

Rural Vernacular Heritage and Strategic Design: Matmata as an Example of Sustainable Development



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Abstract: *This paper explores the vernacular architecture and sustainable design strategies of Matmata, a small town located in southeastern Tunisia that stands as an emblem of Berber architectural heritage. It provides an opportunity to analyze and discuss the building strategies of the past that remain relevant. The significant potential of Berber originality is evident in the troglodytic (underground) architecture found in the town. Besides, the article aims to showcase Matmata's originality and present underground living as a cultural heritage, which has recently faced a decline due to various socio-economic changes in the region. Additionally, the paper delves into the development of hotels in Matmata.*

The research is organized as follows: The initial phase involves interpreting the basic theoretical and methodological concepts of sustainable design. Subsequently, a geo-historical study of the region is introduced. Afterwards, an analytical study is conducted to research Matmata's troglodytic architecture.

Keywords: *Matmata; rural vernacular heritage; troglodyte; strategic design; integrated tourism; sustainable development*

Kırsal Yerel Miras ve Stratejik Tasarım: Sürdürülebilir Kalkınma Örneği Olarak Matmata

Özet: *Bu makale dağların yerel mimarisini ve sürdürülebilir tasarımını incelemektedir. stratejileri. Sonuç olarak, Tunus'un güneydoğusunda yer alan küçük bir kasaba olan Matmata, Berberi mimari mirasının mükemmel bir örneğini temsil etmekte ve geçmişin hala geçerli olduğu düşünülen bina stratejilerini analiz etme ve tartışma fırsatı sunmaktadır. Dolayısıyla, bu Berberi özgünlüğünün büyük potansiyeli trogloditik (yeraltı) mimaride kendini göstermektedir. Bu makale, Matmata'nın özgünlüğünü vurgulamayı ve bölgenin geçirdiği sosyo-ekonomik değişimler nedeniyle son zamanlarda büyük bir düşüşe tanık olan yeraltı yaşamını kültürel bir miras olarak sunmayı amaçlamaktadır. Araştırmanın ilk aşaması, sürdürülebilir tasarımın temel teorik ve metodolojik kavramlarının yorumlanmasından oluşmaktadır. Ardından, bölgenin jeo-tarihsel bir incelemesi sunulacaktır. Daha sonra, Matmata'nın trogloditik mimarisini araştıran analitik bir çalışma yer alacaktır.*

Anahtar Kelimeler: *Matmata; kırsal vernaküler miras; troglodit; stratejik tasarım; entegre turizm; sürdürülebilir kalkınma*

1. INTRODUCTION

This paper investigates the sustainable design strategies implemented in the vernacular architecture of Matmata's mountains. Situated in southeastern Tunisia, this small town serves as a pristine token of the Berber architectural heritage and originality. It provides a unique opportunity to scrutinize and discuss enduring building strategies from the past, particularly evident in the subterranean troglodytic (underground) architecture.

The primary objective of this article is to accentuate Matmata's distinctive architectural features and underscore the cultural importance of its underground dwellings, which have experienced a significant decline due to the multiple regional socio-economic shifts. Additionally, the paper aims to illustrate the various strategies implemented to promote this heritage as a tourist attraction, including the establishment of hotels inspired by the local architectural legacy.

In our quest to identify the elements of sustainability in Matmata's troglodytic rural vernacular architecture, we will navigate through two key phases. The initial phase involves interpreting the fundamental theoretical and methodological principles of sustainable design. Following this, we present a geo-historical investigation of the area. Subsequently, an analytical exploration into the troglodytic architecture of Matmata comes to fruition.

The research Methodology

In this article, we will delve into four key areas of focus adopting both a chronological and thematic approach. The initial area will explore the geographical and historical aspects of Matmata's mountainous region. Simultaneously, the second axis will be dedicated to exploring concepts related to our study theme, encompassing vernacular architecture, troglodytes, and sustainable development.

The third axis will shift its focus to the local values embedded in Matmata's troglodytes, viewing them as an exceptional example of vernacular architecture. Within this section, we will introduce various values, including the troglodytes' unique know-how, the intrinsic value associated with their original vertical architecture, and finally, the significance of this monument as a collective cultural heritage. Moving forward, the fourth axis will concentrate on studying rural vernacular heritage as a means of fostering tourism development.

The research approach & Objectives

In our examination of the sustainable design strategies within Matmata's vernacular architecture, we have adopted an inclusive approach that blends thematic and descriptive elements, incorporating maps, photos, and diagrams. The initial thematic analysis aligns with the specified themes outlined in the methodology (research axes), aiming to furnish both a pertinent and evaluative understanding of our research theme. Concurrently, the descriptive study plays a pivotal role in our research endeavors, seeking not only to define the architecture of the vertical troglodytes but also to accentuate their distinctive characteristics.

The rationale behind the research

This article fits in the framework of sustainable regional development, exploring the concept of a "bottom-up development strategy," also referred to as "decentralized development." The former approach holds promise for addressing both local and regional development within Matmata, operating under the assumption that the region can advance by leveraging its own resources. Consequently, a profound understanding of the region and its potential is crucial for fostering local development.

The "Matmata El Kadima" region is known for its distinct and "unique" heritage potential, particularly in its vernacular architecture, which stands as a key asset for diversifying Tunisian tourism products. The

objective is also to investigate the growth of cultural tourism in the inland regions of Tunisia, offering a viable avenue for the sustainable development of disadvantaged areas.

The Problem statement

How does the rural vernacular architecture of Matmata represent an innovative orientation within Strategic Design? And can this unique architectural heritage exemplify effective sustainable building practices, contributing to job creation in rural communities through integrated tourism?

2. PRESENTATION OF THE STUDY AREA

2.1 .Geographical setting (see maps)

According to the Berber encyclopedia, the “Matmata Djebel” -or Matmâta if we follow the Arabic spelling of the word- rises to altitudes ranging from 500 and 650 m (715 m east of Zemertene), spanning approximately 50 kilometers in length and running roughly parallel to the Mediterranean. The town is around 50 km away from the Mediterranean. It also overlooks the small coastal plain of the Arâd and the broader plain of the Djefara. That study area is in fact a part of a much larger morphological ensemble; the “Jebel” or “Ksours” mountains –with the term “Qșûr”, plural of “Qșar”, translating to "castles" or "fortified villages" in Arabic This mountainous region forms a semi-circular arc, stretching about 150 kilometers from Jebel Matmata in the north to the eastern limits of Tripolitania in the far south. Following a meridian orientation, Matmata Mountains give way to “Jebel Dammar” -in dialectal Arabic: Demmer, at the level of “Foum Tataouine”, and then further to “Jebel Abiod”, bending to the southeast. In Libya, the Ksours mountains extend into a long high ridge that notably includes “Jebel Nefoussa [1].

This region is widely renowned for its geological heritage and distinctive geomorphologic forms, setting it apart from the coastal plains of eastern Tunisia and the dunes of the Great Eastern Erg in western Tunisia. This mountainous area is home to a wealth of typical architectural features: “Hûsh” structures, religious buildings, both horizontal and vertical troglodytic dwellings intricately carved into the isothermal clay and gypsum layers known for their cooling in summer and warmth in winter. The mountain villages, with architectural and cultural traits reminiscent of the Berber origins of the southern Tunisia villages; coexist with “Gsours”, oil mills and citadels. All these buildings bear the indelible mark of human endeavor and collectively contribute to the development of a sustainable economy.

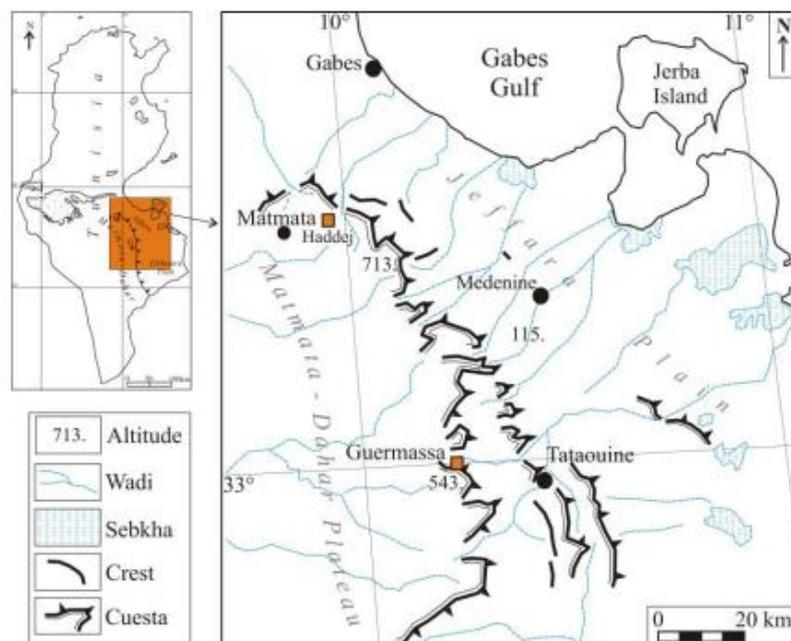


Figure 1. Location map of the study region [2]

2.2. Historical Background

The town of Matmata boasts a rich history considering the fact that it has been continuously inhabited from prehistoric times to the present day. Hence, archaeological research has uncovered evidence of the « Ramadiya » shell middens and various artifacts from the lithic culture dating back to the Neolithic period [1].

However, this presence is rather limited. In fact, the map of the prehistoric sites drawn up some twelve years ago [3] clearly demonstrates their scarcity in the Jebel region. Boukhchim states: "On the eastern slope of the mound bearing the great citadel of Matmata, we have located the remains of a prehistoric settlement in connection with a water source ("Ain El-Gattara")" [3]. These remnants come to further affirm the existence of a pastoral mountain population since prehistoric times.

During the Roman period, dating back the 2nd/3rd century AD, the Jebel became an integral part of the Roman Empire, situated within the limes tripolitanus. The forts at "Ksar Tarcine" and "Ksar Ghilane" marked the boundary of the Sahara far to the west [4]. The evidence of Roman settlement is substantiated by the presence of defensive ruins within the Jebel. Additionally the region encompasses various types of hydraulic installations, including "Jessours," dams, wells, and basins [5]. The occupation of Jebel Matmata by the prominent Berber tribes of "Zenâta", "Laouâta" and "Haouara" lasted from late antiquity to the middle Ages [6]. "Ibn Khaldûn" further affirms the very ancient Berber origin of the tribes that settled in this mountainous region [7]. Yet, regardless of the exact date of their arrival, historical sources confirm that Matmata was hosting the most significant tribes in the northern Dahar during the 11th and 12th centuries [8].

The modern and contemporary era seems to be marked by a proliferation of buildings, as indicated by the legend of "Ghazi" in "Douiret" (Louis 1975): "Toujane" is believed to have been founded four centuries ago, with its mosque dating back to 1002/1596. One of the courtyards of "Ksar Ouled Soltane" is even slightly older than that. Matmata, founded approximately two centuries earlier, is said to emerge following the initial settlement on the mountain. Above all, the last two centuries have witnessed a rapid surge in the number of "ksour" (Baklouti 2000), which is likely to be attributed to the standardization of lifestyles. This trend persisted through the Protectorate era, with the second courtyard of "Ksar Ouled Debab" dating back to 1881. Indeed, this Berber region has undergone far-reaching cultural changes, with the history of Jebel Matmata and its inhabitants evolving over time. The "Dahar", originally Berber-speaking, underwent Latinization and subsequent Christianization during Antiquity. Yet, with the Arab conquest that endured until the early 8th century, a new cultural influence appeared. It is also noteworthy to mention that the islamization and arabization of southeastern "Ifriqiya" introduced elements of the Arabic language and the Muslim religion in two waves: one in the 8th century and another in the 11th century, marked by the arrival of the nomads "Banû Hilal" and later "Banû Sulaym" from the Arabian Peninsula and Egypt [2].

3. A STUDY OF CONCEPTS

3.1 Vernacular architecture

"The study of the vernacular architecture development is an opportunity to learn significant lessons: It serves as a manifestation of the values embedded in the popular culture of each country, reflected in its construction practices. This architecture has evolved over centuries, deploying local means and techniques to address specific social, cultural and economic needs. Through its character, originality and inventive qualities, vernacular architecture plays a crucial role in shaping the environment, seamlessly blending into its surroundings [9]. The term vernacular, originating from the Latin "Vernaculus" and "relating to slaves born in the house" [10], denotes "everything that is particular to a country and its people" [11].

Vernacular architecture also referred to as local or regional architecture, gained prominence in the late twentieth century under the influence of English vernacular architecture. It describes the architectural style of a specific time, place or group of people. It also refers to "the influence of cultural traits, the impact of physical environments, the role of materials and techniques, the stages of construction, the details of design,

the importance of symbolic and decorative elements, the methods of typological categorization & the variety of uses and capacities" [11].

"Traditional or built vernacular heritage is the fundamental expression of a community's identity, reflecting its relationship with the territory and simultaneously representing the world's cultural diversity" [12]. Now that we have defined vernacular architecture and attempted to identify its boundaries within the field, we can outline its scope as follows:

- popular or primitive architecture
- rural or mountain architecture
- anonymous or architect-less architecture
- marginal architecture
- spontaneous architecture
- regionalism and critical regionalism ...

Vernacular architecture has consistently been associated with the notions of territory and identity; Above all, it emerges as the outcome of a design process that prioritizes the use of local resources and culture. Its diverse global manifestation encompasses numerous dwelling types, with troglodytic dwellings being particularly noteworthy. This style of architecture, whether rudimentary or sumptuous, can be discerned across diverse traditions featuring underground or carved dwellings.

3.2. The troglodytes

Troglodyte is a common noun originating from both ancient Greek “τρογλοδύτης” (from “τρώγλη” = cave and “δύειν” = to enter, to plunge into) and Latin "Troglodyta". The adjective derived from this noun is troglodytic. According to “Le petit Robert”, this defined as "an inhabitant of a dwelling built underground, in rocks (...). By analogy, a person who lives or works underground" [13]. The troglodyte dwelling is an ancient phenomenon with a prehistoric tradition, wherein people dug dwellings in rocks and caves, underground or on the mountainside, to find shelter and hide from the danger of animals and adverse weather. In the book entitled " Dug houses, underground houses: discovering, restoring and building troglodyte dwellings ", authors distinguish between two architectural types of troglodyte dwellings around the world: Lateral troglodyte dwellings , characterized by caves dug horizontally into the mountain (Fig 2) and vertical troglodyte dwellings, characterized by caves dug vertically into the mountain (Fig 3).

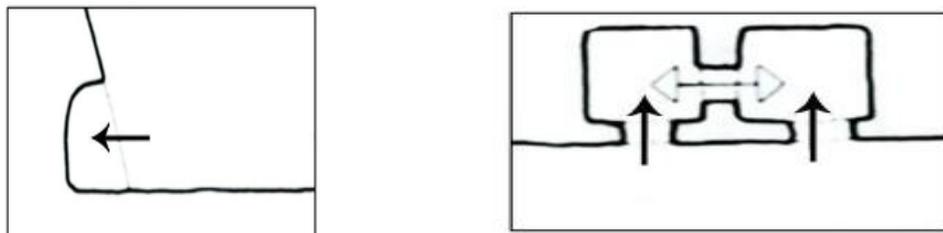


Figure 2. Schematic cross-section and plan of a horizontal dwelling [14]

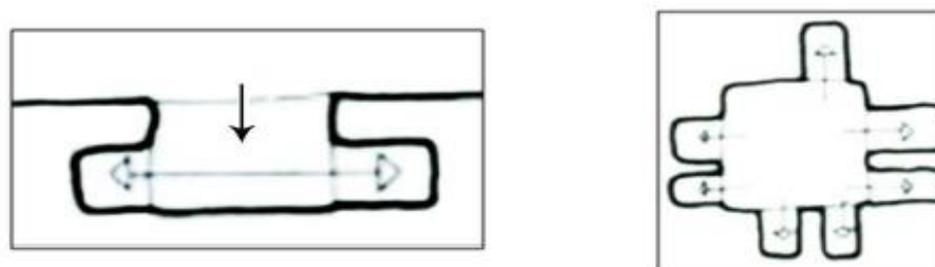


Figure 3. Schematic cross-section and plan of a vertical dwelling [14]

Not only did these dwellings serve as temporary or permanent shelters, but they were also often religious places, featuring temples and monasteries built into the rocks. The troglodyte house is a dwelling designed within a natural environment, perfectly integrated with its surroundings. One of the significant advantages

of troglodyte constructions is undoubtedly their harmonious integration into the landscape. In Tunisia, the greatest concentration of troglodyte dwellings is situated in the south-east of the country. It "is located along the "Djebel", the expansive mountainous arc that stretches from the southern Matmata region to "Tripoli", delineating the "Sahara" Desert and jutting out onto the plain in both Libya and Tunisia" [15]. In southeastern Tunisia, troglodytic dwellings can be categorized into two main types: The Matmata region is characterized by vertically dug troglodytes (Figure 4), whereas the Tataouine as well as Remada regions are known for their horizontally dug troglodytes into the mountain (Figure 5)

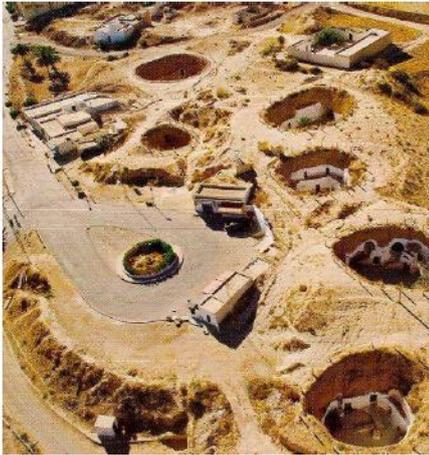


Figure 4. Vertical troglodytes



Figure 5. Horizontal troglodytes

In this article, we will focus on the study of the vertical troglodyte dwellings in the Matmata region.

3.3. Sustainable development:

This term is derived from the English concept of "sustainable development", coined in 1987 by the World Commission on Environment and Development, known as the "Brundtland Commission". Then, it was further elaborated by the "UNCED" at the Rio de Janeiro Earth Summit in June 1992.

Besides, the concept of sustainable development was extended to tourism in 1995 at a meeting organized by the "UNWTO" in Lanzarote (Canary Islands), leading to the publication of the Charter for Sustainable Tourism. According to this charter, sustainable tourism is defined as the "tourism that takes full account of its current and future economic, social and environmental impacts by meeting the needs of visitors, professionals, the environment and host communities" [16]. Sustainable tourism development is essentially based on environmental, social and economic aspects.

- Environmental sustainability involves promoting tourism that preserves ecosystems and minimizes environmental damage.
- Social sustainability implies tourism activities that improve the local populations' standards of living without over-exploiting resources.
- Economic sustainability entails creating a tourism activity that ensures effective economic development for host communities over the medium and long term.
- Sustainable tourism must safeguard the cultural specificities of each region of the world. The cultural aspect remains one of the few elements that evaded globalization

Given the assertion that "without culture, there is no tourism" [17]. Cultural tourism is partly founded on the enhancement of local cultural identities. In fact, as stated by [18], "They don't describe social objects; they create them and help them stand out». Subsequently, cultures, identities and local heritage, serving as pillars of cultural tourism development, are described as "symbolic, open, political and dynamic. They go beyond the description and representation of societies" [18]. The chart below illustrates the different dimensions of a sustainable tourism development.

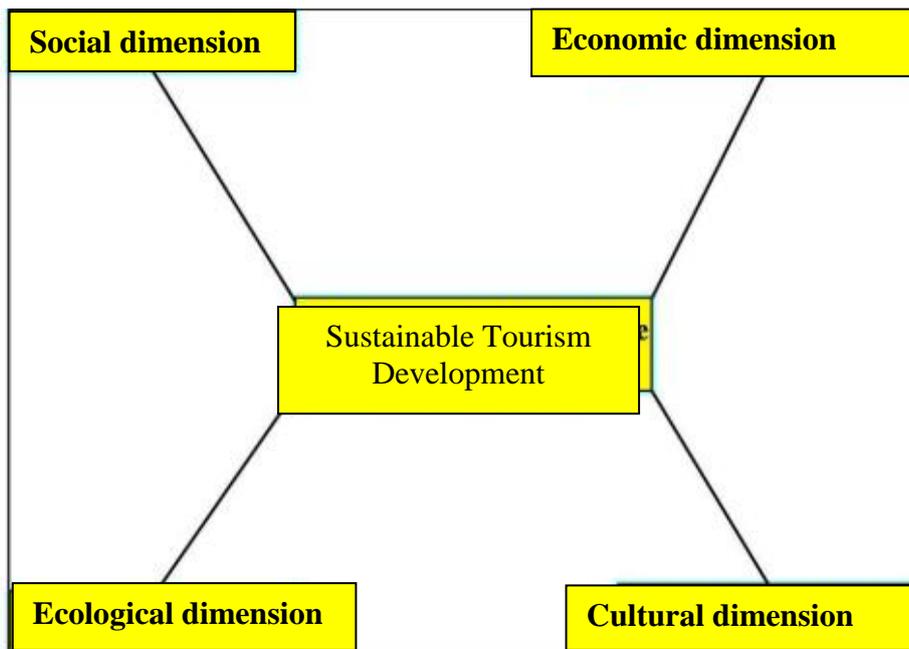


Figure 6. The dimensions of Sustainable Tourism Development [19]

The cultural dimension is thus centered on preserving regional identity, safeguarding human heritage and respecting local values" [19]. In the following chapter, we will focus on the local values of Matmata troglodytes as an outstanding example of vernacular architecture.

4. THE LOCAL VALUES OF MATMATA TROGLODYTES AS AN OUTSTANDING EXAMPLE OF VERNACULAR ARCHITECTURE.

Located halfway between the surface and the underground, troglodytic dwellings seem to represent a bridge between architecture and nature, i.e., between man and nature. By burying themselves in the ground, they aim on one hand to preserve the landscape, and on the other to protect the individual. The extraordinary diversity of these forms bears witness to man's adaptability to any environment, which is why this underground architecture deserves to be part of the world's heritage. With the notion of heritage, troglodytic dwellings are not just a part of folklore, but can once again become a contemporary way of life. This is both a miracle and a lesson in how to live in harmony with nature, preserving it while enhancing its value. These features have helped us identify a number of shared values between the troglodyte and mankind.

4.1. Know-how value

Digging a troglodyte dwelling is meticulous process, guided by a set of well-defined conditions. Consequently, there are generally four steps to excavating a troglodyte dwelling.

- The first step involves selecting a site with a moderate slope (no more than 20 degree inclination). This is typically achievable as the natural topography of the area usually provides the required morphology. The chosen site is then subdivided into three levels (level A, B and C).
- The second step comprises the excavation of the central courtyard, known in Matmata as the "Mehress". The digging is hence carried out down a gradual stairway using a pickaxe, connecting the upper-level A to the lowest level C.
- The third step involves stopping the vertical digging upon reaching level C. At this point, a horizontal tunnel is excavated to connect the central patio to the outside area. The excavation connects the B level to the C level via a tunnel, known as the "Sguifa". Its length varies according to the distance linking the intermediate level to the lower level (B and C).
- The fourth step involves excavating the rooms opening onto the central patio once the exterior design has been completed. The morphology and structure of the site favors this stage. "From a depth of 5 meters, the clay layer becomes more solid, enabling secure rooms to be dug" [14]. The

number of rooms varies according to a set of criteria, including the number of family members, usage and so on. For safety reasons (risk of landslide), rooms should be no less than two meters deep and no more than four meters high.

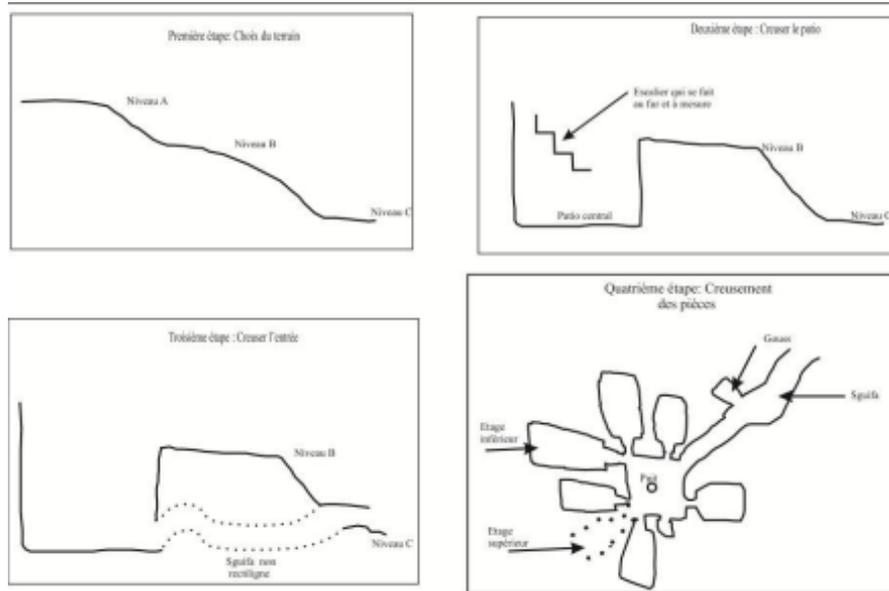


Figure 7. Steps of the vertical troglodyte dwelling excavation [20]

4.2. Architectural value: an original example of vernacular architecture

When seen from the sky, the village is characterized by a play of fullness and emptiness. The upper plane corresponds to the village space while the lower plane, on the other hand, represents the domestic space. Besides, the central courtyard structures the troglodyte architectural space. The underground caves surround this open-air space. On the ground floor, the caves serve as living quarters. Upstairs, they are used as an attic. A chimney cut into the ceiling opens directly onto the village space, allowing the caves to be ventilated.

The construction of a troglodyte house begins with the excavation of a circular courtyard measuring between 5 and 10 m in depth, depending on the presence of compact clayey sand. The entrance is built second. It may be an underground or open-air corridor, with or without a door. The final stage is the excavation of the rooms.

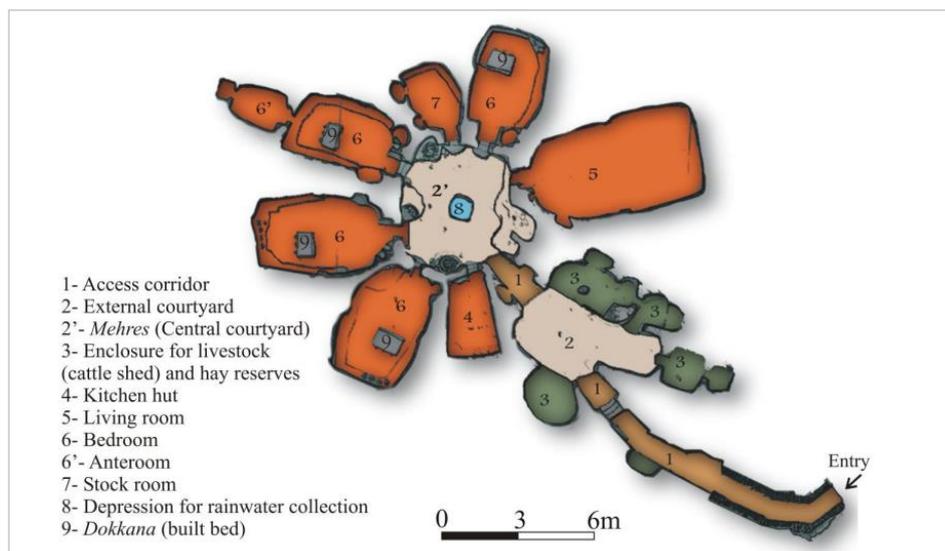


Figure 8. Example of a vertico-lateral dwelling at Jebel Matmata [21]

What's more, this vernacular space has been characterized by a unique aspect of thermal comfort. Being warm in winter and cool in summer is just one of the many privileges offered by these troglodytic dwellings to their occupants. According to Gideon S Golany, this factor is the main reason for digging troglodytic dwellings. Indeed, "the main motivation for establishing underground settlements was the inhabitants' desire to escape climatic stress" [22].

4.3 A collective heritage memory

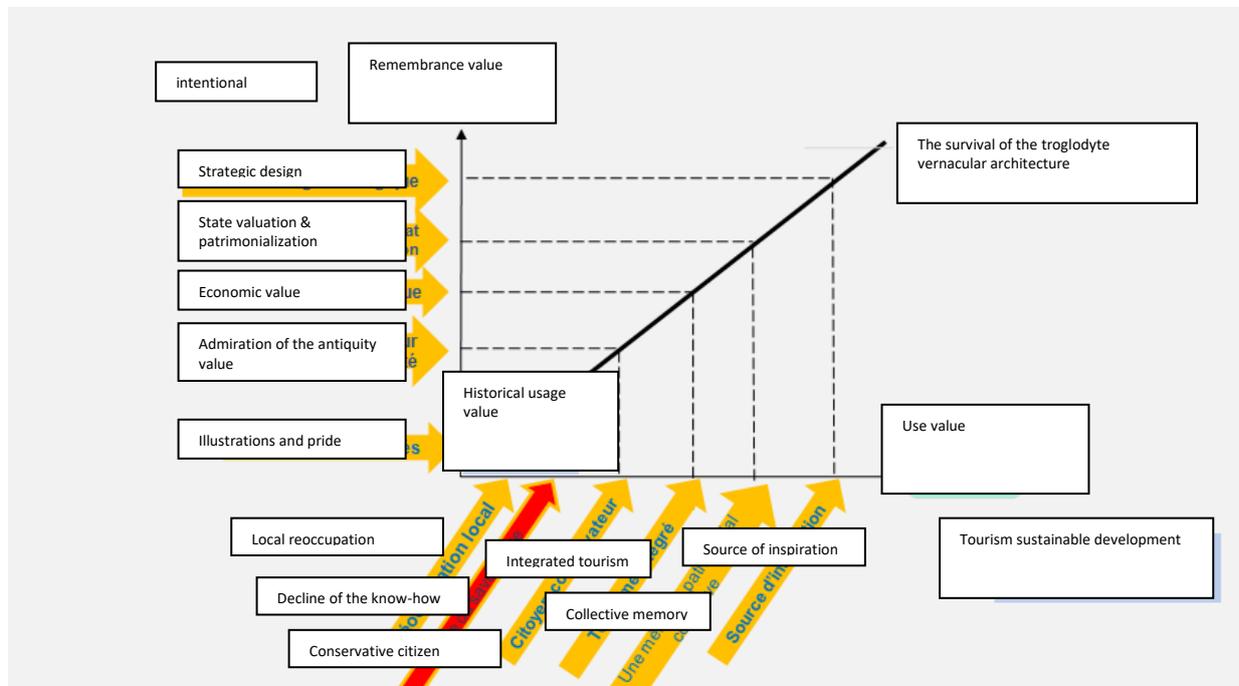


Figure 9. Survival in relation to the two parameters of remembrance and use

We will explain this evolution in detail. Initially, the local population's reoccupation of the troglodytes gave rise to a widespread sense of pride and joy, resulting in the creation of museum spaces for visitors. Hence, that rejuvenation of use can be considered a means of future remembrance. Nevertheless, it is also necessary to note that the "know-how" technique of digging into the sea rock "know-how" is under threat of disappearing. In admiration of its age-old value, local citizens have preserved the troglodyte as a masterpiece of original vernacular architecture art for ten centuries of occupation. The Berber citizen is aware of the historical, cultural and economic values of this vertical space. This is why the use of troglodytes has evolved from a domestic space to a heritage space for tourism. Then, being aware of the troglodyte's iconographic value, the State introduced measures not only to enhance it but also to encourage its innovative reuse. Following this analysis of values, and to perpetuate this cycle of survival, we propose a more in-depth exploration of a strategic design approach based on the same characteristics of remembrance, aiming to establish a practical school of know-how. This involves state institutions, civil society, universities, and private-sector companies as well. Accordingly, the State is advocating for integrated tourism to ensure the survival of troglodytic vernacular architecture, which holds significant value as a remembrance.

5. DEVELOPING TOURISM USING RURAL VERNACULAR HERITAGE

The town of Matmata, recognized for its heritage and habitat, is characterized by a set of "exceptional universal values». It serves as the bearer of the local multi-faceted values. For Berbers, it is unthinkable and excruciating to separate the material elements of heritage from its social and economic environment, as well as its residents who create, own and use it. Thanks to the international exchanges and incentives for innovation, local artisans have gradually broadened their horizons, which have created jobs for young people returning to their hometowns.

Today, heritage has emerged as a significant economic consideration in the discourse on local development, playing a pivotal role in both tourism and cultural industries. The increasing number of visitors to monuments and sites, the profound connection of local populations to these symbols of their identity, and the growing interest shown in them through multiple preservation and enhancement incentives all attest to the potential that heritage holds for local development. Integrated tourism seeks to develop sustainability, striking a harmonious balance between the economy, nature, landscape, and society. This form of tourism brings together intensive and extensive approaches, catering to both locals and vacationers throughout the year. Matmata, with its numerous troglodytic and heritage sites, offers a multitude of opportunities for integrated tourism and an adapted experience across various domains. In a country like Tunisia, endowed with few natural and mineral resources but a rich history, leveraging vernacular architectural heritage for tourism purposes is a key instrument for the development and promotion of territories. According to [23], "All development and planning at a given moment are expected to align with necessity and possibilities, addressing the economic needs of a group or community. These transformative endeavors often entail altering the existing state, whether in its natural wilderness or constructed form".

Integrated tourism is a genuine tool for development, fostering encounters and exchanges. The aim is to establish an integrated, equitable, and sustainable tourism structure. Tourists immerse themselves in another culture at the village's own pace, engaging with the daily life of the local population through participation in traditional activities. However, in Matmata, the existing system for safeguarding the outstanding natural and cultural heritage faces several limitations. This classification excludes a significant part of rural heritage from protection, thus alienating it from its deep cultural roots. Furthermore, the exclusion of heritage from the local development process risks standardizing sites and instigating detrimental rivalry among them in attracting tourists.

5.1. Strategic Design

This is a specific project activity with the goal of formulating and developing a strategy, which is not merely an outcome but rather a sequence of decisions known as "Strategic Action". How can a design strategy contribute to the enhancement of our troglodytic heritage through integrated tourism?

Integrated tourism is indeed a genuine tool for development, fostering encounters and exchanges. The goal is to establish a sustainable, egalitarian, and integrated tourism business model. Tourists gain insights into a new culture through the lens of troglodytic vernacular architecture, deepening their understanding of the host population's daily routines by participating in traditional local activities. The benefits for the village are manifold, including job creation, growth in local trade and crafts, combating rural desertification, and promoting Matmata's culture and region.

Integrated tourism allows for sustainable development, achieving a balance between the economy, nature, landscape, and society. Additionally, three strategies have been implemented to safeguard the troglodytic architectural heritage and enhance the living standards of local inhabitants in terms of protection, livability, and economic development of services and creative industries. However, many heritage sites relying solely on tourism face a serious economic crisis when tourism is affected, as demonstrated during the pandemic. Matmata has proactively developed new cultural industries, as evidenced by the International Matmata Festival and the "Costumes for Cinema" festival held in the ancient ksour, home of the Amazigh Berbers. The parade, featuring Amazigh women, injects vibrancy and reinforces economic stability during low tourist seasons. The study of tourism activity in the Matmata-Demmer chain has revealed a significant undervaluation of heritage. Consequently, the impact of tourism on local development is constrained. Various factors hinder the promotion of cultural tourism in the region under study, including legislative loopholes, land tenure problems, insufficient heritage restoration, discrepancies among stakeholders, and the failure of tourism development projects. As a result, the development of cultural tourism in the region requires legal and legislative reforms favoring decentralization. A strategic approach is essential to safeguard and protect the mountain heritage. Alongside the necessary measures to overcome the crisis in the tourism sector, there should be a specific focus on promoting "Integrated Rural Tourism (IRT) based on local social networks" in any future Tourist Development strategy in the Matmata-Demmer chain. This focus on heritage and sustainable development stems from the same belief in intergenerational solidarity.

Heritage signifies an inheritance passed on to the next generation, while sustainable development embodies progress that "meets the needs and aspirations of the present generation without compromising the ability of future generations to meet their own." The concept of heritage complements the notion of sustainable development by defining what must be considered as heritage. Conversely, sustainable development implies consideration of heritage. This connection is the third overlap between the two concepts, extending the notion of heritage to include natural heritage. Additionally, the idea of "common heritage of humanity" is particularly applied to natural heritage, contributing to the global solidarity concept.

In short, once in Matmata, one can notice two types of valuation: The first is the “Marhala” Hotel in Matmata El Kadima serving as an in-situ troglodyte. Being dug into the rock, this hotel displays a unique set of vernacular architectural characteristics. The second is Hotel “Diar El Barbar”, which is in the famous Berber village of Matmata. Being built 12 meters underground, the latter features a distinctive architecture in the style of a vertical troglodyte house adopting the vernacular architectural as a source of inspiration in its design.



Figure 10. Marhala Hotel in Matmata El Kadima



Figure 11. Diar El Barbar Hotel

5.2. Results

- Understanding that tourism can facilitate a thoughtful and sustainable development for our archaeological monument, striking an economic, environmental and social balance.
- Discovering that Matmata, with its numerous troglodyte and heritage sites, offers a multitude of opportunities for an integrated tourism that should consequently be widely promoted.
- Being aware of the need to preserve this monumental vernacular heritage and prevent it from disappearing.
- Advocating for the integration of Matmata’s rural vernacular heritage into the global cultural heritage.

To achieve these goals, the National Heritage Institute (INP) is called upon to intervene.

6. CONCLUSION

To conclude, Matmata stands an ideal destination for tourism thanks to its natural, cultural and heritage attributes. Therefore, the development of a balanced and adequate tourism approach can positively address its challenges. According to the latter, solidarity tourism remains the best option for the travelers given the benefits it provides and the significance it assigns to local heritage and cultures. In particular, it enable local people to integrate into tourism projects, fostering a stronger sense of belonging and revitalizing their esteem for their heritage and culture.

Throughout this work, we tried to approach Matmata as a case study providing insight into how successful a village with a heritage allure can be. Our focus was on the fundamental principles guiding the development of a brand image through “strategic design”. In this context, the renewal of resources takes on a clear cultural dimension since the field of culture is broadly defined. Cultural resources encompass sites, landscapes, monuments, objects and documents associated with both past and present human activities. According to this article, the local regional as well as national dimensions are rooted in identity, where cultural resources are even connected to the colors and architectural model. These dimensions primarily serve to reveal the degree of the local populations' attachment to their identity. In the same vein, the new forms of governance guiding sustainable development are inherently connected to the history of the populations in question, their cultural practices and the space they occupied at a given time. Hence, such a definition brings together the two poles of nature and humankind. In general, the social system involves the economic subsystem whose role in the evolution of the eco-socio-system is often decisive.

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