

ASSESSING THE RESTORATION OF SIDI EL BENNA MOSQUE IN TLEMCCEN (ALGERIA)

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Abstract

The restoration of historical monuments in Tlemcen was conceived as a fast process meant to prepare the city for hosting the events dedicated to the designation of the city as cultural capital of Islam in 2011. During two years, numerous monuments were disfigured; for this reason, Sidi El Benna mosque, dating from the 14th century, was chosen as a case study in order to understand the reasons beyond the interventions failure. The evaluation was performed in two steps; the first consisted in checking the scientific consistency of the approach, and the second, in checking whether the national and international rules and criteria were observed. The evaluation shows that the approach lacked scientific soundness and a multi-disciplinary character, and certain study or implementation phases were not properly carried out. Moreover, the restoration principles (minimal intervention, reversibility, compatibility, distinctiveness, authenticity and maintenance) were not considered. In addition, original architectural elements were replaced by new ones, new elements were added without any reasons, the color of other elements was changed, and some elements were detached.

Keywords: Conservation; Heritage; Project management; Islamic monument; Urban regeneration; Qualification.

Introduction

Cities grow and transform continuously, under the inner and outer socio-economic, cultural and environmental pressure. The pressure forces the city to adapt in a process called 'urban regeneration'. The question is, 'What happens to the cities historical heritage during the process?' Ideally, the urban regeneration can start from the historical heritage itself [1, 2]; the two seemingly 'opposed' sides [3] can be integrated [4, 5], or conservation can be marginalized, "dominated by architectural historians, and unrelated to the functions of buildings and historic towns except as historical stage sets" [6]. In addition, "designs driven by conservation interests often ignore the needs for an adaptive form of economic development that emphasizes human economic enterprise and institutional flexibility" [7]. Obviously, the nature of regeneration drivers plays an important role, and community-driven initiatives are more successful than top-down approaches.

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One of the main requirements for integrating conservation into planning is a holistic and multi-disciplinary approach [8-14], similar and often related to the ecological one [15-17]. Monuments are part of a culture [18], which in its turn is part of the regional landscape [15, 16, 19, 20], and have multiple artistic, sentimental, symbolic, socio-economic, cultural, historical and functional values [3, 19, 21, 22], and their restoration needs to be conceived accordingly. Furthermore, the restoration should be aimed as re-integrating the monument in the present urban life [23-24], but must also be environmentally-friendly [25, 26].

The theory of restoring historical monuments started in the 19th century with six doctrines. The first one is the interventionist approach of *Eugène-Emmanuelle Viollet-le-Duc* which allows for removing and/or adding parts of the monument. The second is the conservationist approach of John Ruskin, requiring a minimal intervention. The third, developed by *Camilo Boito*, is a synthesis of the previous ones, tolerating the replacement of damaged elements, allowing for distinguishing the 'old' and 'new', and instituting the rule of restoration for the benefit of consolidation. The fourth approach, belonging to *Alois Riegl*, requires a study of the values of monuments, belonging to the past (age, history, and remembrance) or present (use, art, and novelty) in order to choose the type of intervention. The fifth is Roberto Pane's critical restoration, which embeds opposing principles, i.e., respect for the authenticity of monuments and assumption of the intervention initiatives. The sixth one, phrased by *Cesare Brandi*, enforces the respect for aesthetics (art value) and history (life value) of the monuments.

The international organizations adopted, in their turn, three restoration charters [22, 27, 28], namely the 1931 Athens charter, which requires a critical analysis in order to avoid intervention errors and maximum dissimulation of the new techniques used, and forces restoration yielding to conservation in order to preserve the historical and artistic value of monuments [29]. The 1964 Venice charter introduces the multi-disciplinary approach, preservation of the added assemblies of interesting elements, distinction between the 'old' and 'new', and elaboration of documents describing the intervention phases [30]. Finally, the 2000 Krakow Charter introduces the minimal intervention and respect for the authenticity, integrity and identity of the monument [31]. In terms of methods, the RehabiMed association produced a building restoration guide in 2008, resuming the principles derived from previous studies, charters, recommendations, conventions and international declarations [32]. The method consists of four stages, namely the knowledge (preliminaries, multi-disciplinary analysis), reflection and project (synthesis of the diagnostic, reflection and decision framework, and project), works (restoration) and life (maintenance).

Algeria has little experience in restoration, particularly the 1970's restoration of Mزاب Valley and 1980's restoration of Casbah d'Alger. In the 2000's, the restoration of monuments was made in preparation for important events, such as: Alger – Capital of the Arabian culture (2003), Tlemcen – Capital of the Islamic culture (2011), Constantine – Capital of the Arabian culture (2015), and preparation of Oran for hosting the 2021 Mediterranean games (especially the restoration of 19th and 20th century colonial edifices). All these restorations took place very fast, resulting into the massacre of monuments rather than conserving them. Although legislation is crucial for the conservation and restoration of monuments [33, 34], the Algerian restoration legislation is recent. The interventions are regulated by Law no. 98-04 of 15 June 1998 on the protection of cultural heritage, replacing Ordinance no. 67-281 of 20 December 1967 on the protection of historical sites and monuments, The Executive Decree no. 03-322 of 05 October 2003 on the execution of works on protected cultural elements, the Decision of 29 May 2005 establishing the content of the workbook for interventions on protected cultural elements, the Decision of 31 May 2005 establishing the content of the roster of interventions on protected cultural elements, and the Decision of 5 November 2007, establishing the computation of wages for interventions on protected cultural elements.

Several restoration projects were carried out in Tlemcen before the 1962 independence of Algeria [35]. The locals in charge started the restoration of monuments in the 1960's in cooperation with UNESCO, completing 7 projects (2 in 1964 and 5 in 1965). Starting from the early 1970's until 1991, the citizens realized that the state was not interested in safeguarding the heritage of Tlemcen, and completed other 12 projects (5 in the 1970's, 5 in the 1980's, and 2 in 1991). In 1991, the state responsible organisms completed other 2 projects. The first national restoration plan (1996) included monuments of Tlemcen. The largest city-level restoration was completed in 2009, preparing Tlemcen to become Capital of the Islamic culture in 2011; 101 monuments were restored within 2 years. Nevertheless, the works disfigured the old Muslim buildings [36], including the oldest one, dating from the 11th century. The present study is triggered by the fact that during the restoration the color of mosque minarets was changed from red (Fig. 1) to white (Fig. 2) and the facades were applied a sparkling plaster.



Fig. 1. Minaret of the Great Mosque before the restoration

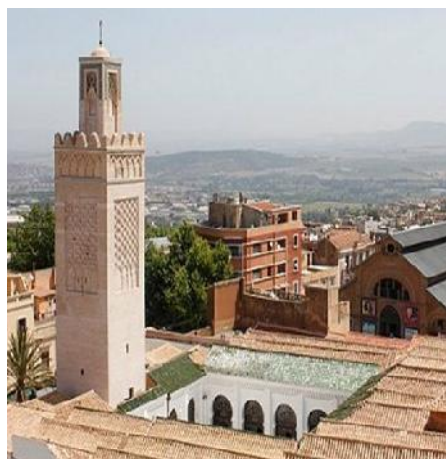


Fig. 2. Minaret of the Great Mosque after the restoration

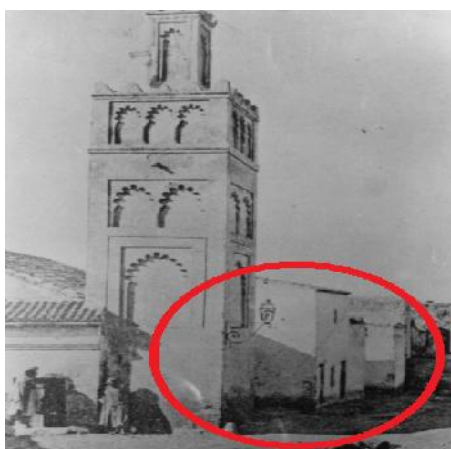


Fig. 3. Sidi El Benna Mosque before the intervention

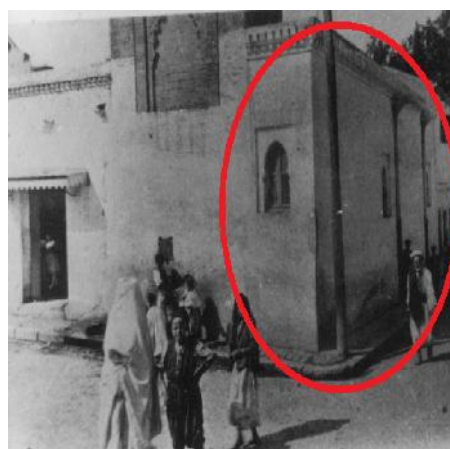


Fig. 4. Sidi El Benna Mosque after constructing the maksourah

Sidi El Benna mosque is one of the 101 monuments restored for the aforementioned event. This old 14th century monument (Zianid period) was affected by the errors made during

the 2009 emergency operations [37, 38]. It was already affected during the colonial period (before 1962) [39] when its authenticity was lost by the addition of a Maksourah (imam room) (Fig. 3-4) and the transformation of the wood framework roof in flat slabs embedded in metal frames (Fig. 5-6), and the addition of the bathroom which did not exist in a neighborhood mosque (believers are supposed to undergo the ritual bathing in their own homes).

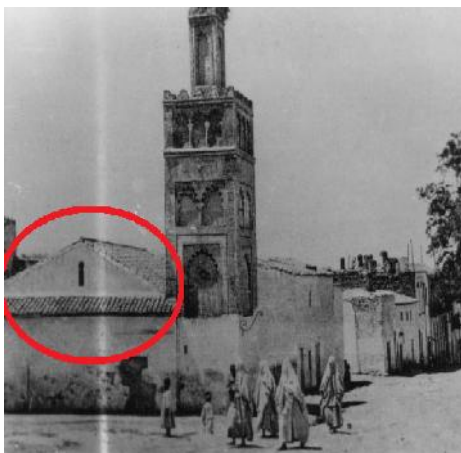


Fig. 5. Sidi El Benna Mosque with its original roof



Fig. 6. Change of the Sidi El Benna Mosque roof

Currently, Sidi El Benna mosque is suffering due to several problems, supposed to have been solved during the 2009 restoration, such as the sparkling facades and insulation. These issues raised questions on the reasons beyond the emergence of degradation fixed during the restoration carried out due to the designation of Tlemcen as Capital of the Islamic culture. The undergoing hypothesis is that the process was not scientifically sound, and, even more, did not observe the principles of restoration.

Materials and Methods

In order to test the study hypothesis, it had to be tested that the restoration of Sidi El Benna mosque employed a scientific approach. The process consisted of the following stages:

- Preliminary study including the intervention decision and presentation of the monument (position, brief history, administrative and juridical data) and the preliminary diagnostic.
- The diagnostic including a multi-disciplinary study of socio-economic (anthropology, usage), architectural (geometric sketch, typology and spatial analysis, study of colors and decorations, legal intervention framework), historical (sources, archeology, oral history), engineering (constructive system, materials, degradation, security, comfort and environment) issues. This stage must end with a details report, the plans of degradation, and recommendations.
- The restoration project including a feasibility study for proposed actions (compatibility of technologies, integration of modern installations, accessibility, specialized workers) and the compliance with existing laws, the new use and change of location, different plans and details, costs, and work security plan.
- The restoration project including the choice of the company, special training of workers, site safety, execution of different plans, adaptability and change of solutions if problems occur, follow-up and final building handing .

- Permanent monitoring and maintenance, following a schedule after the end of restoration.

In the following, the restoration of Sidi El Benna mosque is assessed based on the six criteria of good restoration from the international charters, namely the minimal intervention, reversibility, compatibility, distinctiveness, authenticity and maintenance [22].

Results and discussion

A review of the documents related to the different stages of the process, in conjunction with an evaluation of what happened during and after the restoration of Sidi El Benna mosque, revealed that only the first stage of the restoration process was properly observed.

In the diagnostic stage, the study was conducted by an architect and a civil engineering technician, and not by a multi-disciplinary team. The study addresses the architectural and engineering issues, but not the socio-economic and historical ones. Furthermore, the engineering study did not include physical and chemical analyses of materials, nor comfort and environmental analyses [40]. As a consequence, the stage resulted into the following degradations:

- The bricks broke due to the age and water infiltration within the minaret;
- The minaret brick joints suffered degradation;
- Degradation of lime coating in the prayer room, inside of the minaret, gallery, oblation room, walls and bathrooms, due to capillarity, rains, and humidity;
- Degradation of sealing of the prayer room terrace due to the water tanks resulting into the infiltration of water;
- Lack of sealing in the bathroom terrace;
- Breakup of the gallery wooden framework due to the infiltration of water;
- Degradation of the tiles;
- Degradation of the gutter and the rainwater downspouts of the gallery;
- Degradation of the air sheaths, leading to water infiltration in the prayer room;
- Degradation of the prayer room platform through capillarity;
- Settlement of the patio platform due to the insufficiently compacted backfill;
- Detachment of the terra cotta bathroom and patio floor tiles;
- Degradation of the base of the four wood doors from the bathroom due to humidity;
- Degradation of the two rainwater downspouts from the Eastern façade.

The restoration project includes the following interventions:

- Filling the holes of broken bricks using lime mortar;
- Filling the minaret brick joints injecting mortar composed of lime and sand;
- Removal of the old lime coating and walls coverage with the cement coating from the oblation room, façades and bathroom;
- Implementation of the sealing of the prayer room and bathroom, using steam-proof, polyester for thermal insulation, a concrete slope, three layers of tarred plate separated by a tar coating applied at a high temperature, a 4 cm 15/25 gravel roll for the protection of the tarred plate, and aluminum cover;
- Replacing the old framework of gallery and roman tiles by flat ones;
- Replacing the gutter and the rainwater downspouts of the gallery, made of cast iron by new PVC hoses;
- Replacing the degraded concrete hats of the air sheaths;
- Removal of the prayer room, bathroom, and patio platforms; addition of dry stones, sand, and insulators against capillarity; pouring of lightly reinforced concrete;
- Replace the terra cotta pavement with a granite one;
- Replace the degraded doors;
- Replace the two rainwater downspouts of the western façade;

- Add two air conditioning units with a power of 24000BTU and three water tanks.

At this stage, no study looking at the compatibility of the technologies and integration of modern equipment was found. The interventions are abnormal; the broken bricks had to be replaced and not coated; the procedure did not stop the process, but allowed it to extend to the other bricks (Fig. 7). Similar, the minaret brick joints were filled with mortar under pressure, whitening the Islamic tower, as the mixture of sand and lime lacked the clay that gave the original red color of this architectural element. The coverage of outer and inner walls using cement coating is an error, as the original coating was composed by a mixture of sand and lime. Due to it, the cement coating detached five years after the restoration (Fig. 8). The implementation of the sealing using tarred plates and aluminum altered the authenticity, disfiguring the terrace (Fig. 9). The normal composition includes, from bottom up, clay, coal ash, and earth reinforced by straws. The replacement of the old wooden framework, roman tiles by flat ones, cast iron gutter and rainwater downspouts by PVC ones, old doors by new ones, terra cotta pavement by a granite one resulted into a permanent loss of the original architectural elements of the mosque. Furthermore, the partially degraded elements could have been repaired, and those seriously damaged replaced by a copy. The final action, introducing the air conditioning units and three water tanks, disfigured the mosque (Fig. 10).



Fig. 7. Breking bricks



Fig. 8. Detachment of cement coating



Fig. 9. Aluminum sealing plates on the terrace of the prayer room



Fig. 10. Air conditioning units and water tanks on the mosque terrace

In the restoration stage, the company chosen for the project was not specialized in this field, its workers were not qualified, and the safety conditions were not ensured on site. Moreover, no study was carried out to face eventual problems. The last stage was not observed, meaning that monitoring and maintenance were not carried out after ending the project.

The six restoration principles were not observed. Minimal intervention was not considered – see the concrete platform poured over the terrace of the prayer room for sealing purposes and the new wooden framework placed at the gallery. Also, the use of cement mortar for the inner and outer coating makes the operation irreversible. Similarly, the Portland cement is incompatible with the lime – see the detachment of new coatings. The new and old coatings cannot be distinguished, as the walls are fully covered and there is no archeological witnessing window. Furthermore, the works endangered the authenticity of the monument and minaret by changing the color from red to white (Fig. 11), placing aluminum sealing plates on the terrace and replacing the old terra cotta pavement with a granite one (Figs. 12 and 13). Finally, no maintenance was ensured, although the sealing -related problems returned.

Conclusions

The intervention over Sidi El Benna mosque was merely a mutilation than a restoration, provided that the approach lacked scientific soundness. The study was not carried out by a multi-disciplinary team and did not account for socio-economic and historical issues, for the physical and chemical analysis of the materials or comfort and environmental parameters. There was no study of the compatibility of used technologies and integration of modern equipment at this stage. Furthermore, the company that implemented the project was not specialized, used unqualified workers, and ignored the safety measures.

The interventions did not observe the national or international rules, disregarding the six criteria stated by the international charters: minimal intervention – by changing the framework and pouring concrete; reversibility – by using techniques that do not allow for an easy replacement (cement coating); compatibility – by the detachment of cement coating; distinctiveness – by the lack of archeological windows; authenticity – by the replacement of architectural elements (framework, pavement, gutter, rainwater downspouts, doors) and changed color (minaret); and finally the lack of maintenance and monitoring after the completion of the project.

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