

CONSERVATION AND THE EVOLUTIONS OF A SOCIETY, THE EXAMPLE OF GHADAMES, LIBYA

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Abstract

The present paper intends to address Ghadames Old Town (Libya), world heritage property since 1986. It is based on the conservation and valorisation program undertaken by CRATerre with the local authorities between 2007 and 2009. Thus, several training sessions, building projects and logistic activities were undertaken during 2 years. One of the critical activities in this isolated city was the installation of a large brickyard so as to produce enough adobes for the large conservation project. The description of the steps and conditions to implement this brickyard is the starting point of the paper. The analysis of the evolutions of this specific activity from traditional to semi-industrial practices, leads to the issue of conservation in a quickly evolving society. The research of the causes of these changes questions the impact of political, economical and cultural changes on the conservation policies in Ghadames.

Starting from the evolution of adobe brick production in Ghadames, this very theoretical question is enriched with answers from the field and is turned towards the recurring issue of the adaptation of earthen heritage to contemporary uses. However, the content of this paper concentrates on the experience of Ghadames.



fig.1 : Ghadames, ancient city and palm grove, surrounded by the desert. (credits : Grégoire Paccoud, CRAterre, 2008)

1. INTRODUCTION

The Old Town of Ghadames is an outstanding earthen city in a palm grove, located in the Sahara very near the border between Libya, Algeria and Tunisia. It is known for its density, with streets fully covered by the houses, and for its irrigation system that brought water from the Aïn El Faras spring to the entire palm grove, up to 2km away. The old town is entirely built in adobe, with an average height of 10 meters. This masterpiece of adaptation of people to their environment was left 30 years ago by all its inhabitants, who were offered modern houses in the new city nearby. Together with the loss of Aïn El Faras spring and a lack of economical activity — slavery was the main activity until the mid 18th century, this led to a decay of the old town. The condition of the buildings decreased and know-how began to disappear, especially after the Old Town was evacuated 30 years ago, when a new city was built at its doors. The inscription as World Heritage Property in 1986 is a turning point, and since year 2000, after a decade of international blockus on Libya, international and local actions have tried to collect, keep and rebuild the know-how of Ghadamsi unique architecture.

7 main streets constitute the skeleton of the Old Town's social and physical organization. However, it is composed of 2 main parts, each corresponding to one tribe — Beni Walid and Beni Wazit. Tribal system is the basis of libyan power. It operates in parallel to institutional authorities. However, it has been and is still used by M. Khadafi to rule the country. In this system, each individual is primarily identified as a member of his tribal community. Each tribe representative tries to get the best, politically and economically. This mechanism makes the understanding of power games more difficult. It also complexifies any intervention involving local population.

The past economical activity, based on gold and slavery, was shared between tribes who took part to the caravan trade. Yet, as Libya benefits from hydrocarbon exploitation, it's economy changed scale over the last decades and is now ruled at the state level. Caravan trade was geographically fragmented and resulted from a power balance between tribes, while today's hydrocarbon based economy is centralized and

powerful. This economical gap allowed a planning policy, thus modifying social organization as well as economical organization and allocating heavy resources to big projects on a short-term basis.

CRAterre intervention in Ghadames conservation project is inscribed in this big projects' framework. State's funding are difficult to reach and when obtained, they shall be used within a short time to achieve visible results.

The request received by CRAterre was to establish a human and material environment as well as an organization prone to allow a quick development of maintenance, renovation and refurbishment of the old town of Ghadames.

In such a background, the huge needs in adobes, which is the material used for the works, entailed the set up of an efficient semi-industrial brickyard. This implementation was one of the numerous activities led in Ghadames. It will be detailed because it's the most representative of the engaged changes and of the associated issues.

Bricks production slowed down and related know-how decreased since the old town was abandoned 30 years ago. They were quickly updated and adapted to the new mechanism directing libyan economy. This change resulted in the transition from traditional production to a mass production logic.

2. ADOBE BRICK - TRADITIONNAL PRODUCTION - "USING THE PALM-GROVE'S RESOURCES"



fig.2 : Optimization of local resources : adobe production in the palm-grove to progressively build a high density urban pattern. (credits : Thierry Joffroy, CRAterre, 2008)

The physical environment in which adobe production took place is made of the palm-grove's orchards, used for both growing and breeding. Irrigation channels distributes water to these barren lands, turning them into living gardens. Aïn El Faras (the mare spring) is the heart of this complex system that has watered plots more than 2 km away from the spring. A rail system overlaid on this irrigation system distributed the plots of

land. This whole spatial organization, partly guided by topography, is still visible. The edification of fence walls around the plots turned the rail system into a true labyrinth, often highlighted as a major piece of the ghadamsi defense system. It seems the city's development originated from this rail system. Fence walls along the paths can be used as a base for lean-to sheds and other buildings for gardening and breeding uses, which turn into houses that get over the space that became then one of the covered street of the actual city. The density induced by this interweaving of the buildings is an efficient answer to the rigorous Saharan climate.

Earth for the bricks and the floors, wood for the beams, stone for the foundations, gypsum for the arches and finishes : all these building materials are available at close range in and around the palm-grove. This proximity limits handling efforts needed to transport the materials to transformation areas and to the work-site.

In the gardens, a good quality soil and a constant supply of water allowed to produce adobes directly in the plot where the building had to be erected, or at least close to it. Growing and breeding supplied vegetal fibres and organic stabilizers, that were used to perfect the mix used for adobe production. The palm-grove environment, protected from the winds and shaded by palm trees and other trees, provides optimal conditions for the adobe drying.

Time constraints linked to adobe production⁽²⁾ and the farmer's way of life implied a temporal tasks organization, structured by the seasons' pace.

Heat during the summer and weakness of the earthen mixes used during autumn lead to think that this period was dedicated to other activities than building. It is also the time of ramadan and the time of dates' harvesting, which is the main resource of the palm-grove.

Building period might have last over winter and spring, until the beginning of the summer. This is also, paradoxically, the caravans time. Taking advantage of a lesser heat, soils destined to specific uses were left soaking during a caravan trip, several weeks or months. One can imagine in such a domestic economy framework, with defined temporalities, that adobes were moulded and left to dry the time of a caravan trip.

As basic materials (soil, water, vegetal and animal stabilizers) are available to each household, the home economics' framework presently suggested seems to be the most likely. However, it hasn't been verified by interviews or literature. A trading economy is also possible, in which some families own the lands and soils proper for adobe production. They produce and sell adobes. Although it is less conditioned by paces, temporality is still hinging upon decisive quality specifications. These specifications are mainly related to drying (too quick in summer) and infestation⁽³⁾ in autumn

That production, which is constrained by seasons and limited to human scale labor, induced an adobe production fitted with the production capacity of the palm-grove. All along this very constrained process, the chain of tasks is comprehensible, allowing easy transmission by speech and gesture.

3. ADOBE BRICKS - INDUSTRIAL PRODUCTION - "A BRICKYARD WHERE 20000 ADOBE BRICKS ARE PRODUCED PER WEEK"



fig.3 : Mechanization of the production implies to have a quarry outside the palm-grove (credits : Serge Maïni, CRAterre, 2008)

Given the massive needs to comply with the works planning, soil from the palm-grove was too difficult to access and too changing for a large scale production. Soils had to be easily accessible, homogeneous, and available in large amount. Such soils were looked for outside the palm-grove, breaking with the tradition of using directly available materials. A new soil mix was searched and tested by CRAterre team. It is composed by a sandy soil and another, white, clayish. Both were taken from quarries located kilometers away from the palm-grove. A new brickyard was also installed outside the palm-grove, so as to improve productivity and work comfort. It is easily supplied by trucks. Soaking, mixing and moulding are done in the same place. When dried, the adobe blocks are sold to renovation companies working in the old town. As no soil from the outside of the palm-grove had never been used to make adobes, the process to identify proper soils took longer than expected, all the more because of the peculiarities of saharan thin and salty soils.

Tasks, as a whole composed of know-how, economics and area, are clearly identified in the brickyard to improve productivity and facilitate the control of the production line. This system implies specialization of the workers. With day laborer that is temporary workforce, training for the several positions shall be quick and easy, concentrated on the specific task to achieve. Though, knowledge of the whole field and understanding of its issues are guarantees of a greater attention to critical details, and therefore of better serviceability. In the new brickyard, management and control are devoted to very few people, who are sole quality guarantees. In case these few people resume their job, it is the entire conservation project that is threatened.

This production that can reach 20000 adobe blocks a week(4) is a consequence of

Libyan State's financial management. The governmental economy is ruled by planning strategies requiring a short term expense for the projects it funds. Concerning Ghadames conservation project, this economical process isn't adapted. The harsh barren climate rules in the desert, and it is extremely hazardous to plan for on a short term basis. Confronting an abstract economy to a demanding social and climatic environment unveil obvious dysfunction-s. Drying of the bricks is one example : it's now taking place on an unshadowed plot, requiring the always reported building of a covering structure to reduce the temperature and humidity gaps commonly found in the desert. Partially disconnected from the seasons, today's production pace necessarily induces discrepancy of the adobe quality.

4. CRATERRE INTERVENTION - "UPDATING KNOW-HOW"

CRATERRE aim in this complex project for the revitalization of the medina was to revive know-how through a support methodology.

Following the work done with UNDP (United Nations Development Programme), the first step consisted to understand the know-how and to collect appropriate documentation. This could be done through interviews and the follow-up of works. Old ghadamsi builders took part to these activities. Richness of the interviews allowed to identify the scope of constructive postures, traditional as much as contemporary.

To have a communication tool usable between building trade, we decided to work on a conservation guidebook. Drawing was given the priority to mitigate the oral transmission issues. The large documentation about practices and buildings, especially photographic documentation, served as base for this graphic development.

The chosen strategy for Ghadames Old Town conservation quickly ran up against a lack of qualified workforce. Therefore, training became a central part of the intervention. It was primarily oriented towards builders working in the Old Town and supervisory staff.

Theoretical sessions and work-site visits were used to train and improve ghadamsi professionals.

Theoretical sessions were rich in lessons for everyone, including the trainers.

Knowledge and know-how were discussed and exchanged, as well as research, technical improvements and critical positions. Sessions where masons came were always especially interesting, and we can only regret that they didn't come more often. Work-site visits were especially destined to companies and workers. They were more practical, in touch with encountered implementation issues. As for theoretical sessions, lessons were shared between all attendees (local workers and CRATERRE staff).

Apart from the work-sites launched by the Old Town authorities, CRATERRE led an experimental work-site to transform traditional houses into touristic lodges. This work had 2 purposes :

- Training a general company to new methods and intervention technics, which essential aim was efficiency improvement through partial work mechanization. Main developments on the work-site were implementation of electrical hand-tools and lifters, and footbridges on the roofs.
- Experimenting solutions to improve traditional houses' comfort. When optimized, this first experiment, should be extended to the medina's periphery where actual water sanitation systems can be implemented. These systems aimed to optimize the works' quality and improve the work comfort through safety. This last point was one of our main concern : The global project's strategy was to begin with easy works then evolve towards difficult and dangerous places. That's why a long time was spent with the workers on shoring technics and global securing of the structures.



fig.4 : Mechanization and safety installations helped improve efficiency on Mazigh lodges' work-site (credits : Florian Herold, CRAterre, 2008)

From the installation of a new brickyard to the implementation of footbridges on work-site, CRAterre activities aimed to provide up-to-date tools that were needed to answer a political demand.

As we've described, this demand causes strong changes in practices. Therefore, the policies at stake will now be further questioned : how do they impact heritage, know-how and the whole ghadamsi cultural identity that is still strongly related to this heritage ?

5. HERITAGE POLICIES FOR GHADAMES - "WHO'S GHADAMES HERITAGE FOR ?"

Being isolated in the desert, Ghadames and its resources allowed the development of an autonomous community that proved hardly controllable by a central authority. This community's identity was built around vital resources : an artesian well, soil for farming and building. How much this heritage matters is shown in a recurring assertion of ghadames inhabitants : to be a "real" ghadamsi, one must own a house in the Old Town and a garden in the palm-grove. Although the whole population lives since 30 years in the new city, it's still actual.

This identity, bound to a territory, was questioned when Aïn El Faras spring's flow decreased and stopped during the 70's. It led to an important loss of activity in the palm-grove. A replacement well, together with the previously bored ones south of the palm-grove provide since then a minimum water supply to keep up some gardens around the Old Town. At the same time, the Old Town itself was emptied from its inhabitants, who were rehoused in a new modern city, at the doors of the palm-grove. This process follows a modernist conception of urban planning : deny the past and start again from raw. Fortunately, the full logic of the "tabula rasa" didn't apply for Ghadames and the Old Town was spared. Nonetheless, it lost its purpose of housing, leading to

slow decay.

Despite the fact that these radical changes were imposed and finally accepted by the population, attachment to this heritage town remains strong among those who once lived there, and who still keep the memory of living inside its walls. As for the younger generations who never lived there, they're looking for a more contemporary identity and tend to neglect such an heritage, barely more than a cool place in summer...

Indeed, the government intervention in the 70's is a major cultural break. It bears out the progressive loss of know-how addressed by successive conservation programs (UNDP and CRAterre).

Acknowledgment of the exceptional value of Ghadames by UNESCO sparked off a change in the state policies towards this heritage. However, international conservation programs were implemented only when the embargo on Libya ended, in 1999. Thus, UNDP programme started in 2000 and allowed to establish the basis for future conservation of both palm-grove and old town.

The aim is to provide the town with a touristic visibility and to bring back some life in the places.

Therefore, this first intervention built on two basis :

- cultural, with the refurbishment of mosques who nowadays receive hundreds at prayers times ;
- economical, with the implementation of a touristic visit path and the establishment of coffees and souvenirs shops (at the height of season, the site draws more than 400 visitors a day).

Those two approaches fall into different logics : on one hand the reconstruction of a use value, on the other hand the "setting to museum" of the heritage in order to draw income from it through tourism.

CRAterre intervention started after UNDP programme ended, in 2007. All along this second intervention the touristic economy was favored by local and national authorities in charge of the site.

The lack of a clear outlined long-term project became soon an obstacle to the proper understanding between parties. Discussions about management plan, although frequent with local and national authorities, didn't help to improve the situation. Our urging on that matter comes from the inherent risk of a conservation policy solely based upon touristic economy : it could lead to turn the whole site and its population into open museum and hereby loose a major part of this living heritage. But, on the other hand, tourists can also contribute to the revival of know-how as local culture consumers. The balance between economy and culture depends on the decision-makers' aims : is it mainly about making profits or about reviving a culture lacking in identity ?

State funds in full the conservation works through GDA (Ghadames Development Authorities). There was no specific institutional or legal framework for the funding of heritage conservation. Therefore, the usual processes of contracting were followed : companies are contracted after tendering and then controlled in the libyan legal framework. Thus is the traditional maintenance pattern, which is involving the community, abandoned to the advantage of a contractor scheme. Such a centralized economical logic implies a control of the effectiveness of the contractor's activity : the state implements a standardization of the interventions so as to be able to quantify and hereby control the use of its funds. Indeed, the control of a large amount of interventions requests benchmarks, that is to say quantifiable criterion such as actual building regulations. However, these aren't appropriate for Ghadames old town's and

earth building's peculiarity. The induced standardization lay traditional know-hows open to a shrinkage. Risk of defects is significant in this logic because contractors might tend to comply solely with the benchmarks to be paid, and therefore give up an essential part of their skills : self-judgment on the built situation.

Specific benchmarks and criterion were defined by the authority in charge of the site (GOTAO). Experienced masons and CRAterre staff were consulted, so that in the end attention was paid to essential aspects of earthen heritage conservation.

Two owners' behaviors came out of this voluntarist policy :

- Those who wait for the State to fund their property's works, who incidentally give up the full control on their property ;
- Those who refuse the State's assistance because they're afraid the works might damage their property, or might change it, or even might disregard their will.

This policy risks to partially withdraw the owners' autonomy. Once the State withdraw its help, the owners wouldn't be able to keep maintaining their property.

CONCLUSION

The evolution of constructive cultures is linked to their social environment, to the aims of the society in which they take root. It might be necessary to update them so as to follow the evolutions of their context, as was asked for Ghadames. The example of new adobe production is typical : the adobe mix and the production methods had to be adapted considering the awaited conservation of the Old Town. Main implemented evolutions concerned work-site organization and safety, and use of precision tools. Know-how were finally little changed, and if so because of repeated observations or urgent needs.

Projects were begun, however it shall be observed that their advance was difficult and slow, handicapped by the confrontation of a centralized system with a tribal culture. Therefore, we couldn't experiment several systems and techniques to improve comfort and make the works more lasting. Apart from technical issues, the feedback of this intervention opens some questions concerning the global framework of ghadames conservation :

In what extent shall the medina conservation be funded by governmental funds ?

Wouldn't self-management systems be more efficient and preserving ?

Facing the matter of self-management promotion in any centralized country, what posture to adopt in a local development intervention ?

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Notes :

- (1) A significant example of the scale that can be reached by this big projects policy is the great artificial river, which is one of the biggest logistical project in the world.
- (2) Main actions are soaking, moulding, implementation and works maintenance.
- (3) Between september and november, insects lay eggs in humid soil. It causes a mechanical weakening of the soil when dried.
- (4) Ghadamsi adobe measures 40x30x10 cm. Weekly production allows to build 1000sqm of a 40cm thick wall.

Curriculum :

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