilise them as a source of inspiration for their designs.

The research discusses this design approach of interpreting natural features in contemporary landscape designs, highlighting the dependence on mediated perception of nature in the digital age, and the different language methods used by contemporary designers to convey their interpretations.

2. Importance of the Study

The design style that draws inspiration from nature is an approach that appeared in past periods of time, and continues to appear nowadays in the contemporary era. This era is marked for its fast-paced changes and digital innovations, leading to developments in all fields, including the field of landscape architecture, making it inevitable for this naturalistic design approach to be influenced by the changes and evolution of this age, and having a clear understanding and definition of this style in the light of the contemporary circumstances is an important contribution to design theory.

Furthermore, the variety of the design styles that emerged in this era, as a result of the so-called 3rd Industrial Revolution, such as biophilic design, evidence-based design, generative design, etc., allow the contemporary landscape scene to be distinguished for this variety. Each design style

contributes to shaping the overall character of the contemporary landscape, making it important that each style is defined and have clear specifications of its own; hence, defining the character and tendencies of the naturalistic design style would make an important contribution to painting the overall contemporary context.

3. The Research Problems and Objectives

The absence of a classification of the ways in which natural features are being interpreted in contemporary landscape design, and the lack of a clear description of the characteristics of this naturalistic style, present a theoretical gap that motivates the research to delve into this topic and establish some specifications of this contemporary design style and its tendencies.

To tackle this topic, **the research raises the following questions:**

- 1st.** Are natural features being interpreted in contemporary landscape design?
- 2nd.** How are the interpretations of this naturalistic style in the contemporary era different from its precedents in former periods of time?
- 3rd.** How are the technologies of the digital age influencing this design style, and to which extent do they contribute to shaping the overall character of the style?
- 4th.** What are the general characteristics and tendencies of this design style?

In the light of this discussion, **the research aims to:**

Detect the influence of natural features, such as landforms, geological formations, patterns and the overall landscape environment on contemporary landscape design in the last three decades, and to define what types of natural features are found inspirational in the contemporary landscape design field.

The research also aims to define the language methods and tools that are being used by contemporary designers to communicate their interpretations of nature.

In addition, the research aims to detect the influence of this design approach in interpreting natural features on the resulted spatial experience and the values promoted by the final design product.

4. Hypothesis

There is a contemporary design style that draws inspiration from natural features, and interpret them relying on several design language methods. This naturalistic design style is influenced by the technologies and tools of the digital age and presents new interpretations that are different in comparison to the interpretations of former historic styles, as it is able to perceive the natural world differently and recognize new attributes of natural features.

5. Research Methodology and Dissertation Structure

In order to answer the raised questions and achieve its goals, the research divides the study into four main chapters, and synthesizes and combines the conclusions of all chapters to present its new scientific achievements in a fifth chapter.

Figure (1) demonstrates the study approach that aims to encompass the components involved in the process of creating a design that is inspired from a natural feature, which are the source of inspiration itself, the process of perceiving the natural feature and recognizing its attributes, the contemporary designer, who according to his knowledge, background and interests, this process of perception will vary, and finally the design language chosen to communicate the interpretation and produces the final design.

In accordance, the research starts, in Chapter 1, with defining the term “natural features” and exploring what are possible categorization systems of the natural phenomena, highlighting the importance of natural feature analysis to recognize all defining attributes. It also presents a theoretical study of the concept of visual perception, the theory of active perception and demonstrating how mediating digital tools are influencing perception in the contemporary era.

Chapter 2 is a historical review on the way past design styles perceived and interpreted nature, highlighting the choice of language of each style.

In Chapter 3, the research conducts a theoretical and analytical study of design language methods by examining examples from the fields of visual arts and landscape architecture, as a way to identify the tools of each method, and to what extent the results resemble to the origin in the case of each method.

Chapter 4 discusses the main topic of the dissertation through an analytical and comparative study of landscape design projects that interpret natural features as their design concept. The research assembles a collection of 64 contemporary landscape projects and analyzes key information related to the

location of each project, date of realization, site area, design studio, etc., in addition to the type of natural feature that is the source of inspiration, as a way to conclude general tendencies of the naturalistic design style. Furthermore, the research selects 34 projects for deeper analysis and conducts a comparative analysis of this smaller collection in order to detect more design-related tendencies of the style. Finally, in Chapter 5, the research synthesizes and combines all conclusions of the previous chapters, to present its new scientific achievements.

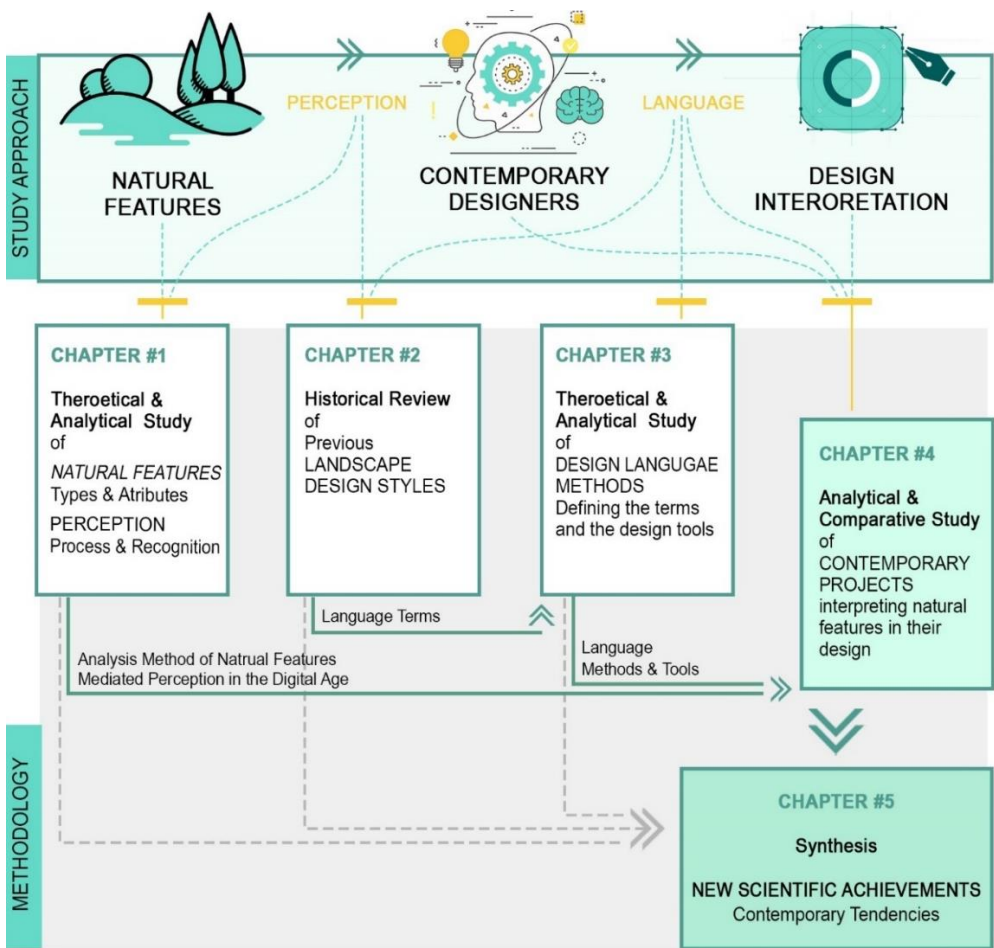


Figure 1: The research methodology, showing the study approach and the constructed chapters accordingly, Source: Author.

6. Literature Background and Data Collection

The research relies on a comprehensive review of scholarly sources from diverse disciplines. Sources from the fields of geology, geography, and geomorphology explore the variant types and categories of natural features.

Sources from the fields of psychology, and philosophy facilitate the study of visual perception and active perception theory, highlighting the difference between immediate and mediated perception as an important aspect to be considered. Sources on computer science, surveying, mapping and urban planning allow the research to give examples of digital tools and technologies that act as mediators in perceiving natural features in the contemporary age. Furthermore, the research relies on sources from the fields of visual arts, and landscape architecture to explore the interpretations of nature in past historical styles, to discuss the different language methods, and to create and discuss its collection of contemporary landscape projects that interpret natural features. In terms of data collecting, the research was able to explore the work of 146 contemporary design studios, relying on books showcasing and discussing contemporary landscape architecture projects, in addition to online landscape architecture platforms and websites with international recognition showcasing landscape projects made by landscape architects and architects from around the globe, such as Landezine, LAND 8, WLA, ArchDaily, DeZeen, and others.

7. New Scientific Achievements

The new scientific findings of the dissertation can be summarized in the following 7 theses:

- **Thesis 1 : Since 1995, the contemporary landscape design approach, which interprets natural features as a source of inspiration, has gotten more popular over the years, with a progressive increase in the number of projects designed according to this approach.**

Thesis 2 : The contemporary landscape design approach of interpreting natural features is reoccurring in Europe in large numbers in comparison to other continents, and is very popular, particularly in Denmark, with many projects designed in this style and many design studios that conduct it, such as, SLA, and 1:1 landskab.

Through the analysis of key data of 64 contemporary landscape design projects that interpret natural features as their source of inspiration (a summary shown in Figure 2), the research recognizes that, in the contemporary era, the number of designs that draw inspiration from natural features has increased progressively over the years. The research draws attention to the popularity of this design approach in Europe in comparison to other parts of the world, with

56% of the projects, and 58% of the design studios taking place in this continent. The research also recognizes that Denmark presents 28% of the European projects, which are all designed by Danish studios which found in this approach a way to deliver their philosophy and have several projects realized in this style.

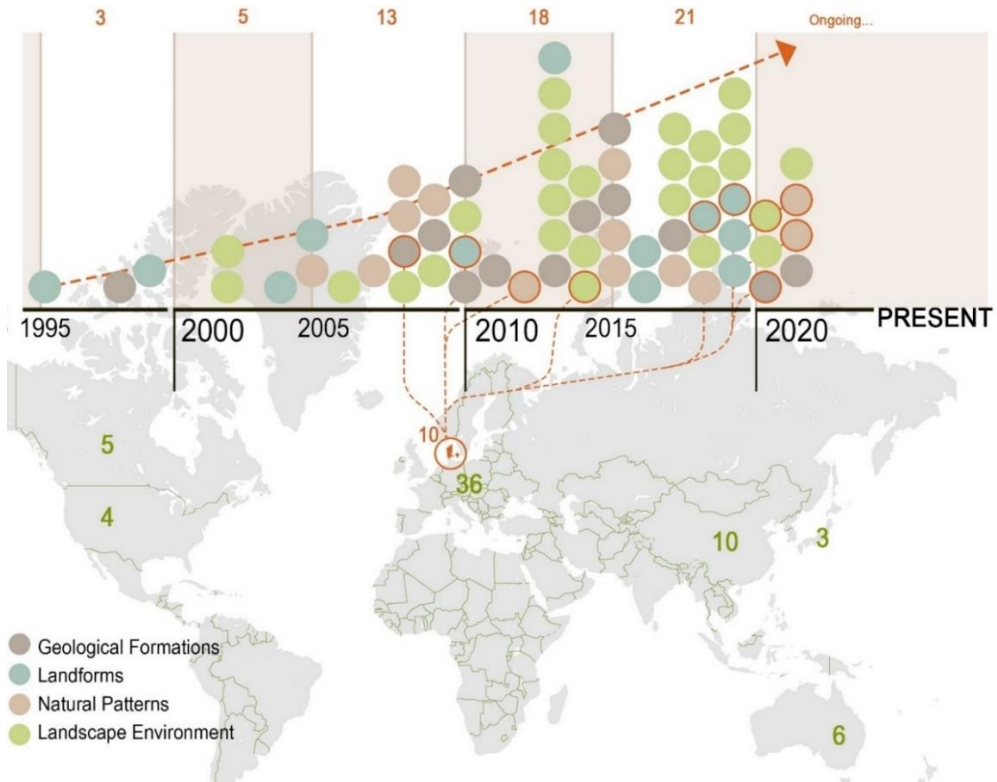


Figure 2: Analysis of identifying data of 64 contemporary landscape design projects that interpret natural features. Source: Author.

- **Thesis 3 : The types of natural features considered inspirational for contemporary designers fall under 4 categories:**
 - Geological Formations
 - Landforms
 - Patterns
 - Landscape Environment

Landscape Environment is the most popular type as a source of inspiration, as contemporary designers tend to interpret several elements and attributes of a certain landscape.

After reviewing the 64 projects' source of inspiration, the research presents a categorization system of the types of natural features that contemporary

designers are finding inspirational. As shown in Figure (2), several projects draw inspiration from *geological formations* for attributes like stratification, layers and forms. A second category is *landforms*, for their morphological attributes. The third category is *natural patterns*, which demonstrate how digital technologies are influencing the perception of the natural world. The fourth category is *landscape environment*, with 41% of the projects taking inspiration from a certain natural landscape with all its components.

- Furthermore, the research's deeper analysis of 34 cases from the collection of projects led to detecting design tendencies. A summary figure was developed for each project, highlighting key aspects of the design approach in relation to the natural feature. An example is shown in Figure (3).

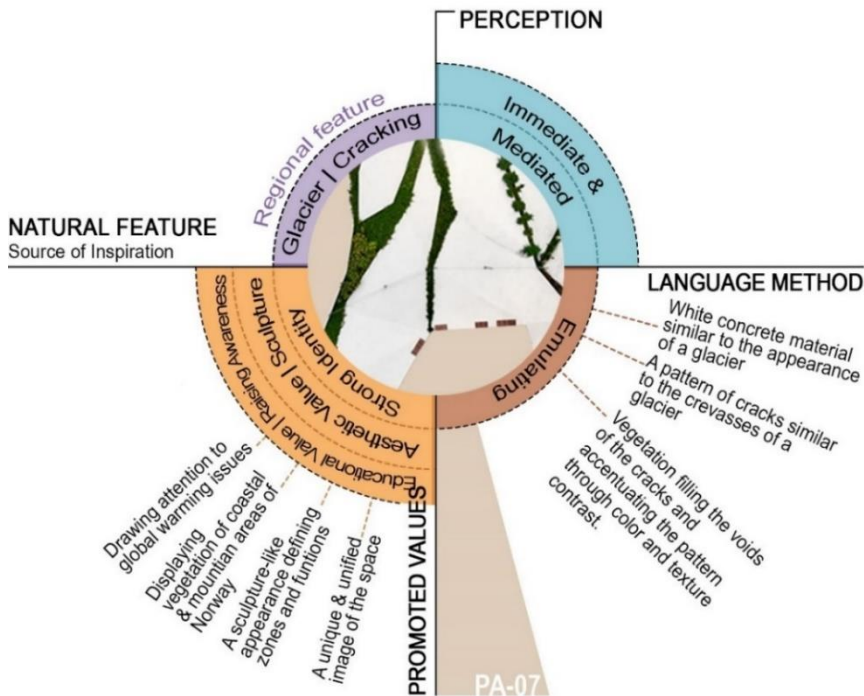


Figure 3: Example of the summary of project analysis focusing on the interpretation of the natural feature, Source: Author.

Based on the analytical study of the 34 cases, the research found that:

Thesis 4 : Contemporary designers tend to draw inspiration from local and regional natural features that are known to the locals, and not only demonstrate aesthetically appealing attributes, but also hold a cultural or heritage value that speaks to the collective memory of the people.

53% of the case studies chose a local natural feature as their source of inspiration, that is known to the dwellers of the town or the city of the project, and 32% of the cases chose a natural feature that is found in the country or the region of the project and well known to the dwellers of the project's city.

In addition, 74% of the chosen natural features are valued by the locals and hold a cultural significance, whether for being associated with traditional activities, a historical event, or geological history of the area, etc., and 65% of the features have an aesthetic value, for attributes, such as distinct forms, textures, colors.

Furthermore, by conducting a comparative analysis on the case studies, the research could make a connection between a set of (*design tools, results, and promoted aspects*), demonstrated in Figure (4). Accordingly, the research indicates that when designers choose local or regional natural features with cultural significance and aesthetic values, they are able to evoke the collective memory of the users and create spaces that not only have a unique visual image but also promote the cultural heritage of the area, which in turn contribute to strengthening spatial attachment.

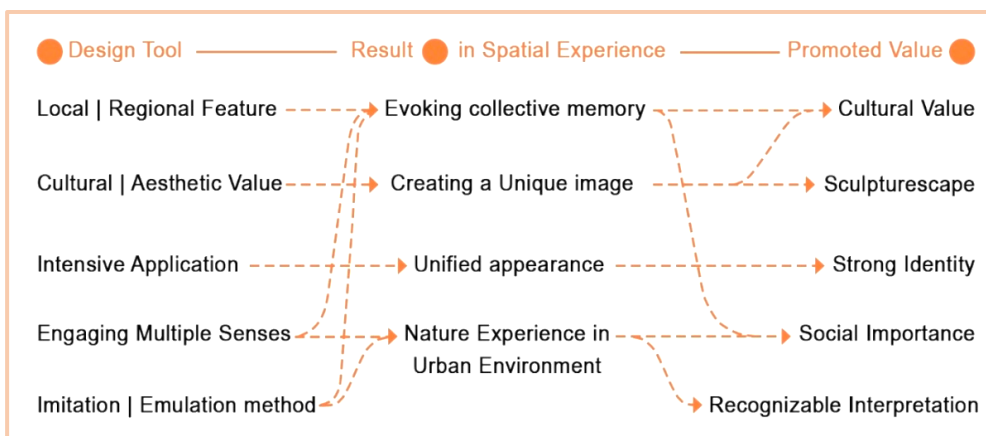


Figure 4: Trios showing repetitive patterns when interpreting a natural feature in the design. Source: Author.

- **Thesis 5 : The contemporary interpretations of natural features are intensive and applied to encompass the entire area of the project, and designers tend to express their interpretations in 3D forms and volumes, allowing the natural feature to play a significant role in shaping the spatial experience and contribute to unifying the appearance of the site and creating a space with a strong identity.**

According to the analytical study of the 34 cases, and the results of the comparative analysis, the research recognizes a design tendency, in which designers apply their interpretation of the natural feature in an intensive way, which is the case of 85% of the analyzed projects. This tendency allows the natural feature to be a dominant feature that appears over the entire area of the site, and the main definer of the space that organizes all design elements, which result in creating a space with a unified unique image, which in turn contribute to a space with a strong identity, especially that this contemporary approach shows a tendency to using more site-specific and custom-made design elements, rather than traditional pre-fabricated ones.

Furthermore, only 26% of the analyzed projects present a 2-dimensional interpretation of the natural feature, whereas the rest tend to express their interpretations in 3D forms and volumes or a combination of both cases. In addition, the majority of the projects employ the feature's attributes and morphology to serve in both structural and decorative ways, by defining zones, creating decorative, functional or interactive elements, and providing activities and socializing opportunities, etc., which gives the natural feature a significant role in defining and shaping the spatial experience, rather than only serving as a decorative element like in many previous historical styles.

- **Thesis 6 : “Emulating” and “Abstracting” are the most common language methods that are used by contemporary designers in conveying their interpretations of natural features, resulting in elaborated interpretations that allow the source of inspiration to be recognizable by the users.**

Based on the analytical study of the 34 cases, the research identifies the design tools of each contemporary language method, and consequently, and by intersecting the scores of some points of the comparative study (*Language Methods, Spatial Expression, Design Tools, Engaged Senses*), the research recognizes that the interpretations resulted from applying the imitating, and the emulating methods are complex and elaborated as they are achieved by combining variant design elements and engaging different senses of the perceiver, which allow the experience nature within the urban environment, making the source of inspiration recognizable by the users. Similarly, the abstracting method also combines variant design elements and is complex and elaborated, and even though it does not provide a literal presentation of the

natural feature, the focus on presenting key morphological attributes in a basic vocabulary makes the interpretation recognizable by the users as well.

When examining the prevailing choice of language that is being used in contemporary interpretations, the research found that 47% of the projects used an *emulating* method, and 38% used an *abstracting* method. Unlike many historical styles, copying, and borrowing scenery are not the preferred language of this contemporary approach, but rather a more subtle and adaptive language.

- **Thesis 7 : Contemporary designers depend largely on mediated perception in perceiving natural features. The available advanced technologies and tools of the contemporary digital age allow them to perceive the natural world differently and to recognize new attributes in comparison to past periods of time, which allow them to produce new types of interpretations.**

The results of Chapter 1 and the results of the analytical study of the 34 projects clearly show a tendency on depending on digital tools in perceiving the natural feature. This dependence on mediated perception influences the design process of contemporary studios. Most designers rely on satellite images, maps and digital data to study and analyze their source of inspiration, and some even rely on new technologies in generating their designs. This leads to the assumption that many of the contemporary design tendencies may be a result of this influence, for example, the tendency to create sculpture-like landscapes that dominate the site conveying vast areas of landscapes, depends on mediators that allow these areas to be seen from a high vantage point, or the tendency to create 2D patterns that organize the space and present a visually appealing element also depends on technologies that present a top view of the source of inspiration.

The availability and easy-access of these digital tools and mediators in the contemporary era are unprecedented, not only in professional fields and contexts, but also outdoors at any time, with mobile phones allowing instant access to maps viewer, and drones exploring the surrounding areas, etc., making the influence on the design process in this age inevitable.

Finally, the research draws a remark to the fact that many of the projects score high credentials in responding to the concerns of the age regarding mitigating climate change and answering to sustainable concerns, which can be a

common aspect shared with other contemporary trends that were previously mentioned.

8. Further Research Recommendations

An ongoing debate has started, on whether the Third Industrial Revolution has ended and the Fourth Industrial Revolution has already started, a term that started to be used in 2016 as a result of the recent developments in areas, such as artificial intelligence, robotics, IoT and biotechnologies, etc. (Moloi, & Marwala, 2023; Zhang, 2022; Philbeck & Davis, 2018; Schwab, 2017). This new revolution, is suggesting new research streams that need to be explored. The research suggests further studies on exploring the shifts that can occur in the field of landscape architecture as a result of such innovations. The research recommends examining the influence of these innovations, particularly on the naturalistic design approach, which draws inspiration from natural features as new possibilities reveal, ones that allow emulating not only the visual attributes but also the intricate natural algorithms that have evolved over billions of years.

Furthermore, as a step to achieve its aims, the research has categorized design language methods that landscape designers use to interpret nature, and examined examples of these methods in the fields of visual arts and landscape architecture to define their tools. The research finds these language methods as a rich topic for discussion, and recommends further research exploring the methods and their tools in the field of landscape architecture.

9. List of Publications

9.1. Articles published in International Journals:

Al Basha, N., Eplényi, A., & Gábor, S. (2020). Inspirative Geology - The Influence of Natural Geological Formations and Patterns on Contemporary Landscape Design. *Landscape Architecture and Art*, 17 (17), pp 39-48.

<https://doi.org/10.22616/j.landarchart.2020.17>

Eplényi, A., **Al Basha, N.,** & Khadour, N. (2020). Historic Public Park Design – A Case Study on Complex Landscape History Education – Südpark Kleinburg Breslau. *4D Tájépítészeti és Kertművészeti Folyóirat*, 55-56 (1), pp 156-167. <https://doi.org/10.36249/55.56.11>

Al Basha, N., & Khadour, N. (2021). The Importance of Urban Regeneration through Cultural Heritage - The Case of Bab Touma Square in

Damascus, Syria. *Teka Komisji Urbanistyki I Architektury Oddzialu Polskiej Akademii Nauk w Krakowie* , XLIV. [10.24425/tkuia.2021.138718](https://doi.org/10.24425/tkuia.2021.138718)

Khadour, N., **Al Basha, N.**, Sárospataki, M., & Fekete, A. (2021). Correlation between Land Use and the Transformation of Rural Housing Model in the Coastal Region of Syria. *Sustainability*, 13 (8), p. 4357. <https://doi.org/10.3390/su13084357>

Al Basha, N. (2019). Regional Identity and its Importance in Directing the Development Plans - Case Study: The Coastal Region in Syria. *Damascus University Journal of Engineering Science (1999-7302)* 1854/S. <http://damascusuniversity.edu.sy/mag/eng/>

9.2. Conference Participations and Published Papers in Proceedings:

Al Basha, N., & Eplényi, A. (2020). Communicating Natural Patterns in Landscape Design. *SZIENTIFIC Meeting for Young Researchers 2020: ITT Ifjú Tehetségek Találkozója 2020*, 48-52. ISBN: 9789632699370.

Eplényi, A., **Al Basha, N.**, & Benkaid, S. K. (2021) Tér-trükkök, torzítások és izgalmas térélmények a kerttörténetben (Tricks and Distorts in the Spatial Experiences of Garden History). *A kertművészet, a színház és a filmművészet kapcsolata*, 68-77. ISBN: 9786158162821.

Al Basha, N., & Eplényi, A. (2022). An Overview of the Interpretations of Nature throughout the History of Landscape Design. *János Lippay – Imre Ormos – Károly Vas (LOV) Scientific Meeting 2021*, 11-25. ISBN: 9789632699882.

9.3. Conference Participations and Published Abstracts:

Al Basha, N., & Eplényi, A. (2024). Perception of Natural Features in Contemporary Landscape Architecture. *János Lippay – Imre Ormos – Károly Vas (LOV) Scientific Meeting 2023*, 13-14. ISBN: 9786150202525.