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Original Research Article

Investigating the Design Process of the Tourism Project of the Zinc Mining Museum in Norway

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Abstract| Tourism is now a major element of many communities' activities and revenues, and its importance is growing day by the day. Landscape architecture, as a fledgling subject in the field of natural and artificial environment design, has generated unique characteristics for this field. Currently, the most pressing challenge is how to bring together and harmonize the diverse themes and extensive knowledge of landscape architecture, as well as how to manage the scope of this knowledge and apply it? For this purpose, this study attempts to investigate strategies based on the concepts of a systematic approach, modeling to overcome the problem of complexity and breadth of concepts in the design process. In addition, this study aims at linking the strategies to suggest a suitable framework for landscape design of places with tourism potential. this study used a descriptive-analytical research approach. The bibliographic data for this study was gathered from available texts and documents in scientific databases and analyzed using a conceptual coding process. Finally, this study takes a critical look at the design process and shows how the coordination between the vast knowledge of landscape architecture can be created. Then, this study examines the general landscape design of the Zing Mining Museum in Norway and its landscape layers in Norway as a tourism project and scrutinizes the natural-social landscapes with two macro ideas of design, contextualism, showing the traces of history, which are achieved through the use of tools and local materials, resulting in the least amount of interference during construction and maintenance, as well as the mine's work procedure that has been achieved.

Keywords| *Design process, Contextualism, History traces, Zing Mining Museum in Norway.*

Introduction| The field of landscape architecture is linked to the concept of tourism, as well as the creation, organization, and management of natural and man-made open spaces. The inextricable link between landscape architecture and current processes has resulted in the development of unique characteristics in this field. Such characteristics require landscape architects to be familiar with and apply a wide range of knowledge, for example, human behavior, artistic and historical concepts associated with open and natural spaces, and science of nature and natural components, as well as engineering knowledge for landscape construction and management. In addition, they need to have a deep understanding of the concepts of creating and organizing space. Indeed, the many scales proposed during human actions in the environment and his efforts to construct man-made settings demonstrate the subject's and associated areas' range (Adib, 2012). As a result, the landscape,

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as an example of a complex system, contains multiple subsystems and, like a dynamic living system, grows and changes at a rapid rate, resulting in a complete lack of comprehension of the variables that cause the change (Gharai, Masnavi & Hajibandeh, 2018). Consequently, one of the primary reasons why the landscape is depicted as a dynamic and complicated system is because of this (Meinig, 1979). Meanwhile, without understanding the complex context of this information and paying attention to its various aspects, a one-sided perspective of landscape architecture cannot be beneficial. According to Motloch, landscape architecture is a multidisciplinary and complicated profession, and landscape architects must examine this information. Landscape designers must thus combine creative design with new information and manage the interrelationships between current and new human growth to ensure sustainable cultural and ecological development (Motloch, 2000). As a result, this article aims to answer the question of how to combine and coordinate many themes and the extensive knowledge of landscape architecture, as well as how these knowledge boundaries may be managed and implemented. As a result, the authors believe the project of the Zing Mining Museum in Norway to be a successful tourist effort in this subject.

Research Method

The data for this documentary study was analyzed using a descriptive-analytical approach. For this purpose, sources related to the design process were examined and the data was retrieved using SAD and PAKILDA design methodologies. For this purpose, texts, documents, articles, and published materials in the scientific databases were reviewed. The opinions of the visitors and design process of one of Norway's landscape-tourism initiatives as a case study were examined. The bibliographic data was collected and analyzed using a conceptual coding process.

Theoretical foundations

• Landscape architecture as an environmental design method

Landscape can relate to a specific location from two perspectives, and it can also reflect the civilization under investigation. They have turned it from a fully pure condition to a man-made area by paying respect to their cultural traits (Makhzoumi, 2000). Landscape architecture may be defined as a profession whose societal mission is to bring science and art together to organize, plan, and design the entire physical and cultural landscape (Motloch, 2000). As a result, the scientific concept of landscape architecture divides the field into four domains: "tacit knowledge," which is an implicit interpretation based on the designer's intuition and learning by doing, and "conceptual knowledge," which disseminates tacit knowledge to others in the form of categorized principles and rules. "Systematic knowledge" is openly articulated, analyzed, and classified according to scientific standards."Operational knowledge" is the process of translating systematic and conceptual information into an executive language in a profession (Deming & Swaffield, 2010). As a consequence, it appears that examining landscape architecture design procedures and defining the evaluation of the utilization of a diverse set of information in research is a required and crucial step.

• Design process

Design is a deliberate process in which designers seek the optimal solution and end goals. The design process is not linear and does not have a defined and standard dimension; rather, it is built on the constant transformation and application of diverse knowledge dimensions. As a result, this procedure can be classified as both cyclical and progressive (Motloch, 2000). Meanwhile, advances in design methodologies have resulted from human approaches over time. Turner (2001) announced two design methodologies, SAD and PAKILDA, in response to these developments and the new multidimensional perspective of the area, which will be detailed in the following section:

The SAD design approach is a semi-scientific research method used for determining the design context that is dependent on the designer's tacit and intuitive knowledge and is not easily generalizable (Adib, 2012). Turner adds the use of simpler tools to develop the design route in the PAKILDA design technique, such as words, diagrams, mock-ups, and blueprints, to express the design process. This procedure, he says, is comparable to that of a bee's flight. The bees' journey from the hive to the meadow appears to be random, yet they memorize a sequence of signs and utilize detailed maps to get from one place to another. Landscape architects, likewise, pursue a long journey from the status quo to the proposed situation, which is more based on modeling and systematic view to guide and control landscape design and convert the tacit and conceptual knowledge of designers into systematic and operational knowledge, with many unpredictable deviations. However, the approach outlined by Steinz in 1990 is more in line with the landscape architecture process. According to her, the designer is always confronted with basic concerns throughout the landscape architecture process and must respond to them using a mix of six responsive models (theatrical, process, evaluation, change, impact, and decision-making). He

recommends applying these models in three stages of a project: background research, technique selection, and design studies. One of the most appealing aspects of this strategy is its adaptability. The designer can go back and forth between each phase as many times as required until he or she gets the desired result. The next section of this article investigates the design process and policies employed in successful projects in Norway, taking into account the concepts described in the landscape design process.

Case Study

• Design context

Norway is a hilly and wooded country whose natural wonders along its roads are enhanced by art, design, and architecture. In recent years, one of the most effective measures to attract a diverse range of tourists seems to be a limited intervention in the landscape of this country, which attempts to create new design experiences in harmony with nature. The intervention is aligned with the culture and civilization of Norway and its natural attractions. In this regard, the government tries to preserve the natural fabric, culture, and environment to attain quality and sustainability while reducing the negative impact of tourism on the environment. This has improved social values and economic revenues. The Zing Mining Museum on Peter Zumtor is one of the numerous architectural projects situated next to these walkways in this master plan to catch the attention of tourists going through Norway's beaches and waterfalls (Fig. 1).

• Zing Mining Museum in Norway

The mine in Norway lost its fortune while it was at the peak of its exploitation due to an explosion, which occurred during drilling. In this accident, a large number of miners were killed. As a result, the Norwegian government created a museum to keep the memory of the mine and the dead miners alive among the communities, as well as to take advantage of the location's position on the national tourist route. The Norwegian Zing Mining Museum, as one of the country's scenic assets, has a unique history in the tourist sector and generates diverse and powerful spatial impacts in the minds of visitors. Peter Zomtor developed the Zinc Mining Museum in Germany based on her study on history, culture, setting, and audience, with little aesthetic and ecological impact. In addition, one of the challenges of the plan to preserve natural surfaces and vulnerable vegetation while interacting with the existing rock structure is the use of natural features that shape the site's landscape identity, which has been a part of the character of the place for many years, distinguishes this project from others that intervene in natural landscapes. One of the project's aims is to develop powerful concepts into an integrated concept that is suitable for the environment, resulting in a stronger site identity. To put it another way, this idea maximizes the link between man and his environment while remaining simple and powerful (Fig. 2).

• From an idea to a design

The designer encourages users to make use of the site's potentials by developing sustainable, useful, and

Fig. 1. Plan of the location of the museum in the natural bed of the valley. Source: https://www.inexhibit.com.

Fig. 2. Location of the museum in the natural bed of the valley. Source: www.vmproduksjon.no

inspirational solutions. Beauty, according to Zumthor, is an interior process that must be experienced through all five senses, and it is a concept associated with the earth and surrounding nature. As a result, the architect's fundamental approach is to design with little intervention on the site, to adopt a careful approach to the existing layers of information, rather than to add an alien style to the surface that destroys existing layers of information and historical remains. Zumthor has given new life to a dead and forgotten terrain with this design, to remove the sorrowful appearance from the abandoned mine area and remind the departed lives of individuals on the outskirts of society. He refers to his structure as a memorial to the workers who worked and died there. In reality, his purpose is to provide travelers with opportunities to reflect on the site's history and past (Zumthor, 2015). The study of landscape projects, as well as the utilization of tacit and conceptual knowledge and its translation into systematic knowledge for design, is one of the design's strengths. Zumthor's audience-focused design is based on the Pakilda design process, which engages consumers' thoughts. Each component of architecture, in her opinion, is planned and designed in an entangled process that does not follow a straight line.

• From a design to an execution

With snowfall in winter, the steep cliffs are entirely white, and the poplar trees have become dried skeletons, Zumthor used a contextualism approach to the design of this project, which has a great impact on its setting. During the winter, Zumthor's purpose is to create a contrast between the white background and the design's black materials to grab the attention of passers-by, leading to them stopping and entering the museum or spending time on the side of the road. These structures are a cluster of pavilions, or observation platforms, that, with their wooden constructions and dark walls on a snow-covered bed, evoke a concentrated visual interest and, despite their basic and simple architectural style, harken back to former industrial structures. On the other hand, the clever arrangement of events imparts a unique spirit and worth to the location, which might be described as a space conveying a message in the minds of spectators (Bell, 2003); (Fig. 4).

To prevent visual interference, the architect separated each user into their block in this collection, each of which gives a unique perspective. This helps to retain the valley's texture and does not detract from the field's natural beauty. Zumthor also offers daily lighting of the internal areas by constructing hidden gaps in the ceiling and indirect lighting at night to create the sensation of the mine in the galleries, to portray the hardship of working in the mine. Sunlight shines in tiny bands from above into these black boxes, illuminating the objects (Fig. 5). This is the same light that shined on these rudimentary, out-of-date miners' tools in the past. In actuality, the stark contrast between the white floor and the black walls, as well as the more dramatic difference between light and darkness within and outside the room, reflects the miners' perception of the mines' total blackness and the hardship of their labor. The inside walls are likewise inclined, and the roof is linearly imprinted with a texture that looks to have been carved by stone extraction along the tunnel walls owing to the impact of axes (Fig. 6), which helps to tie the mine and museum together.

The designer uses materials that are natural to the area, such as wood from poplar trees, which is the most common vegetation. Since the black hues of the poplar woods represent the darkness inside the mine, the usage of this material is reminiscent of the mine and the design's bedrock. The site's geography is linked. As a result, Zumthor was the only company that could show off its manufacturing legacy via materials and design. Is the design's foundation. Thus, Zomotor's work, which is a powerful reminder of the industrial past of this site, is an example of his work, which is a tight relationship with history via careful selection of location, materials, and design, as if the building has been in the design for years. Simple linkages between the pieces, on the other hand, convey the simplicity of rural life in the area (Fig. 7). The design of the stone roads and guard walls in the design bed has also been examined to contextualize and retain the area's uniqueness. People will eventually feel psychological ownership of these community places and experience collective life as a result of attending these locations and collecting shared memories.

Conclusion

The success of the project may be measured in terms of offering multifarious solutions that address the project's needs and various influences while also moving the project toward greater sustainability by establishing an integrated and coherent system. According to the

Fig. 3**.** Diverse landscapes of the Zinc Mining Museum. Source: https://www.inexhibit.com.

Fig. 4. The color contrast of the design with the site bed.
Source: https://www.inexhibit.com.

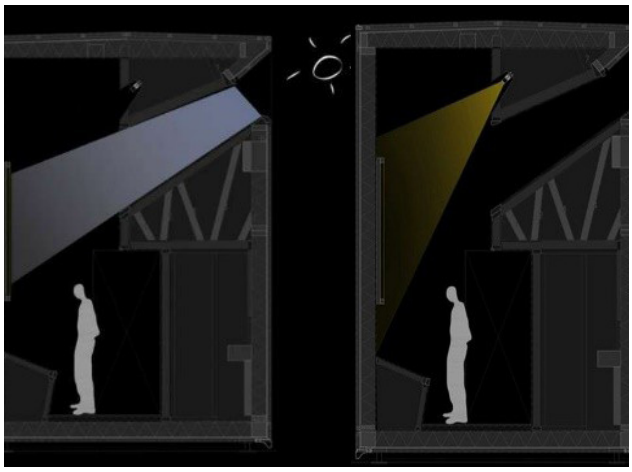

Fig. 5. How to light the gallery with natural and artificial light.
Source: https://www.viabizzuno.com

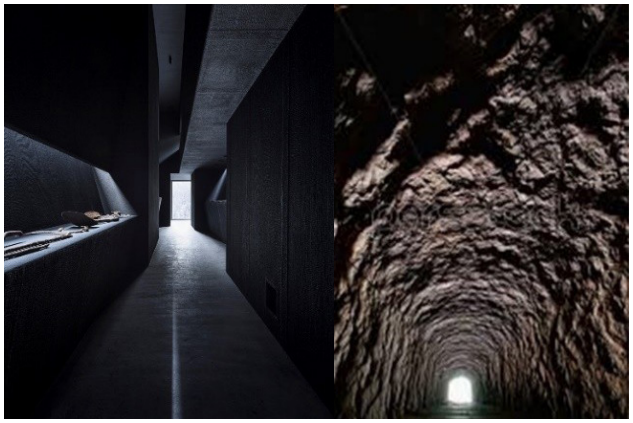

Fig. 6. Similarities in the interior of the museum and mine.
Source: http://hicarquitectura.com.

Fig. 7. Simple connection of the structure with the stone context.
Source: https://www.inexhibit.com.

designer's train of thought, it is critical to recognize that their approach has been dominating, protective, and focused on maximizing the potentials of the site platform for the tourist industry's development. The designer's ability to integrate the natural part of the project with the needs of tourists and to benefit from different areas of knowledge makes this project unique in terms of intervening in natural landscapes. Another key aspect of the project's success is the designer's ability to integrate the natural part of the project with the needs of tourists and to benefit from different areas of knowledge. The main idea of Zumthor design, on the other hand, is to use contextualism and historicism by utilizing local materials, minimizing interference during the construction and execution of the design, and realizing various perspectives, colors, and textures taken from the body, as well as optical contrasts in the prefabricated mine in all parts. Finally, the success of the project may

be measured in three areas: ecological, usefulness, and aesthetics. Thus, one of the project's ecological triumphs is the use of the site in design, preservation of the area's vegetation, and proper use of the four seasons of the project. People welcome the spaces designed as expected by the designers, and this design from an aesthetic point of view has achieved achievements such as the use of large pieces of stone as an element in space, natural lighting, and use of local materials, as well as the effect of being four seasons on people's mental image. As a result, this landscape project is regarded as a success in the tourism industry.

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