

Third session: urban analysis case studies focussing on the historical traces, the ethnic groups, the building technologies and the rehabilitation strategies.

## Searching in the tradition of the *medina* of Gafsa in Tunisia for an urban-upgrading project.

Gianluca Cadoni <sup>1</sup>, Annalisa Masetto <sup>2</sup>

### Introduction

The research on the urban structure and the architectural properties of the *medina* in the town of Gafsa has been assigned the purpose of drawing up an urban-upgrading project for the *medina*.

The interest in renovating this historical centre derives from the desire to save the heritage which, even if not remarkable enough historically artistically, or scientifically, to be included in the *World Heritage List* of UNESCO, represents the expression of local culture and history.

At the present time the *medina* of Gafsa is in such decline that it has been transformed into a ghetto populated by the poorest members of society, rejected by the people living in the rest of the town, and is a residential quarter where all services are almost exclusively commercial and used only by its inhabitants.

An urban-upgrading plan, apart from the restoration of the most valuable houses, could foresee the redevelopment of some sites to avoid zoning, typical of the *medinas* and of later developments under French colonization to the present day, to reconnect the newer zones to the ancient quarters.

### Gafsa: physical realities

*C'est par la route de Sfax qu'il faut arriver à Gafsa. La piste suit les derniers contreforts du dj. Orbata: à gauche, la montagne, ravinée et sèche; çà et là quelques broussailles, quelques touffes de driss ou d'alpha[...].*

*Paysage désolé sous un soleil brûlante, sous une lumière crue qui noircit les ombres et tue les demi-teintes, qui fait le contours tranchants et l'horizont trop net..*

*Aux environs de l'Aïounet Melah, la montagne devient plus abrupte, la piste abandonne le voie ferrée qui s'engage dans un ravin. Puis soudain, une corbeille de verdure apparait: Gafsa ; une contraste saisissant..<sup>3</sup>*

Gafsa is situated at the centre of a vast territory which lies between the steppe and the desert. Its position has always been considered strategic not from a commercial point of view, but for the command of the territory. «*C'est le centre naturel de la surveillance du Djerid, et le centre de ravitaillement des nomades. [...] De là, l'importance exceptionnelle de Gafsa au point de vue militaire.* »<sup>4</sup> According to the testimony given by Count du Paty

<sup>1</sup> Gianluca Cadoni, architetto. [gianluca.cadoni@infinito.it](mailto:gianluca.cadoni@infinito.it)

<sup>2</sup> Annalisa Masetto, architetto. Studentessa al corso di perfezionamento "Habitat, tecnologia e sviluppo", presso il Politecnico di Torino. [annalisa.masetto@infinito.it](mailto:annalisa.masetto@infinito.it).

<sup>3</sup> BODEREAU Pierre, *La Capsa ancienne, la Gafsa moderne*, Augustin Challamel Editeur, Paris, 1907, p.9.

<sup>4</sup> Colonel LEON-GUSTAVE NIOX, *Géographie militaire, Algérie et Tunisie*, Librairie Militaire de L. Baudoin et C<sup>ie</sup>, Paris, 1890, p.386.

de Clam, in 1885 it was still possible to see the remains of the ancient walls of pisè, which were then destroyed by the French Authority after the occupation of the city.

There is very little vegetation; other than esparto, you can find rows of prickly pear, which, apart from dividing the small cultivated fields, control the movements of the dunes. In the most favourable conditions, you can find olive plants. The only elements which alter the monotonous landscape are the *oueds (wadi)*, the seasonal streams of water.

Gafsa's climate, outside the protection of the oasis, is extreme, the driest and hottest in Tunisia<sup>5</sup>. The scarcity of water is one of the worst problems: annual precipitation is less than 200mm.

Some ancient historians<sup>6</sup> celebrated the richness of this land, that could have come from the controlled use of water under the Roman occupation "*ainsi la nature ne fut pas transformée: mais l'homme utilisa sagement les ressources qu'elle lui donnait*"<sup>7</sup>.

Gafsa is an oasis-medina system, an isolated complex characterized by an outlook based on self-sustenance; the town and the countryside are linked by a unique determining factor: the presence of water, which allows the cultivation of the earth and the settlement of man.

### **The development of the Medina**

The structure of the *medina* is composed of two different parts, divided by rue Kilani Mètoui<sup>8</sup>. The southern part, *Guebli-Gafsa*, may be the original urban centre; its elevated position and the spring, *Wad al-Bay*, or *Wad al-Kabir*, make it a privileged place. This spring, on which the Romans built two Baths, that are still the town's symbol, acts as the core in the in-radius system of the main roads. The borders of this area could correspond with the city walls, whose doors, findable in ancient plans, confirm the radial arrangement of main roads. The most important public buildings, such as the Great Mosque and Dar Al-Bey, and the houses owned by the most powerful people were close to these radiuses.

In contrast with this coherent layout, *Joufi-Gafsa*, the northern part, is characterised by irregular blocks erratically subdivided into living spaces, as if it were an extension. Here we can find the Jewish's quarter. It has managed to maintain its commercial and artistic vocation, especially along rue Sidi Ahmad Sahili and the external boundaries.

In the south-east there is the *Souk Lybia*, the main market: the ancient *Souk* was called *Al-Rahaba*, and in this area there was the *Marchè Central* and the *founduks*. All along the external borders of *Joufi-Gafsa*, is visible the deepest transformation: the city walls were substituted by the French with colonial buildings and peripheric boulevards. Administrative activities have been moved outside and the new walls of the *medina* are formed by tall European-like buildings, with windows facing the streets, and which stand together with the *Kasbah*, which, in a recent restoration, lost its original configuration and relationship with the oasis.

### **Water, ground, sun, wind: the sculptor of the medina**

The first city nucleus was, therefore, established next to a spring. The arrangement of the main roads, following the slant of a slight slope, facilitates water drainage towards the

---

<sup>5</sup> The temperatures in Djerid reach 50°C during the day, with a daily swing of 20°C; in winter the nightly temperature can fall to 0°C. In January the average relative humidity is 37%, and falls to 32% in July.

<sup>6</sup> Some scholars, such as Tissot and Commander Roudaire, thought that the richness of this area, celebrated by ancient historians such as Erodoto, Pomponio Mela and Plinio, came from lake Triton (which was in contact with the Mediterranean), and rains caused by its evaporation would have quenched these dry lands and when the lake finally dried up, all that was left were the *Chott*, a salt lake. In reality numerous other scholars disagree with this hypothesis and Bodereau explained how Lake Triton could have been the Gulf of Gabes

<sup>7</sup> BODEREAU Pierre, op.cit., p.53.

<sup>8</sup> Souk To'Maa, the wool souk.

oasis in case of torrential rain. These are combined with those streets which follow the level curves, in accordance with a built-up logic which complies with and exploits the natural orographical structure.

To block the rays of the sun, carrying heat and dazzling light, the city structure has grown thicker and thicker, roads are narrow and bending, whilst houses are getting increasingly closer to one another with the purpose of avoiding a prolonged exposure to the sun's radiation.

Some other measures exist regarding protection from the sun: throughout the entire *medina* a network of *sibat* (*sabat*) - elevated ways – are creating covered passages among the houses. During the summer, some water is spread under the *sibat*, so as to create a pleasant coolness in these shady areas: this way people gather thereunder, to take a nap or chat.

Heat comes also from the Saharian winds, full of sand: the entire layout of the *medina* is built to obstruct the entrance of the wind. This has been demonstrated by a computer simulation: the *medina's* almond-shaped structure seems to offer an aerodynamic shape pointing southwards, which brakes the sirocco's blasts, and there are no roads going southwards (*Fig. 1*). There are, instead, roads flowing into the perimeter constructed towards East-West: the more humid and cool winds blowing from the sea come from the East: the walls are penetrated and allow the wind to flow through the *medina* (*Fig.2*).

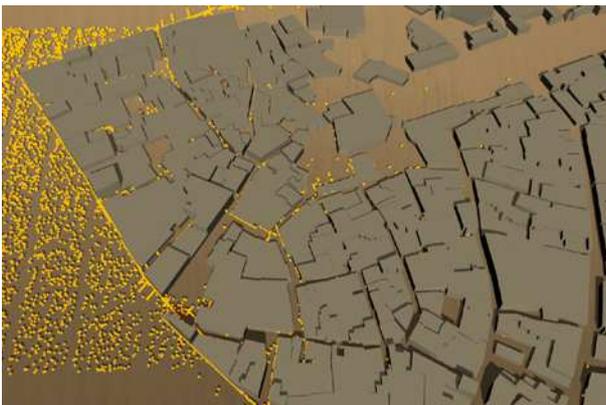


Fig.1 – Computer simulation: the almond-shaped structure breaks the sirocco's blasts

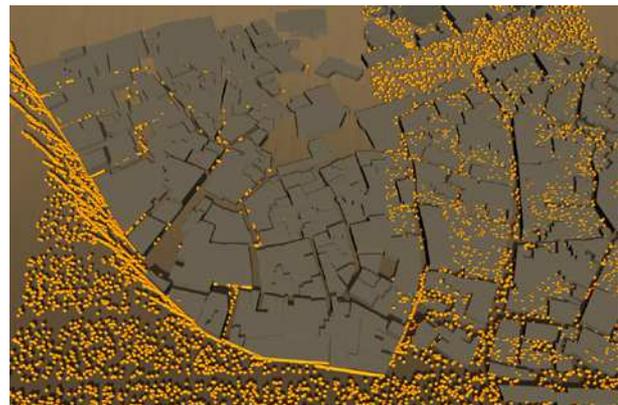


Fig.2 – Computer simulation: the roads let the eastern winds coming from the sea enter the *medina*

## Hierarchy of the street network

Furthermore all the ways which constitute the *medina's* road system can be divided according to a hierarchy. Different denominations indicate different types of streets (*Fig.3*), according to their importance or their dimensions, and with reference to the people around as well as for the life conducted therein. From these analyses we verify the differences between man's spaces, the streets, those between women, the houses, realizing the passages from public to private places and existence of neighbouring communities.

### **Shari (Charaa)**

These are the main streets crossing the *medina*. They represent wider paths to be followed in order to rapidly pass through the *medina*. Life is concentrated in the points nearer to the Souk, around the commercial activities.

In *Guebli-Gafsa* the road in-radius picture is followed. In *Jaoufi-Gafsa*, there is only one *Charaa*, rue Sidi Ahmad Sahili, which reflects the peculiarities of this portion of *medina*: it is considered a meeting point, and many commercial activities can be found along all its

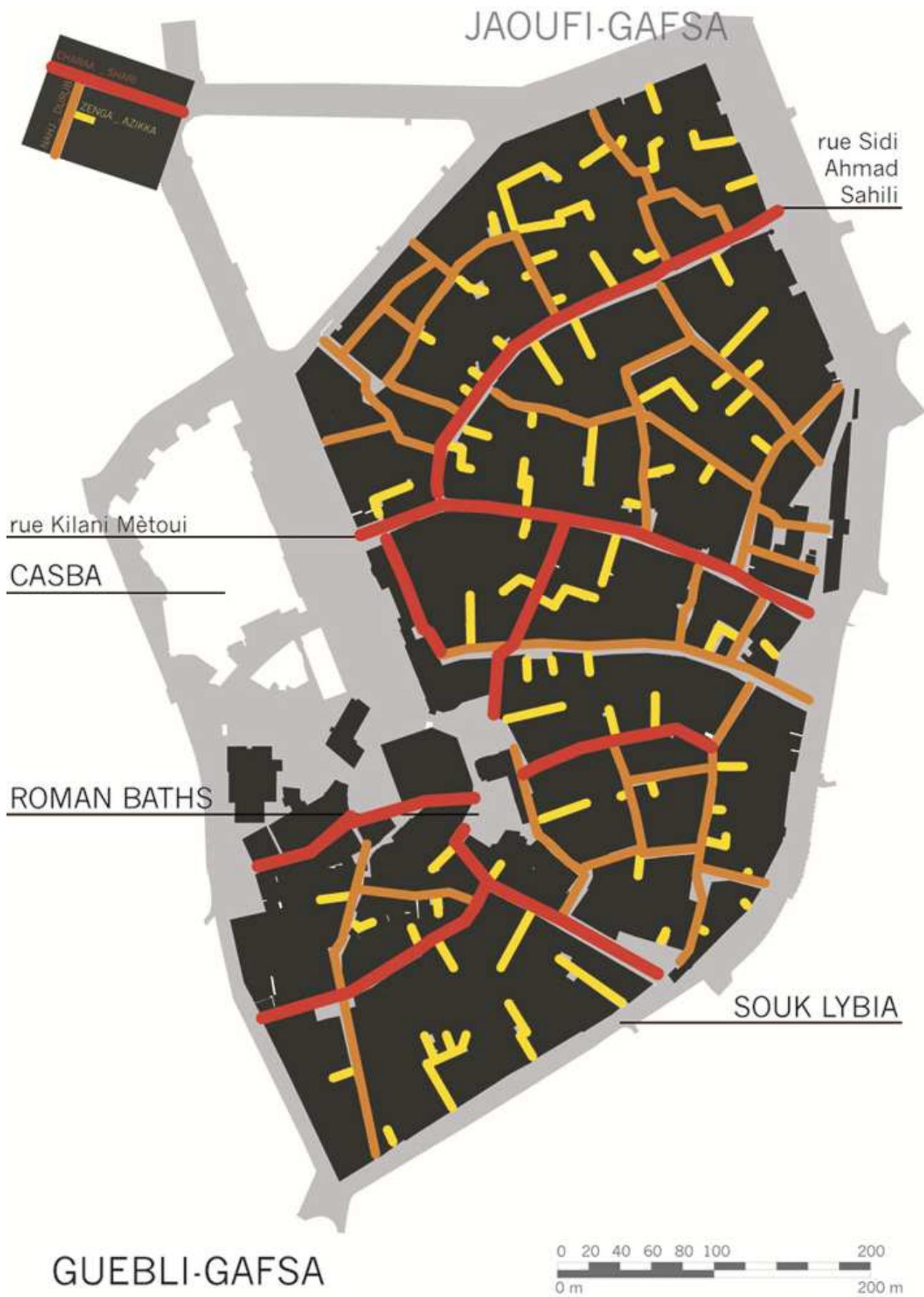


Fig.3 – Plan of the *medina*

length. The only road which goes through the entire Medina is rue Kilani Métoui<sup>9</sup>, which divides *Guebli-Gafsa* from Jaoufi-Gafsa. Many of commercial activities are located along it and it is always very crowded and animated, especially by men. This is the only road which can be completely covered by car.

### **Durub (Nahj)**

These secondary streets connect the principal streets to those which encompass the *medina*. In *Guebli-Gafsa* some of them follow the level curves.

The durubs' width can vary, but the length decreases, the perspectives become shorter, the rhythms slow down. Many of these are really alleys allowing access to more internal sites and are often the children's kingdom, their meeting and playing point, under the careful eye of their parents or under their neighbours' care. The neighbours meet and gather for a talk, even at the entrance of the *dar*, and a foreigner doesn't pass unnoticed.

### **Azikka (Zenga)**

These are the blind alleys, those which penetrate inside the building units, the most widespread urban structure, the most private way of access to the domestic life.

They are narrow and perpendicular to the streets of greater importance, to comply better with the shape of the block; sometimes, in the course of their short length they bend like an elbow.

Passages little larger than a door, narrow slits in a compact configuration: they announce the entrance to the family world.

For many women these spaces form the horizon in which their daily routine proceeds, the last sign of the *dar*, the narrow fissure for spying the outside world or perhaps for chatting with the neighbours and the children.

## **Man's contribution**

Urban shape is the answer to inhabitants' needs, too. The architectural typology inward-turned, the domestic privacy, matched with small public places, encourage people to meet. The layout which protected the community from raids, now contributes to create the ghetto's features, difficult for strangers, and can be listed.

The sense of disorientation when inside the Medina is due to the irregularity of its routes, to its reduced perspective, to the fact that the street crossing appears as a labyrinth where there is no way of accessing the centre of the *medina*, but one is compelled to embark on a series of unforeseeable turnings to find the way out.

Views are denied by the layout itself, made by short and narrow streets, which, with slopes and bends, confine the visible world (*Fig. 4*). Everything you see, is within hand's reach, contrarily to the perception in the desert, and make the *medina* an experiential space.

Most crossroads are shaped like a windmill, and the buildings are not aligned: views are shrunken and close, streets are not axes, but stretches of links. They aid in obstructing the wind. The alleys are generally offset, in order to stop visual continuity and protect the privacy of these spaces; sometimes they make some *gincanas* (*Fig. 5*), to penetrate the blocks, respecting the living spaces. There are some alleys in small blocks, where they don't seem to be necessary; these come from the neighbourhood of houses belonging to the same family or clan and corresponds to a first level of the group domestic place.

Apart from the urban shape, the most diffused architectural typology (the courtyard house, *dar*) and the constructive habits (masonry and floors of palm wood), even if conditioned by the availability of materials<sup>10</sup>, have always reflected cultural requirements and hygrothermic needs, particularly thanks to the thermal inertia of thick masonry.

---

<sup>9</sup> Souk To'Maa, Wool Souk; It can be interpreted as the fossilized lay-out of the ancient walls.

<sup>10</sup> Gafsa and Tozeur, two oasis-medinas, disting 50 Km, have developed different constructive techniques: Gafsa has always used the stones taken from near caves, while Tozeur has produced bricks, even used to create geometric



Fig.4 – Street with slope and bend; *sibat*.



Fig.5 – Street with a gincana.

Vernacular architecture has been identically repeated throughout the centuries and the construction took place using *twiza*<sup>11</sup>, and followed a defined programme, which provided:

- The delineation of the living space;
- The position of the entrance, that had to respect existing doors, and usually in the corner of the “house”; the entrance never faced the patio directly, but was preceded by a room, the *skifa*, positioned towards the patio or with a winding passage; in most important *dars* the entrance is composed of a number of rooms: the first one, *d’riba*, is followed by one or two vestibules, the *skifas*; the *d’riba* can be vaulted and furnished with stone seats: it was used as a semi-public reception room; this use depended on the householder’s role.
- The delineation of the patio (*wast al-dar*); although the lots were irregular, it was rectangular and quite large; the rooms were organised around this central space, which had to be so large that it could ensure illumination and ventilation of the rooms;
- Construction of the cellars, which were the measure of the richness of *dar*, were vaulted and made of stones; they were reached passing a low door and used for storing food and as a shelter in the hottest hours of the year;
- Construction of the walls facing the patio;
- Construction of the kitchen, *kanun*, next to the entrance, with a chimney and sometimes a well;
- Excavation of a hole for the toilet.

---

decoration on the facades. Archaeological material, like blocks of stone, columns, capitals, have always been reused in Gafsa, especially in religious buildings. This is obvious in an isolated town which has always profited from its resources in the best way.

<sup>11</sup> The householders were helped by family and friends, and repaid them offering meals during the time of building; only the richest families called a master mason, the *sta* or *ma’alem*.

In recent decades, new urban developments and new buildings have changed their style, with more “modern” shapes: quarters divided by parallel and perpendicular streets and structures in reinforced concrete and thin walls. Despite the existence of rules, the lack of control and the isolation of the *medina* have led to the formation of some not-codified rules, shared and followed by the resident population. Much of the work attempted by the residents has generally compromised what had been built before, from the addition of storeys, cosmetic changes, to the construction of extraneous elements such as balconies facing the streets.

The lack of money and equipment, the unemployment, the need for space, the desire to personalize their dwellings reduce the historical value of the buildings in the eyes of the inhabitants, who have replaced some of the old, rich families, who have moved to other accomodation in other cities.

### **The conservation of the face of the *medina***

The heritage of the *medina* risks being gravely damaged by the degradation and lack of maintenance, above all that of the protective whitewash used on the roof: leakage threatens to badly damage both the roof structure (made of palm wood), and the masonry.

The most valuable *dar*, which would most merit restoration, are those in the worst condition; often derelict, they are owned by groups of people who have inherited them, for this reason it is very difficult for a prospective buyer to negotiate an agreement with the owners, but restoration has not yet been accepted by the owners as being a good investment.

Minor restoration work i.e. more easily accomplished work, such as the restoration of doors and frames can be done by the inhabitants. The architecture used in the *dars* of Gafsa is always inward looking, everything is concentrated onto the courtyard and on the outside there are no features at all, except for the doors (*Fig. 6*). They were symbolic for the families living there, symbolic of hospitality, this was linked to the significance of passing a threshold. The oldest doors were made of palm wood, while from ‘900 the *bois rouge du nord* began to be preferred; sometimes these double-doors were carved or

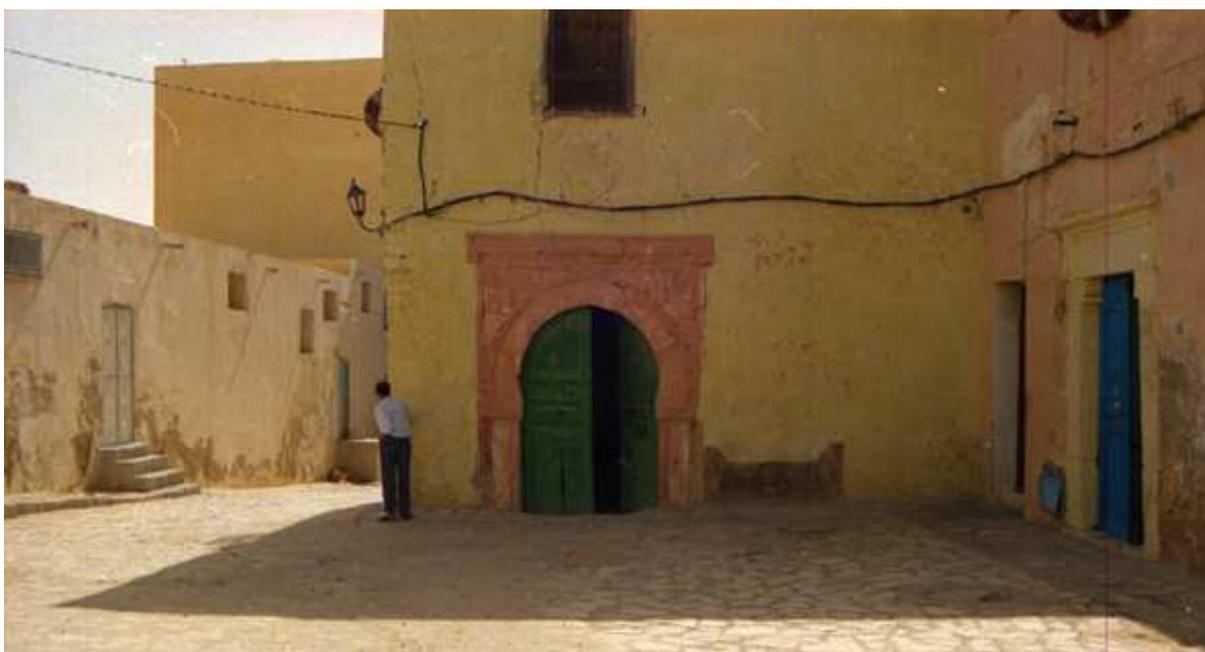


Fig.6 – Typical doors and facades

decorated with knobs, and had a smaller door set inside, called *bouiba*. There were different types of frame, from simple ones, where the finish is given by the perfect cut of the stone, to those richly decorated with various extracts from the Koran, symbols of good fortune, or other ornamental elements. The piers were built using squared blocks of stone, which generally came from archaeological material, on top of which a trunk of palm wood was placed; the architrave could be built with one or three blocks of stone, or also substituted by arches.

When you pass the doors, the public face of the *dar*, and enter the courtyard, you can see the real facades of the *dar*. The wooden doors carved or decorated with knobs, sometimes with a little window above, are between two windows, which are decorated with carved stone, sometimes framed with coloured ceramic tiles. A first floor is a frequent characteristic, it can cover the ground floor partially or completely; its presence needs to take into consideration the movements of the people, and so many stairs, balconies, loggias and porticoes. The room, *bayt*, which can only be reached via the courtyard, is the fundamental unit of residential architecture, and its dimensions are determined by the maximum length of the palm wood beams. The people use these spaces in a flexible way, depending on what they have to do during the day. In some cases, one of the sides of the room is occupied by the *sedda*, a sort of platform, made of stone or wood, that stretches from one side to another, and is around 3 metres wide and around 50 cm off the ground. After it became a proper mezzanine reached by a small stone stair. Food and blankets were put underneath; a bed was put on top, surrounded by a curtain; in the end it was enclosed by a wooden partition, decorated or fretworked, a *musharabeya*. The last step in this evolution was the construction of a stone wall with a door inside, forming a separate, lateral room, called *maksura*. In the richest houses the width given by the beams was doubled, making a T-shaped room, *bayt-al-kbu*, with a central alcove, between two *maksura*. These places are characterised by decorations and vaulted ceilings.

These private spaces constitute the real fascination of this architecture, but, until now, have been hidden to most people's eyes.

## Conclusions

This dissertation is part of a specifically designed study for a urban-upgrading project for the *medina*; in this project, the heritage has been considered, at the same time, as the means and the aim in a process of social and economical development, in which the whole town participate. The knowledge of the architectural typologies and of the urban layout are therefore useful for a specific evaluation and for the people to understand the use of the constructed spaces.

In conclusion, we should like to underline that the first step towards the preservation of the heritage, together with or through researches might consist in rendering the inhabitants sensitive to the problem.