Earthen architecture landscapes as identity items in southern Morocco—Studies in Mgoun Valley, High Atlas

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ABSTRACT: The pre-Saharan valleys in southern Morocco, located between the High Atlas Mountains and the Sahara desert, make up a territorial unit with a strong identity. The acknowledgment of its landscape, environmental, social and patrimonial merits is necessarily linked to the land recognition as a key item in the spatial, architectonic and social construction of these valleys, as well as in the shaping of the collective imaginary made of inhabitants and tourists. The work gathered in this study was realized by the cooperating group of Malaga’s School of Architecture in Mgoun Valley. The objective is an approach to earthen architecture understood as a live cultural landscape, in order to foster its enhancement and guarantee its survival and development.

1 STUDY FOR THE ENHANCEMENT AND DEVELOPMENT OF EARTHEN ARCHITECTURE LANDSCAPES

This investigation is the result of the works carried out around the Landscape Workshop and Heritage in Southern Morocco: Proposal for the development of a responsible tourism model, held between the 20th and 30th September, 2011. The workshop focuses its subject to study on earth works, their habitat and their landscape as the engine for development. The objective is, on the other hand, to initiate a line of specific work in Mgoun Valley. The methodology applied in this workshop, which is based on a documentation work and fieldwork, lets us know five main aspects to focus at:

1. The linking of the main historical factors.
2. The identification of the main landscape and environment units.
3. An approach to social and cultural backgrounds.
4. The acknowledgment of landscape identifies items, paying special attention to earthen architecture.
5. The detection of the actual transformation processes which are putting earthen architecture landscape survival and territory sustainability at risk.

It is worth explaining that numerous studies about earth works in southern Morocco have been carried out, but those studies about landscape are still scarce and becoming increasingly more necessary. As Jose Manuel López Osorio, the workshop coordinator, states the only possibility for regional development means having to preserve landscape and heritage values (López 2003, p. 8).

2 MGOUN VALLEY, TERRITORY AND IDENTITY

Faissal Cherradi asserts, earthen architecture constitutes one of the great cultural wealths of Morocco (Soriano 2006). We can find this architecture along the valleys placed in the south of the Atlas mountain range under cover of the fertile lands of the oasis.

Man intervention in the modeling and working of earth in order to create habitable spaces, along with the management of water in the oasis growing and a certain stockbreeding, have enabled the development of a characteristic habitat and culture.

The results of the processes of anthropization in the course of time are earthen architecture landscapes real identity items.

Mgoun Valley, better known as “Valley of the Roses”, is placed in the southern slope of High Atlas, in the region of Souss-Massa-Draa, about 100 km in the northeast of the city of Ouarzazate. It is confined on the one hand, in the north by the massif of Irhil Mgoun, where the third highest peak of Morocco is placed, 4068 metres high and, on the other hand, in the south by the basin od Dadés river and the Jbel Sagho desert.
The valley has its head in the city of Qal’At Mgouna, in the vicinities of the N-10 highway which connects Ouarzazate and Er-Rachidia. In the opposite part of the valley, about 2200 metres high the dar (duar) of El Mrabtin is placed along with other small settlements.

There exists, between both settings, fifty populous clusters, plus numerous nomad settlements, placed in the highest altitude of the valley.

We can differentiate within the unit in order to study, two great areas: the Southern and Northern slopes.

The Southern slope stretches along Oued Mgoun, between the cities of Qal’At Mgouna and Bou Taghrar (1427 m and 1576 m respectively), that is to say, between the meeting of the Dades River, in the south, with the affluent Assif Oati, in the north. It is the best communicated area of the valley, due to its smooth orography, with an asphalted road which flows in parallel to the river in its eastern bank, except in its higher section, to the north of Hdidia, where the road branches off due to the rugged topography and the non-existence of productive lands. In this section we find twenty population centers, with some ksar and numerous duar which live on the vast cultivable extensions. Fortified perimeters rising over rocky stratum in the centre of the oasis are quite characteristic, as for example Kasbah Itran and Tighremt Mirna (Fig. 1). These fortifications, nowadays in a state of abandonment, were the origin of the modern duar.

Finally, it is worth highlighting that high demography and accessibility favoured an uncontrolled growth of building, which extends beyond the centre of population and occupy plots of land along the road. This is producing important and quick transformations in the landscape, not only due to a model of extensive growth, but also because they introduce new constructive typologies using reinforced concrete which produce considerable and severe changes in the housing units and appreciably alter the landscape.

It is placed, in the confluence of both rivers next to the nucleus of Bou Taghrar, one of the most fertile zones of the valley, taking shape of a neuralgic center where the flows coming from the south and the north are connected. It is also here where we can appreciate the transition between two landscapes. The most urban and extensive landscapes are located to the south of the valley, and the most rural landscapes to the north, with well defined landscape units, between craggy valleys and open ones.

Secondly, the northern slope of the valley, in the north of Bou Taghrar, embraces territories of the most precipitous orography, over 1550 m. This one bifurcates into two river basins where five landscape units can be distinguished:

1. In the south, Assif el Oati Valley, between Znag and Agouti el Fouqami, perfectly demarcated by the sheer mountain walls.
2. In the western slope, an open and extensive valley along the Assif Tourmet and el Oati affluent. A very anthropized area, with numerous settlements, amongst them the dar of Alemdoune stands out.
3. In the north of Alemdoune, the valley narrows and another landscape unit comes out, in the town of Amejgag and breaking through the narrow passes of Assif Imeskar.
4. In the Eastern side, in the bank of Qued Mgon river, we can find the Issoumar Valley, a perfectly defined unit where earth works landscape presents one of the most beautiful views.
5. Finally, placed in the most northern part beyond the massif peaks, we find seven villages. Really fertile green landscapes are placed next to the river source and its difficult accessibility has helped preserving its land architecture.

Beyond any difference, the whole valley is characterized by the red colour of the earth, the rocky walls and its buildings. The earth and the stone are indispensable elements in the characterization of the physical landscape in all scales herein; from relief to buildings. The land is also a narrator of cultural meaning, because according to García Leon (2009) we can recognize the culture living in a region “through the artful devices each civilization introduces, affecting the culture of construction, urban space, the territory and landscape”.

The other identity element is the oasis, which makes this earthen architecture landscapes being potentially attractive and unique scenarios.

Although the present work highlights the architecture and earth modeling, we have to bear in mind that it is the oasis element which makes this architecture possible and enhances it as a landscape. However, there is absolutely no doubt that land architecture has a patrimonial and aesthetic interest by itself; it is the oasis that gives these landscapes a special power, beauty and identity, making them especially attractive for tourism. From this point of view, the understanding of this interdependence is a key aspect for

Figure 1. Tighremt Mirna. Author: J. M. López Osorio.
the development of policies and actions design to enhance, protect and develop the area.

This is why the approach from the landscape helps us get an overview of earthen architecture within a comprehensive context where architecture, nature, historical buildings, culture and the group imaginary fuse together setting up a meaningful unit.

3 GENESIS OF THE EARTHEN ARCHITECTURE LANDSCAPES

The natural ecosystem that characterizes the region of the south of the Moroccan Atlas is the stony desert (hammada). According to the data contributed by Jordi Badía Pascual, “99% of the region is arid, barren, with no water or a fertile stratum of earth”. The productive areas placed in the oasis make up the 1% of the fertile territory, which justifies its condition of “ecosystems in extreme sustainability situation” (Badía 1998). The population settlements are concentrated in them, in a constant fight for survival this began in the Early Middle Ages, when the gradual soil impoverishment forced the nomadic tribes to become sedentary. According to archaeological findings discovered and recent analyses of pollen (Soriano 2007), the Maghreb was a savannah biome, rich in flora and fauna species, with a land full of zones with perennial gramineae, bushes and arboreal types.

This historical aspect is essential in order to understand the construction and existence of these landscapes, since the gradual effect of desertification had forced the reorganization of territories of the nomadic tribes. With the fertile land shortage so close, it takes place a fight for survival which begins in the Middle Ages and that would be the purpose for wars and continuous tribal conflicts. The fight for survival would be the fight for the right to occupy the productive soil. It will also be the beginning of land architecture and the habitat transformation.

The rivers basins are the only collectors of water coming from thaw floods (proceeding from the high summits of the Atlas) in spring time, and from heavy rain in the beginning of summer time.

This happens because the soil lacks vegetal and arboreal species to retain the little water that may occur. The rivers basins are therefore the final collectors where water becomes stagnant and with it the alluvium and slime sediment, very rich in organic matter necessary for the agricultural development.

Against the uncontrolled excess of seasonal water, two main climate issues appear: a strong solar radiation, and chergui, a dry warm sandy wind, coming from the Sahara. In this context the basins constitute themselves as fertile and independent environmental units that enjoy a certain microclimate as far as they keep safe from the winds of the Sahara. They have a guaranteed water supply and a restricted solar radiation due to the high walls that form the river basin of the valleys. That is why these valleys are constituted as landscaping and environmental units, where agriculture is possible and, with it, the settlement of the population centers (Fig. 2). These circumstances together with the sociopolitical factors determine the appearance of the earthen architecture landscapes and the oasis.

4 HISTORICAL SEQUENCE IN THE PHYSICAL AND CULTURAL CONSTRUCTION OF PRE SAHARIAN VALLEYS

- A progressive and slow desertification of the territory takes place, which causes the transition from the savannah biome to the hammada (stony desert). This process sets throughout the Middle Ages, the unique fertile ecosystems which are reduced to the fluvial river basins.
- It supposes the gradual settlement of the best adapted nomadic tribes around valleys. It is the beginning of the fight for the control of water and the necessary fortification of the architecture.
- The arrival of Islam with the Arab conquest in the VII century introduces the scientific knowledge of an evolved agrarian culture which may allow a sustainable and self-sufficient management of water, by the development of irrigation systems and a complex infrastructure of khetaras, saguías (irrigation ditches), channels, wells and laundries.
This hydrological network and a better knowledge on agriculture, will allow the growing with irrigated crops of new species. The introduction of the date palm (*Phoenix dactylifera*) will help take root and stabilize the land of orchards at the same time as it offers a shelter to the solar radiation improving the soil’s humidity conditions. This makes the creation of a cultivation system by layers optimize the production. This system is made up of a superior strata consisting of palms, an intermediate strata of medium size trees with a large number of fruit trees (fig trees, walnut trees, almond trees, apple trees, pomegranate trees...) and a last level, where seasonal crops are produced (maize, wheat, forage, and vegetables like carrots, potatoes, turnips, marrows, tomatoes...).

- The agriculture improvements allow the stabilization of new lands in the torrent beds, vacant until then, extending the productive area of valleys and allowing the towns to grow and to relax their fortification needs.
- From the XVII century onwards, the decay of the Trans-Saharan commercial route that connects Tombuctú and Marrakesh begins. At the end of the XIX century, with the French occupation of Tombuctú, the caravan commerce found its end, causing an economic decline in the region, which increasingly depends on the subsistence economy of the oasis.
- With the French Protectorate in 1912, a slow process of emigration begins, which gets intensified from the decade of the 50's and the 60's onwards. The growth of the population and the restlessness to improve their life conditions motivate the continuous rural exodus to the cities. This emigration produces, therefore, a gradual process of abandonment by the populations, being the cause of new imbalances.
- A phenomenon of reconditioning new homes and “second residence” construction in the outside of the ksar or fortified enclosure takes place. This process gives rise to the development of the duar: tight groups of houses which, in this evolution step, looks like an urban spread of growth just like an oil smudge, where European imported constructive systems are commonly adopted, with reinforced concrete framed structures and cement block walls.

- Finally, a slow but increasing arrival of visitors takes place, related to a cultural and adventure tourism attracted by the beauty of landscapes and the culture and hospitality of their inhabitants.

## 5 THE EARTH: CONSTRUCTION, IDENTITY AND LANDSCAPE

According to the landscaper Rosa Barba, “the earth belongs to what we recognize as a previous condition, in the sense that it precedes us. The earth gives support and confidence; it talks about a human condition which sets the landscape as something permanent in our memory. On the other hand, water offers the possibility of an artificial world of Nature, and the vegetation is the most evident mark that there exists a landscape” (Barba 2000).

Beyond “the natural” image that these territories may offer, we have to bear in mind that we are talking about spaces that have been highly affected by human intervention which, in the struggle for survival in a territory with such extreme conditions, has used earth, water and vegetation to build his own habitat. Earth is the main constructive material in the architecture, shaping an urban and landscape image provided with a strong entity. The mud walls are used for the building of the historical construction (*kasba* and *tighremt*), in the fortified town (ksar) or in the group of houses (dar).

Also, the mud wall is used in the construction of peripheral fences which delimit property patches, many of which have not been built yet. These constructions have been spreading very quickly in the last few years, transforming noticeably the surroundings. The mud walls conform to a sign of identity of the contemporary landscape of the valley, and have their rationale in the emigration and the change in the structure of land ownership. We found them in peripheral zones to the main bodies (Azrou and Znag are two good examples of it) (Fig. 3) and throughout the communication channels. Their horizontality and low height favor integration to landscape, but they anticipate strong transformations of the habitat, as they delimit lots that will be built in the near future.

On the other hand, the adobe has been traditionally used in the superior levels of kasbahs,
lightening the walls and allowing the development of peculiar geometric decorations.

Another main issue in the definition of landscape image is the flat earth cover, building up a rich image in tonalities, textures and forms, and which provides us a homogeneous and integrated map-reading of the surroundings.

Finally it is possible to emphasize, the importance of the mosques whose minarets are a landmark in the landscape. They are constructions made of reinforced concrete that, despite introducing an urban status shift, identify and characterize the nowadays habitat.

Besides the architecture, the land is also the base on which the ways, streets, public spaces, channels, slopes, terraces, etc. are given a shape, making possible, therefore, the construction of the social usage space as well as the productive space of the oasis.

Stones and boulders are one of the natural resources used in the definition of anthropic environment. These materials are found in the construction of the walls that contain and delimit the territory all throughout the communication channels, in the terracing of the fertile soil and in the demarcation of the threshing floors. Its use in the nomadic settlements is also characteristic, either in the construction of small volumes; or for the fencing of the threshing floors around the caves, or to gather the cattle; or piled up in landmarks as if they were indicating the temporary occupation of a cave. The stones are also used in the construction of dividers which divide the water throughout the fluvial courses, making possible the beginning of an irrigation network.

6 TRANSFORMATION AND IMBALANCE AGENTS

We have seen how the transformation during time seem to have been adapted to the territory in a process of logical construction and “negotiated” with natural dynamics. It has favoured the development of a sustainable model from the environmental point of view with very low rates of resources consumption and waste production.

The earth and the stone, along with other raw materials proceeding mainly from agriculture and animal breeding, allowed the basic needs of shelter to cover, food and spaces for social usage. It is, as we have seen, a subsistence economy which depends on the annotated productive spaces of the oasis. This means that we are dealing with very fragile units, where the struggle for the environmental, social and economic sustainability is an increasingly difficult challenge to confront. A model of development has not been able to keep up with the new times nor to absorb the population increase, making the region sink into a certain level of poverty. This has motivated the appearance of two phenomena of demographic flows which are deeply transforming the space configuration and, with it, the landscape: the emigration and the tourism.

Nowadays Mgoun Valley is subject to multiple pressures related to the globalization and the climatic change. While desertification advances, the global processes are importing models which harm the traditional laws of physical and social construction. It is putting at risk the survival of the preexisting models.

The emigration, although it is a source of wealth, is also an agent of destabilization and uprooting. According to the studies developed by J. Lacomba and M.J. Berlanga in the Moroccan High Atlas, the emigration consolidates social inequalities (2006, p. 5) and weakens the traditional communitarian structures.

In the case of Mgoun Valley, more than a fourth part of the inhabitants has been affected by the emigration, which is accompanied by the disintegration of the traditional social institutions, the penetration of the market economy and the diffusion of innovations and urban habits (Laouina 2002, cit. Lacomba 2006).

The result of this process is perceived in the fast and uncontrolled growth of the dar (Fig. 4), and in the introduction of new architectonic typologies imported from Europe that alter the earth landscape substantially, and putting at risk the sustainability of the model. This in fact is fed by the changes in the legislation on the ownership of the land, pushed by the communities and the Central Government.

On the other hand tourism is attracted by the enjoyment of the landscape. This turns the landscape into a source of resources, and an alternative for the economic development of the region, as well

Figure 4. Walls demarcating future urban growth. Author: J. M. López Osorio.
as an opportunity for its enhancement. But the tourism can also be a threat and cause of strong imbalances, if it is not regulated to guarantee the environmental and social sustainability.

7 TOWARDS THE ACKNOWLEDGMENT OF THE CULTURAL LANDSCAPE

The preservation and the enhancement of earthen architecture as a heritage, needs an ample vision to be able to recognize, not only its constructive and architectonic qualities, but it also its value as cultural landscape units.

An approach from the point of view of “cultural landscape” is proposed for this. It is a concept that was recognized at the World Heritage Convention in 1992 (Fowler 2003). This conception guarantees the preservation of earthen architecture as a patrimonial resource, putting it in service for an economic reactivation of the region, causing the reinforcement of the community self-esteem.

A work of identification and stock-taking of the resources do not seem to be enough for this recognition to be effective. It becomes necessary on the one hand to know all the nuances composing the imaginary collective of inhabitants and tourists and, on the other hand, to narrate a history able to attract visitors and investments, as Joaquim Sabaté states (2004) as far as the patrimonial parks.

In this sense, the organization of the cultural landscape in relation to determined itineraries could be useful, introducing a temporary spacial sequence, articulated along a didactic and narrative route. At this point the contributions from J.M. García León (2009) are interesting. He explains how “from the recuperation of means of communication not only do we grant values to the natural and cultural resources, but also we integrate the elements to be protected and preserved, profiling the landscape in benefit of the communities in decay.”

In the case of Mgoun Valley, a specific study for each of the landscaping units composing it is proposed, where an integral analysis for the recognition of the land architecture as cultural landscape is approached. In order to do that, it would be necessary to go beyond the stock-taking of the architectonic pieces, and to deepen the development of the landscaping studies, the knowledge of the economic and social structures and the construction of a historical and cultural narrative that gives sense to the differentiated physical and social construction of each unit.

NOTE

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REFERENCES