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The landscape and biophilic perspectives of the new city of Guelma Hdjar El Mangoub

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Abstract:

Biophilic design is a human-centered approach that seeks to strengthen our connection to natural processes within the urban space. The new city of Guelma: Hdjar EL Mangoub is characterized by breathtaking landscapes, beautiful mountains and strong vegetation. In this sense, it is a question of researching and showing the extent to which natural elements are taken into consideration in the development of this new city as essential elements of its urban design. The adopted methodology serves to define the key frameworks of urban design according to a biophilic approach. The results obtained show the presence of a biophilic design defined by the first experience of nature.

Keywords: biophilic design, nature, public spaces, building, landscape, Algeria

1. Introduction

For the urban architect, the city-nature relationship means studying the links between built and unbuilt space as well as the relationship between the users of urban space (public and private) and nature (Djouad, 2021.). Guelma is a wilaya in eastern Algeria and is located in a natural environment that is particular in its species and landscapes. The commune of Belkheir is located in the central zone of the wilaya, covering a total area of 94 km². Administratively, the commune of Belkheir is attached to the daïra of Guelaât Bousbaâ. Belkheir has an agricultural vocation par excellence given its rich natural heritage, notably the climatic conditions and the nature of the soil. H'djar Mangoub is a zone of the commune of Belkheir, it is located at approximately 09 km in the south of the chief place, and the surface of the perimeter of the P.O.S. is 152.8348 ha. The site is crossed by the communal road leading to Ain Larbi over a distance of 1390m, and also crossed by a track leading to the RN 80 by Bir Ben Sib over a distance of 2142m. The site of Hdjar Mangoub is intended to receive the various needs of the chief town of Belkheir, the secondary town of Chihaoui Laïd and the secondary town of Salah Soufi in terms of urbanisable land. The essential problem lies in the fact that these agglomerations are surrounded by agricultural land with high potential, part of which is included in the irrigated area. The safeguarding of this wealth is a major principle. The creation of the new zone at Hdjar Mengoub in the south of the municipality involves a study of the land use plan. This choice was made with a view to safeguarding the commune's agricultural wealth and is perfectly in keeping with the vision of sustainable development of the territory.

2. The city in nature

2.1. The transition from a situation of rupture to an articulation

Since history, the city and agriculture have been two inseparable worlds, the latter often being located around the city to satisfy its needs for fresh produce. At the end of the 20th century and with the acceleration of urbanisation, agriculture was marginalized, although it offered a pleasant landscape that reflected the social practices of the inhabitants, and it competed with that of the forest and the lakes... These abandoned agricultural spaces became virgin natural spaces over time (Donadieu P., 2000; Pratiwi, 2022). The second aspect of this relationship is that of the countryside. The link that holds the city and the countryside together is not recent, it is based on different social and political perspectives. This link is manifested in two major figures: the city theoretically includes representations of the countryside such as agricultural crowns. The second figure of the positive link is based on an urban representation of the countryside as a place of rest and relaxation for the inhabitants of the city (Donadieu P., 2000; Dechaicha et al., 2021). Gradually, the opposition between the city and the countryside became blurred. At the end of the 19th century, the garden city was born as a conception of a small-scale city made up of housing intended primarily for working populations, the place where an urban utopia of modernity was implemented: the city in the countryside. This was the beginning of a transition from a situation of rupture to one of articulation. The improvement in transport conditions now favours the return to the countryside of city dwellers in search of calm and greenery (Djouad, 2021).

2.2. Biophilia in urban planning

Biophilic urbanism seeks to build a relationship between natural elements and the built environment (Djouad, 2021). Furthermore, it attempts to interpret the understanding of biophilia in urban and architectural planning and design. At the building level biophilic elements are those that can be integrated on, in and around a building. At the street scale are those integrated in and along streets, roads and pavements. At the city scale they are larger in size and are probably less numerous (Urich, 1983).

3. Research methodology

On the basis of landscape analysis, we have broken down the landscape into entities according to the color criterion (Delbosc, Ceccaldi, Panaïotis, Bioret, Hugot, 2018). These entities were visually analyzed to evaluate their dynamics from the space surrounding the city (Paquette, Poullaouec-Gonidec, Domon, 2005). The biophilic approach at the urban and architectural scale focuses on how to design space while dealing with natural elements (Beatley, 2020).

4. Results and discussion

4.1. The landscape surrounding the town

The nature surrounding the town of Hdjar El mangoub represents a natural mosaic. The vegetation cover covers the majority of this environment, varying according to its components: dense and scrubby forests of Eucalyptus, Zen oak (boulif), maritime pine and Aleppo pine. The scrubland represents patches in the middle of the forests, giving a perfectly homogeneous structure and visibility over the whole natural environment.

4.2. The place given to nature in the urban design

The choice of the site of Hdjar Mengoub is due to its land availability to accommodate the needs of the three agglomerations which exceed 100ha on the various deadlines (short, medium and long term), this site also presents geological and geotechnical aptitudes as for the constructability of the ground, and especially this site presents a weak agricultural potentiality

The elaboration of the P.O.S. as a planning instrument must be done in the spirit of the national policy of development and town planning.

The sustainable development of the territory and the integration of the environmental dimension into the development plan are among the priorities and principles of planning (Amen, 2021, Aziz Amen, 2022).

To this end, the main lines to be respected in the development of this P.O.S. are based on:

- To foresee the impact of the urbanization of the site of Hdjar Mengoub on the immediate environment, notably in terms of foreseeable pollution, waste management and activity zones.
- Provide for environmentally friendly development and construction, particularly in terms of energy consumption.
- Ensure the integration of the project in its environment by a good choice of the aspect of the constructions.
- Provide for the site to be connected to the various networks: electricity, gas, drinking water, and sewage system and telephone network.
- Structure the site with major roads and boulevards.

*Ensure a satisfactory supply of structural and accompanying equipment.

4.3. Functioning and spatial dynamics

The new city of Hdjar Mengoub will be a much diversified space which will include various urban functions necessary for the life and the wellbeing of the population, as well as for the development of the city. Relations between the various spaces will be established, the role of the present study is to channel these relations for the good functioning of the city.

The city's space will be structured from the main roads and boulevards which will ensure the connection and the dynamics between these various components (Amen et al., 2023, Amen & Nia, 2020). The structuring will also be articulated around the main spaces and other secondary spaces which will be places of meetings and grouping of services and equipment (leisure area + structuring equipment).

4.4. The urban composition

The Hdjar Mangoub land use plan is composed of a diversification of spaces and occupations, namely collective housing, individual housing, public equipment and relaxation and leisure areas.

For the collective housing, buildings with heights of up to R+4 have been proposed, which will constitute a quality point for the site, particularly in terms of aesthetics and urban composition.

A programme of 5,400 dwellings occupying 44.49% of the POS space.

An urban space constituting the large central square, structured by two large boulevards on which are implanted the large equipment such as the bus station, the mosque... etc. and the leisure zone and on both sides of the buildings with commercial frontages. And which counts a dynamic point in the site. Individual housing will occupy the southern side of the site, in continuity with the immediate environment.

5. Conclusion

The town of Hdjar El mangoub is developed in a natural space of high landscape quality. Its visibility is evident from its surroundings. Biophilic design is a human-centered approach that aims to strengthen our connection with nature and natural processes within the buildings and urban public spaces in which we live and work. And above all, we have all had a positive experience with nature at some point in our lives. And this serves to reduce stress, increase creativity and clarity of thought, improve our well-being and speed up healing.

The region of Hdjar EL Mangoub in Guelma, around which our research is based, is characterized by stunning landscapes, beautiful mountains and strong vegetation, but these assets are not properly exploited in a way that shows their value. The results indicate that biophilic design is more complex and richer than the simple application of vegetation to buildings and urban space; it broadens the variety by encompassing different types of physical, sensory, metaphorical, morphological, and material to spiritual nature.

Conflict of interests

The authors declare no conflict of interest.

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