

6 DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN

XV to XVIII Centuries

Ángel Benigno GONZÁLEZ AVILÉS (Ed.)



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Vol. VI

PROCEEDINGS of the International Conference on Modern Age Fortifications of the Mediterranean Coast
FORTMED 2017

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Editor
Ángel Benigno González Avilés
Universidad de Alicante. Spain

EDITORIAL
PUBLICACIONS UNIVERSITAT D'ALACANT

FORTMED 2017

Colección Congresos UA

Los contenidos de esta publicación han sido evaluados por el Comité Científico que en ella se relaciona y según el procedimiento de la ``revisión por pares``.

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www.publicaciones.ua.es/

Imprime:

ISBN: 978-84-16724-76-5 (Vol.VI)

Depósito legal: A 494-2017



Inhabited ruin heritage: stone and water in the defensive system of Tala Aougrou. (Gourara, Algerian Sahara)

MAHROUR Illili

University Lumière Lyon-2, Department of Anthropology-LADEC, Lyon, France.
E-mail: illilimg@yahoo.fr

Abstract

Tala Aougrou is one of the fortified settlement oases forming the network of defensive structures of the Gourara. It is located in the south west of Algeria, on the ancient caravan routes linking sub-Saharan Africa to the Mediterranean world. Thanks to its geographical position, at the foot of the Tademaït plateau, Tala Aougrou has benefited from abundant waters, which have allowed the establishment of five ancient fortified human settlements. Today, the vernacular architecture defensive system is caught in the midst of the city development characterized by phases of demolition and abandonment of the urban fabric. Despite an advanced state of ruin, these ancient defensive human settlements are still inhabited and provide access to knowledge of the site transmitted by the "living word" (oral tradition). Through this "lesson of the inhabited ruin", we analyze the constructive logic of this defensive structure in its mastery of stone and water, specific to this Saharan region. Hence, the study of the materiality of the transformation of the site, in close mimicry with nature and stone constructive know-how, identifies two key elements of the defensive system: Lehfi (ditch) and Foggara (collecting and transporting water device).

Keywords: Stone architecture, Ditch (Lehfi), Water system (Foggara).

1. Introduction

Tala Aougrou is one of the fortified settlement oases forming the network of defensive structures of the Gourara. It is located in the south west of Algeria, on the ancient caravan routes linking sub-Saharan Africa to the Mediterranean world. Thanks to its geographical position, at the foot of the Tademaït plateau, Tala Aougrou has benefited from abundant waters which have allowed the establishment of five ancient fortified human settlements.

Today, the vernacular architecture defensive system is caught in the midst of the city development characterized by phases of demolition and abandonment of the urban fabric. Despite an advanced state of ruin these ancient defensive human settlements are still inhabited

and provide access to knowledge of the site transmitted by the "living word" (oral tradition).

In our in situ observation at Tala Aougrou we have approached inhabited space through a field method based on two notions: urban wandering and involuntary memory. The first one identifies the art of living the city through the urban walk and practicing the city "from below" [Berenstein-Jacques, 2008]. The second, also called the itinerary method, through physical displacement in space, makes coexist past, present and future during the enunciation process of the interview and all along the space and duration of the itinerary [Petiteau, 2008].



Fig. 1- Lehfi: The western ditch of Tala Aougrou old fortress “El Guesba El Guedima” (Illili Mahrou, 2016)

Walking in Tala Aougrou is to be among living ruins in formal and spatial mutations, with the introduction of concrete in the heart of the vernacular tissue. Our spatial landmarks of city dwellers are relatively blurred in the midst of stone and sand ruins and to resort to the inhabitants’ know-how is essential for an accurate knowledge of the place.

This participatory method allowed us to have access to a knowledge based on the experience and the practice of the places. Throughout our investigation, a qualitative approach has been privileged by questioning the act of building through the words of the inhabitants encountered during itineraries outside touristic circuits.

We met one of the last master-builders living in Tala who gave us an unprecedented knowledge of the link between the defensive system and the Foggara (water supply system). Here, anthropology and architecture are brought together to serve Saharan built heritage research, and through this "lesson of the inhabited ruin" we can analyze the constructive logic of this defensive structure in its mastery of stone and water, specific to this region.

Thus, the study of the materiality of the transformation of the site, in close mimicry with nature and stone constructive know-how, identifies two key elements of the defensive system: Lehfi (ditch) and Foggara (collecting and transporting water device).



Fig. 2- Old master-builder drawing on the sand the diagram linking the main foggara to the ditches of Tala Aougrou fortresses (Illili Mahrou, 2016)

2. Water and defensive System in Tala

2. 1. The toponymy

Toponymy, as a living word, reflects the spatial perceptions of the territory inhabited by autochthonous people who, despite their ethnic differences, have kept original Berber toponyms (Tamashek of the Touareg, Tazenatit and Tachelhit of the Zenets). So, the word "Aougrou" refers to the term "teyyruṭt" which means scapula and shoulder [Bounfour and Boumalek, 2001] and refers to this particular part of the relief: the flat and wide regular shape of the Méguiden, at the foot of the Tademaït plateau. This geographical configuration will favour the gradual establishment of several human settlements reaching 14 inhabited ksour in the 19th century: Bou Guemma, Charef, Yaâla, Aoualia, Zaouia Sidi Aoummeur, Akbour, Aâboud, Tiberghamine, Ksar El Hadj, Tinghline, Ksar Tala, Zaouia Sidi Abdallah, Oufrane, Oulad Mahmoud. [Colonieu, 1860]

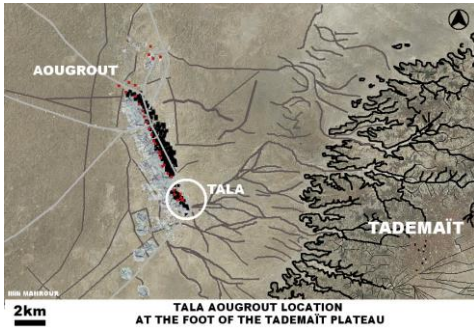


Fig. 3- Location of Tala Aougrount at the foot of the Tademaït plateau (Illili Mahrour, 2016)

Today, this alignment of ksour, from north to south, represents a continuous network of 28 fortifications mostly in ruins, only few still inhabited.

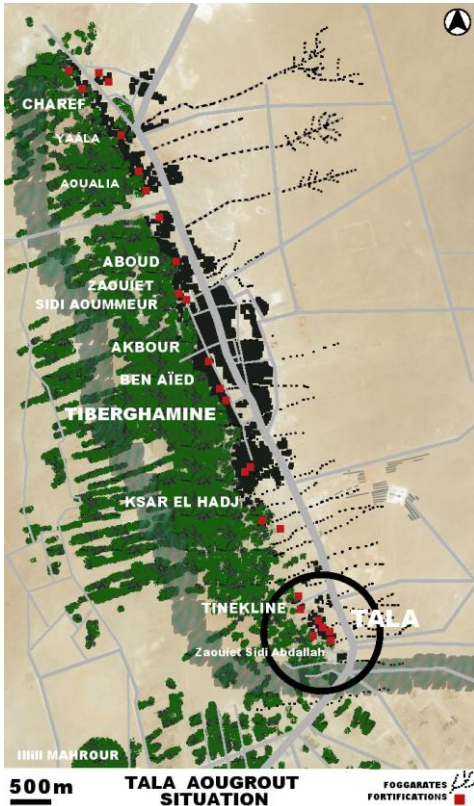


Fig. 4 - Main fortifications of the Aougrount and location of Tala (Illili Mahrour, 2017)

Toponymy of Tala Aougrount illustrates and emphasizes the specificity and the multiple ways

water comes out of the ground. The term "Tala" means, in Berber Tazenatit, both a source and a fountain, and also designates a water tank, a river or a pond [Basset, 1893].

Traditionally, three devices were used for the capture and use of deep water: artesian wells, ordinary wells and Foggara. All the wells differ according to the geological and hydrological characteristics of the area and the rocks of the "Continental Intercalaire" sand and clay formations [Bisson, 1957]. In Tala, we observed two distinct types: the wells dug in the rock and the wells built in worked stone masonry.



Fig. 5- Constructive techniques of Tala Aougrount stone wells: monolith and masonry limestone and sandstone. (Illili Mahrour, 2016).

However, since 1999, the Algerian state has set up agricultural development perimeters in the Aougrount region with the allocation of farm land with irrigable areas of nearly 2500 hectares [Journal Officiel, n°17 du 14 Mars 1999]. The promotion of pivotal cultivation and the systematic use of probes for the capitation of deep waters has contributed to the reduction of the water table and to the drying up of water in many Foggates and other wells of the palm plantation gardens.

2. 2. The Foggara

In Aougrount, the Foggara was the main water supply and distribution system characterized by kilometres of tunnels dug in the aquifer of the "Continental Intercalaire" to capture and channel fresh water. The old galleries are always visible on the surface thanks to the alignment of series of "wells-chimneys" which allowed access for their maintenance and favoured condensation to optimize water flow [Laureano, 1991].



Fig. 6-The “wells – chimneys” of Tala Aougrouit Foggara (Illili Mahrour, 2016)

Once on the surface, the water was stored in basins, "El Majen", and then distributed through a network of stone pipes, the "Séguia", which shared water in the palm plantation gardens through a distributing comb on a pro rata of the work provided to build the foggara.



Fig. 7- South West Tower of Tala Aougrouit old fortress “El Guesba El Guedima” (Illili Mahrour, 2016)

As toponymy tells us, Tala Aougrouit as a tank of water, is still distinguished by the punctual presence of water resurgences in the form of pools that appear at the ramparts foot of the main fortifications. In the past, stagnant water emerged after heavy precipitations, forming ponds and swamps, on nearly 12 km, between Zaouiat Sidi Abdallah and Zaouiat Sidi Aoummeur. These ponds could even be 100m long and 20m wide [Reboul, 1950]. The rains were often the cause of disasters, as waters gathering on the extreme western limit of the Tademait plateau, descended the mountain

which borders the Aougrouit on the east, and reached Tala on Zaouiat Sidi Abdallah palm plantation following the natural channels course (Fig 3). In the 1950s, oral tradition recalled that rainfalls were devastating and that the “oueds” flooded every twenty years [Reboul, 1950].

Thus, in order to avoid the winter floods, the Aougrouit fortresses and particularly those at Tala, settled on a parallel line to the Tademait plateau, on the Meguiden limestone surface of clayey formation and above the Oued Aougrouit bed below the palm grove gardens.



Fig. 8- Double walled west enclosure of Tala Aougrouit old fortress “El Guesba El Guedima” (Illili Mahrour, 2016)

2.3. Lehfi to erect the fortress

The flat and regular shape of the Aougrouit relief led the building masters to use the excavation technique to make the base of fortified dwellings emerge from the ground. Thus, Lehfi designates precisely the ditch surrounding a fortified enclosure [Baudot-Lamotte, 1964] where human settlements were established on a non-homogeneous soil made of sandstone, soft limestone, clays and fine sand. The Foggara layout is a structuring element of Saharan urban fabric and induces a spatial distribution of both the fortresses positioning and the palm plantation gardens parcel system [Mahrour, 1992]. The ground is dug for kilometres to channel water and the fortress is raised above loose soil to ensure its defensive system against nature and people. Thus digging the rock is the founding gesture of sedentary life in this region of the Sahara: men dig to catch water and dig to erect the bedrock of the fortification.

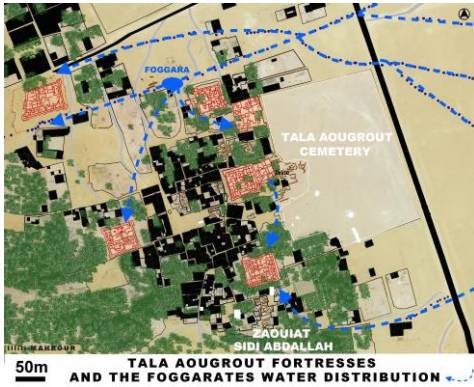


Fig. 9 - Fortresses of Tala Aougrount and the Foggara water distribution (Illili Mahrour, 2017)

Consequently, the defensive system used the water resurgences and circumscribed them in the space of the ditch, just as the pipes coming from the main Foggara provided deviations in order to flood the ditch in case of attack called “Ghezzou” (Fig. 9).

Thus, Tala Aougrount consists of a set of five fortifications housing a population composed of Shurafa, Zenets, Zoua, Oulad Sidi Sheikh, Haratin and slaves [Deporter, 1890]. According to the oral tradition transmitted to us during our interviews with the shurafa descendants of Moulay Abdallah in Tala, their ancestor Sidi Yahya originated in Ain El Hut, near Tlemcen, and thus would be of the same lineage as the shurafa of Sid El Hadj Lahsen of Guentour and Kali. Their ancestor Moulay Abdallah would have come to Tala to found his Zaouia, still present today. This genealogy serves as a landmark in time dating them at least in the 16th century, and in space, naming the cities occupied by the members of the same lineage according to the Gourara territory: Kali, Guentour and Tala Aougrount [Bellil, 2003].

In Tala Aougrount, besides Zaouiat Sidi Abdallah we find the following five ancient fortresses: “El Guesba El Guedima” (the old fortress), “El Guesba El Djedida” (the new fortress), “Guesbat Oulad Moulay Abdallah” (the fortress of Moulay Abdallah’s descendants), “Guesbat E-Sheikh Bou Has” (the fortress of E-Sheikh Bou Has) and finally, “El Guesba El Tahtaniya” (the lower fortress which is in the midst of the palm plantation gardens). The fortresses of Tinecline are “El Guesba El Hamra” (the red fortress and also the oldest) and “Guesbat Eznata” (the

Zenets fortress) and belong to Tala because they share the same water distributed by its main Foggara (Fig. 10).

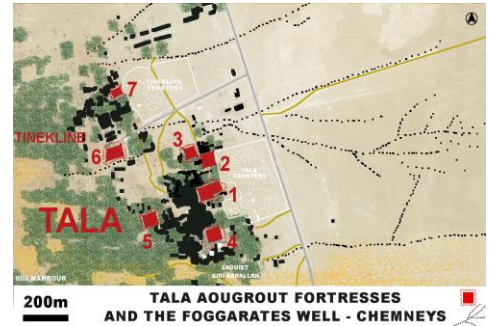


Fig. 10 - Tala Aougrount Fortifications and Foggarat well-chemneys: 1- El Guesba El Guedima, 2- El Guesba El Djedida, 3- Guesbat Oulad Moulay Abdallah, 4- Guesbat E-Cheikh Bou Has, 5- El Guesba El Tahtaniya, Tinecline: 6- El Guesba El Hamra, 7- Guesbat Eznata (Illili Mahrour, 2016)

2.4. The stone wall constructive technique

Just as the Foggarates are excavated for kilometres to catch the waters of the continental limestone stratum, here, the fortifications walls are erected on excavated foundations of the rocky soil consisting of sandstone, "El Hadjra" and limestone, "El Tafza".



Fig. 11- Young master-builder’s drawing of the wall excavated pattern (Illili Mahrour, 2016)

The technique consists in lowering the level of the soil until a relatively homogeneous calcareous layer is obtained by successively removing the layers of sand and pure clay, "El Tine" (Fig. 11). Thus, the workers dig the ditch and cut the rocks into blocks of relatively regular sizes to form the basic material for fortifications and dwellings.

The sets of stone layers are fairly regular and deploy on heights exceeding 20m. They are distinguished by a variety of techniques ranging from the cyclopean masonry to tight and regular layers matching the irregular shapes of the excavated rocks that form the base and the general seat of the enclosures and corner towers walls.



Fig. 12 - The wall regular stone layers of the western enclosure of Tala Aougrouit old fortress "El Guesba El Guedima" (Illili Mahrour, 2016)

Another distinctive feature of this bonding masonry is the absence of corner pier. Indeed, the use of small dense masonry layers on wall thicknesses ranging from 1.80m to 2.2m wide allows them to make changes of direction without resorting to corner pier. In addition, the

walls are based on a non-regular plinth foundation (Fig. 13).



Fig. 13- Southwest wall stone constructive technique on the erected rock basement of Tala Aougrouit old fortress "El Guesba El Guedima" (Illili Mahrour, 2016)

The seat is homogeneous and stable but not flattened, which obliges the master-builders to make a judicious choice of the good rocks which will gradually cling to the rock basement, in mimicry of the original rock, stone after stone, in order to erect the double enclosure walls with a inwards inclination both inside and outside.



Fig. 14 - Constructive stone detail from the western wall of Tala Aougrouit old fortress "El Guesba El Guedima" (Illili Mahrour, 2016)

At Tala Aougrouit, cyclopean masonry is not frequent, but it can be found inside the fortifications. The anchor headings in the wall are regular and of small size and the horizontal layers are very regular with a fairly fine line of joins on the tops.

3. Conclusion

By privileging surveys with Tala Aougrou inhabitants, we had the chance to meet one of the last forgotten master-builders of the Gourara region. In the absence of archaeological campaigns and because of the lack of interest in this heritage and its fast deterioration, an anthropological approach that puts human

knowledge at the heart of architectural research for the preservation of the built heritage is essential for saving a know-how that is ignored and disappearing with the death of the elderly. Today, radical changes in construction techniques replace the original stone by concrete, blockwork walls and earth for the sake of implementation facilities, touristic purposes and the stereotypes of desert way of life.

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