

Spatial Organization of Habitat in Traditional Fabrics: Case of Djemorah in Biskra–Algeria-

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Abstract

The history of architecture shows that ancient civilizations around the world built their homes by integrating their environment, so as to minimize exchanges with the outside world, and to maintain a comfortable living environment. Traditional architecture is the forerunner of bioclimatic architecture and offers lessons on how to live better in harmony with the environment. Regions with a warm climate are known for a particular type of traditional architecture. This study focuses on the way of conception and organization of the habitat and the traditional fabric of the commune of Djemorah in Biskra -Algeria, according to social -economic -climatic and cultural references and needs, all this for an objective to draw the lessons of adaptation of the social and human environment of the inhabitants in their region marked by its arid climate.

Key words: Traditional Fabric /Habitat/ Social Environment / Traditional Architecture/Djemorah.

INTRODUCTION

The vernacular architecture constitutes a very important part of the cultural heritage of the country. This one counts a significant number of traditional localities, abandoned or still inhabited. It is an architecture elaborated in the course of centuries, executed with local means and techniques expressing precise functions satisfying social, cultural, economic and climatic needs. Numerous examples, strike by their ingenuity to adapt to the climate, for example: the habitat of the Pueblos Indians, the troglodyte habitat, the eskimo igloo... (Sriti .L.1996).

Vernacular architecture is the set of lessons on how to live better in harmony with one's environment and how architecture responds to the needs of urban people. According to (Rapoport.A.1975), traditional architecture is a cultural phenomenon whose form and organisation is influenced by the environment.

Arid climate regions are characterized by high summer temperatures, low rainfall and humidity. Traditional architecture often uses the same techniques, as in the case of some Arab cities. This climatic adaptation occurs at different levels, from the exterior to the interior.

The morphogenesis of vernacular architecture is established on the synthesis of a conceptual trilogy conceptual trilogy composed of three reference poles:

Human: which, expresses the content of all thematic data, activities and needs of a socio-economic, cultural and historical nature

Site: integrates all the environmental data, climate, morphology,...

Materials: involve the choices and techniques used in the built form (Guindani&Doepper, 1990)

METHODS AND MATERIALS

This research is based on the study of the habitat and traditional architecture of the commune of Djemorah in Biskra, through a reading and analysis at different urban and architectural levels, and according to various social, climatic, economic, cultural factors... etc. Therefore this study consists of three important parts:

- Presentation of the study context
- General overview of the traditional habitat.
- Analysis of the case study on two levels:

- At the level of the agglomeration and the traditional fabric.
- At the level of the traditional habitat.

Case Study - the Commune of Djemorah in Biskra

Situation and Climate

The commune of Djemorah is located 36 km north-east of the chief town of the wilaya of Biskra, linking the north to the south by the national road 87, its surface is estimated at 250.80 km². It is bounded to the north by the commune of Ain Zaatout, to the south by the commune of Branis, to the east by the commune of Tigharghar and Manaa, and to the west by the commune of El'outaya. Its geographical location has made it a strategic meeting place for traders coming from all directions.

It is characterised by a semi-continental climate, hot and arid in summer, cold in winter. The minimum temperature is 3° and the maximum is 45° during the summer season. Rainfall varies between 200 and 300 mm per year (Monographie de Djemorah.2018) (Figure 01).

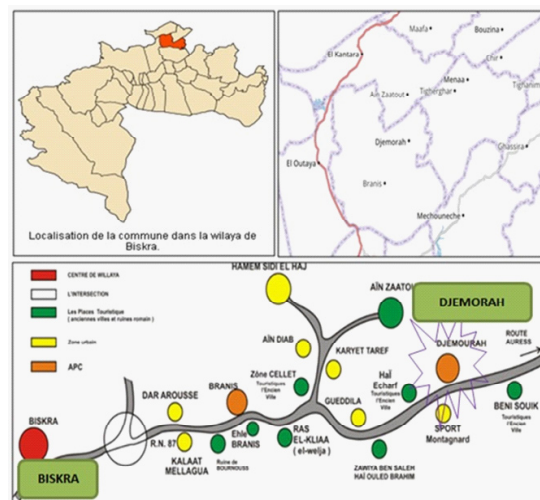


Figure 1. Location and limits of Djemorah

Reliefs

It is surrounded by mountainous chains throughout the territory of the municipality: in the North there are the mountains of Djouadjah with an altitude of 933 m, in the South, there are the mountains of Arkoub with an altitude of 961 m, the Tarb Mountain with an altitude of 795 m, the Fèj Mountain with an altitude of 1019 m (Monographiede Djemorah.2018). Its natural environment is delimited by valleys and rivers flowing into the Oued Abdivalley, which in turn flows into the Biskra valley. The oasis of the palm groves spreads out in length between the two mountain ranges following the course of Oued Abdi (Figure 02).

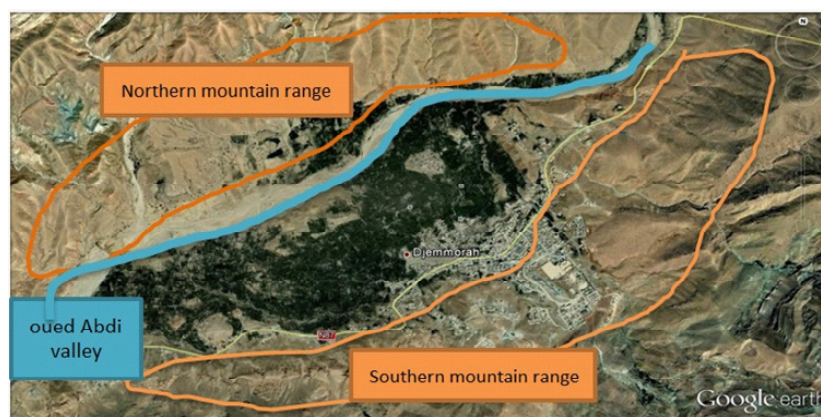


Figure 2. The reliefs surrounding the oasis of Djemorah

Vegetation Cover

The oasis of Djemorah comprises 80,000 palm trees; it extends over several kilometers, it is watered by 08 water intakes made on the Oued Abdi and by numerous very abundant springs in the oasis itself (Monographie de l'Aurès.1904).

The region of Djemorah conceals an agricultural diversity, it is known by its palm trees, apricot trees and other fruits, such as: pomegranate, olives, peaches, berries, prickly pear, and lemon. It is also famous for its cereals, such as: wheat groats, barley groats, wheat, barley and beans (Monographie de Djemorah.2018).

Cultural Tourism in Djemorah

The municipality has several important historical sites, namely: the tower of BeniSouik, the historical cave at the valley of OuledBrahim, Gueddila and the Salat tower. There are irrigation channels and ruins from the Roman period in BeniSouik and Charef, in addition to the Touame and Safel districts, Kharbet Si Messaoud, OuledBrahimGueddila and Salat. Other craft activities are practised in this region, in particular goldsmithery, tapestry and pottery (Monographie de Djemorah.2018).

There are also several fountains and springs of high quality mineral water. The city's wealth of tourist attractions allows it to be considered a true museum open to nature (Figure 03).



Figure 3. Old buildings and tourist areas

History and Development of Djemorah:

Before 1956, the commune of Djemorah was part of the mixed communes of Ain Touta. Afterwards, it became a branch of the department of Biskra, then a commune since the administrative division of 1974, annexing Gueddila and Ben Souik, as two secondary groupings. It became the seat of the Daïra since 11 October 1991 (Monographie de Djemorah.2018).

Some historians refer to its name as “Zemora”, which is close to the Arabic word Zaitona, meaning “Olive Tree”. For some, its name derives from a Roman word “Djemmar”, which was the name of the person who was in charge of the trading station at that time; for traders coming from the North and the South.

Since the previous decades, the ancient population of Djemorah first settled in caves in the mountains surrounding the oasis such as the Benarya region, ouled Ibrahim, Elbor.

Then they moved to the oasis for the exercise of agriculture of a lasting stability (olives, dates, apricots). They settled on the axis of an attractive tourist destination marked by rare panoramic views, including palm forests on the banks of the Oued Abdi valley, and orchards of apricot trees, berries, pomegranates, apples and other fruits. The *Safel* area considered an ancient core of the village.

General Overview of the Traditional Habitat

According to (Hamouda.A& Outtas.S.2011) the traditional mode of production was based on the existence of organizations and social structures in which people controlled the production process of their homes. The decline of this way of life makes today's rural habitat permeable to new urban innovations, gradually transforming the traditional practices and uses of the rural habitat.

In the traditional habitat, man is both the user and the builder of his environment in three interactive environments:

The human environment: ensured by the functional satisfaction of users' needs and activities.

The natural environment: this involves channeling environmental characteristics - physical, climatic, morphological and geological - either to use them or to protect one from them.

The material environment: the use of materials, structural principles and the combination of forces are the fundamental means of expression of geometry (Supic.P.1993)

From (Melioh .F & Tabet.K 2001), there are three categories of conceptual references of the traditional habitat:

Natural references: The natural environment is an ecosystem made up of a multitude of interdependent factors "climate, site, materials and landscape" defined by Amos Rapoport.

Social references: In the design of his habitat, man has referred to his social environment, which is defined as the whole community in which man evolves, in order to provide for his needs. The habitat was quite often used as a place of work in addition to its usual function, especially for craft activities.

Cultural references: the impact of cultural references on the conception of the habitat was clear, where the question of intimacy is a determining factor. This has led to a rigorous hierarchy of spaces, from public to private, first at the level of urban fabrics, and then at the level of the house itself.

RESULTS OF THE ANALYSIS OF STUDY CASE-DJEMORAH-

Analysis of Traditional Fabric

The agglomerations and the traditional fabric in the commune of Djemorah are distinguished by very particular characteristics:

- The majority of the agglomeration - named Déchra - are located within the oasis of the palm grove, and above the surrounding hills, one can clearly see the gradation of the levels of the dwellings on top of each other, following the slopes of the hills. This will influence the organisation of the housing units and the routes between them.
- It is also noted that each agglomeration comprises a group of houses inhabited by a group of people from the same family, in order to avoid the existence of strangers within their assembly (Figure 04).



Figure 4. The agglomeration of the traditional fabric on the hills.

- The road grid of the streets and alleys is an organic grid, following the topography and the relief of the region. This road grid is marked by a hierarchy of streets from public to private, first the streets, then the alleys with reduced dimensions, after the impasse which lead directly to the house. The impasse is a very narrow space compared to the alleys and can reach 90 cm, it ensures a micro climate adequate for daily use (Kaouche.I, 2011). (Figure 05).



Figure 5. The close alleys of the traditional fabric

This organization of the urban fabric is almost the same as the traditional urban fabric of the city of Biskra, which is fed by a hierarchical grid from public to private, reflecting the traditional character and ensuring a link between the different parts of the fabric (Badache.H.2014).

On the other hand, concerning the traditional fabric of the city of Biskra, it is noted that the palm grove, which essentially represents the oasis, has been a real support for the production of the built space since the distant past, through its climatic contribution and the provision of construction materials (Alkama.Dj, 1995). This palm grove plays the role of a veritable thermal regulator and a protective envelope for the houses, creating a clement microclimate in the face of the difficult climate (Laouar.D, 2008).

Déchras

Villages in the valley of Oued Abdi are constructed on high ground above the orchards that follow the rivers.

The “Déchras” are most often placed along the valleys, sometimes on a small height on the side of a rock, sometimes on a small height above the valley, and sometimes on an isolated hillock. Following a spatial hierarchy in three distinct parts: private (habitations), sacred (mosque, Zaouia), and public.(Mechiat.S.2021).

Ksours

They are small compact groups in the center of the oasis and orchards. The inhabitants of Djemorah lived after their first journeys, and settled in the old Roman houses until they collapsed, so they restored and rebuilt them with the Toub, according to the Islamic style (Ghalem.L.2017). Among the old ksours whose ruins are present until today: ksar BeniSouik, ksar Ouled Boudeyaf, ksareharef, ksartouam, ksarldjouadeh, ksarMaouro, ksarOuledIbrahim, ksarGeudilah (Figure 06).



Figure 6. The ancient Ksours in Djemorah

Analysis of Habitat

In general, the habitat unit in regions with arid climates is marked by an introverted aspect, where all the pieces of the house are oriented to a central courtyard - Wasteddar-: the patio, which is a distribution space, a place of life, receives the main domestic activities, it is a climatic point, it acts as a thermal regulator, it offers the shade during a good part of the day (Sriti .L. 1996) In Biskra, the traditional house is marked by its introversion and its centrality, the central element “Wast-eddar” is a multifunctional space of distribution, to the different rooms (Cote.M. 2005).

In Algeria, the patio is also found in the houses constructed at the Ottoman period, as in the case of the Casbah of Alger. The Casbah houses are marked by the “patio” central element which is surrounded by galleries (Boussora.K, 2004).

In Djemorah, the same central space named -Elhawch-, marked by its large surface, it is surrounded by the other rooms of the house, it ensures the regrouping of all the family in order to practise different activities, it is considered as a multifunctional space (Figure 07).



Figure 7. View of the central courtyard -Elhawch- in the traditional house

Characteristics of the Traditional House

The traditional house in Djemorah is marked by certain main characteristics, such as:

- The introverted aspect, where all pieces are oriented towards a central courtyard.
- The external facades of the houses are almost closed, except for the openings of doors, in order to preserve family intimate.
- Small windows over the doors to ensure ventilation and light penetration.
- The multiplicity of social activities inside the house, such as in the kitchen, which includes many activities, as it is the place to cook and also to gather as a family, as well as to weave.
- Construction with local and natural materials from the region itself.
- Constructing wide walls more than 60cm creates an optimal interior microclimate (Figure08).



Figure 8. Characteristics of the traditional house

Traditional construction materials

The construction materials are taken directly from the site, such as: bricks of clay “*toub*”, palm, stone, clay, etc. They have thermo-physical properties that make them sensitive to external climatic conditions (Cote.M, 2005).

The making of “*Toub*” is the most important operation in the traditional construction process. This process begins with the extraction of the clay, followed by three phases: transport, preparation of the mud, then modeling, before starting the construction of the walls (Bouatabba.H& al.2016).

CONCLUSION

Through this study, it can be deduced that the traditional fabric of the commune of Djemorah in the city of Biskra-Algeria is marked by a spatial organization based essentially on the topography and the reliefs of the region, for this reason particular constructive principles are underlined, such as: the compact conception, the curved and sinuous streets and alleys, the use of local materials of high thermal inertia, the use of wide walls, often double-walled, all organized around a central courtyard, which serves as a thermal regulator and as a freshness source. The traditional habitat is a projection of the social ecosystem: through the organization and hierarchy of spaces in the habitat from public to private.

The spirit of the oasis, as well as the trilogy of water, vegetation and building, serves to create a favorable microclimate, through the effects of evaporation, shade, humidification... etc. This traditional architecture is a lesson par excellence in integration with the climate, the economy, and social conditions in the face of an arid climate.

This traditional architecture serves to ensure that the inhabitants live in a way that is appropriate to the climatic conditions of their region and to provide a comfortable environment to live in. For this reason it is preferable to favor these traditional techniques, so that people can live in harmony with their environment.

REFERENCES

1. ALKAMA.D, (1995) Analyses typologiques de l'habitat, cas de Biskra. Thèse de Magister.Université de Biskra.
2. BADACHE.H, (2014) L'espace public entre conception et usage :Cas des jardins publics de Biskra. Mémoire de magister –Université de Biskra.
3. BOUSSORA.K &CHIKH.K (2004) Histoire de l'architectureIslamique, cas du Maghreb. Editions Casbah.
4. BOUTABBA.H. MILI.M, & BOUTABBA.S. (2016). L'architecture domestique en terre entre préservation et modernité: cas d'une ville oasienne d'Algérie «Aoulef»J. Mater. Environ. Sci. 7.
5. COTE.M (2005). Laville et le désert, le Bas-Sahara Algérien ». ÉditionIremam- Karthala.
6. GHALEM. L, (2017).Monuments archéologiqueset sites historiquesdans la régionde (Djemorah).Edition : Dar Ali Ben Zaid, Biskra, Algérie
7. GUINDANI,S & DOEPPER,U (1990). Architecture vernaculaire- Territoire, Habitat etactivitésproductives. Presses PolytechniquesetUniversitairesRomandes. Paris.
8. HAMOUDA.A &Ottas. S (2011). Etude topologiqueetdiachronique de l'habitat rural. Casd'El-Kantara, Biskra. Sciences &Technologie D – N°34. pp. 28-37.
9. KAOUCHE. I (2011).Valorisation des espaces publics du tissu historique de la ville de Biskra.
10. LAOUAR.D, (2008). Les transformations spatio-formelles de l'habitattraditionnelversun type auto-construit non planifié, cas du vieuxBiskra. Mémoire de Magister. Université de Biskra.
11. MECHIAT. S, (2021) Les villages historiques des AurèsenAlgérie, unpatrimoineculturel à valoriser, Revue Annales du patrimoine, Université de Mostaganem, N°21.
12. MELIOUH.F& TABET AOUL.K, (2001).L'habitatespaces et repèrèskonceptuels. Courrier du Savoir, N°01, pp. 59-64.
13. MONOGRAPHIE De L'Aures(1904) Parle LT. ColonelDelartiguedu 3° Zouaves. Constantine. Documents sur Batnaetsarégion.
14. MONOGRAPHIE De la commune Djemorah (2018). La Wilaya de Biskra. Daira De Djemorah, Commune de Djemorah

15. 15. RAPOPORTA, (1975) Pour une anthropologie de la maison, Edition, Beaudoux-Kovats
16. SRITI. L, (1996) Potentialités architecturales et bioclimatiques de l'habitat auto construit, cas d'une ville de Sud : Biskra. Thèse de Magister. Université de Biskra.
17. SUPIC.P, (1993) L'aspect bioclimatique de l'habitat vernaculaire. Arch. & Comport. / Arch. & Behav. Vol. 10, no 1, p. 27 – 47

Citation: BADACHE Halima, ALKAMA Djamel. *Spatial Organization of Habitat in Traditional Fabrics: Case of Djemorah in Biskra–Algeria–*. Int J Innov Stud Sociol Humanities. 2022;7(6):235-242. DOI: <https://doi.org/10.20431/2456-4931.0706022>.

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