Santa Teresa from convent cloistered nuns to ‘open’ museum for the community

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-Introduction

The convent of Santa Teresa, in Cochabamba (Bolivia), is a central place of worship, as well as a cultural point of reference and of social gathering: it still maintains its pristine artistic and historical roots, in its attempt to live through the slow loss of its original aim, mission and use. The Carmelite convent was conceived during the Spanish domination in the 18th century, as echoed in its architecture and in its collection that clearly reminds of the European tradition, but that also bears within itself the precious singularity of the reinterpretation of the construction techniques with local materials that have not been contaminated by modernity and restoration intervention yet. Considered the almost total loss of the original function that is causing neglect and the progressive destruction of the convent, a conservation plan simply addressed to restore the walls is not economically viable, in that it lacks of cautious reflection about its new use, that has to be compatible with the actual socio-cultural context and its original spiritual vocation.

The historical architectural complex was included in the watch list of World Monument Fund and was supported by a cooperation program financed by the Italo-Latin American Institute (IILA), following a request coming from the local ecclesiastical authorities. At the end of 2010, IILA promoted a training program aimed at carrying out the complete convent rehabilitation plan, thus improving the technical abilities of local stakeholders with regard to restoration and management skills. In particular, the teaching focused on the following topics: 1) introduction to the management using the Logical Framework Approach (LFA) and draft of the preliminary proposal for the enhancement of the architectural complex, 2) methodologies for the analysis and survey of the architectural context; analysis of the architectural degradation factors; draft of a preliminary proposal for the complex recovery; 3) study of the convent content of artworks, in order to catalogue, preserve and restore the collection, prior to its preventive conservation plan.

A proposal for the transformation of Santa Teresa complex into a space for the promotion of integrated cultural policies (G. C.)

The ecclesiastical authorities and the Carmelite nuns have finally decided to transform St. Teresa convent not only into an attractive container of art heritage, but also into a landmark for the whole city, a “living space” where cultural policies are conceived and implemented (photo and art exhibitions, concerts, theatre and other performances, training courses in the field of cultural management and restoration, etc.). In this framework, the project definition phase has been conceived not only as a didactic experience, but also as an opportunity to encourage the discussion between different stakeholders, and to promote different approaches and strategies (significantly, the course was attended by representatives of local and national ecclesiastical authorities). The proposal for the rehabilitation of the convent of St. Teresa envisages the
creation of a modern museum, that overcomes the model of “colonial museum”, as a mere container of works of art; what is more, the use of new technologies and the adoption of modern museological techniques will facilitate the designing of fact-finding paths and educational activities conceived for different types of visitors. The same proposal strongly recommends the creation of a laboratory of socio-cultural activities, Casa de la Cultura: this would be a space where innovative and integrated cultural policies, based on the creation of a network of public and private operators, will be discussed and developed. This laboratory is meant to facilitate the active participation of the local community in the promotion of the reappropriation of its cultural identity and an increase in its awareness of the importance of the cultural heritage. Of course, this approach needs to be part of a more complex strategy, that should, first, include a more effective urban and territorial planning, that looks at the cultural heritage as a mine of economic and social values, and, second, should identify measures for the very cultural heritage integrated conservation, being this the result of special preservation techniques combined with the joint research of proper functions.

**Architecture: origins, construction techniques, state of preservation and compatible functional redesign (D. C.)**

The convent was founded between 1724 and 1756: it all started with the construction of a small rectangular planted church, a pitched wooden roof, a baptistery, a sacristy, a choir and some quarters for the cloister life of the Discalced Carmelites. In the next decade, the two-storey convent was built together with cloister (Fig.1), chapter house, refectory, cells and the perimeter walls of the church, that outlined a polylodbad plant. After more than twenty years of discussion on the dome (1767-1789), it was decided not to build it, because of construction and economic difficulties. Subsequently, within the perimeter of the polylodbad walls, two dividing walls that better defined the new rectangular planted church (fig. 2) with groin vaults, a dome and service spaces were realised [Gisbert, de Mesa, 1985, pp. 204-205]. In 1790, the roof of the first church collapsed. In 1867, a side cloister was built together with additional accessory spaces and in 1913, to satisfy the increased number of the novices, two other smaller cloisters were added, thus reaching a total surface of 6.140m². In 2005, the three side cloisters were rebuilt and in the areas adjacent to the first church, roofing, cielorraso and plasters were replaced. Because of the modest bibliography and archival sources, an architectural survey was crucial for the knowledge of the building. Thus, on the basis of actual state an investigation was conducted in different fields: urban context, type, construction techniques, stylistic elements, roofing, flooring, materials, alteration and degradation, distribution of the cracks. What is more, decisive transformation phases were also defined [Fancelli, 2001]. The survey revealed that the support structures are made of plastered local stone whereas bricks are used for the façade mouldings of the churches (Fig.3). Earth is used as basic material for the construction of masonry, mortars, plasters and beaten floors. Adobe on stone wainscot is used in the outside enclosure. All the walls are covered with plaster made of earth, hydrated lime, animal dung, straw and water and protected by a very thin layer of lime mortar coloured...
by natural pigments. The chapter house ceiling is a barrel vaulted structure in adobe, while the sacristy is characterised by cloister vaults. The wooden floors are made of beams, floorboards and are covered by beaten earth, in the cells, and of beaten earthen mortar and bricks in the areas shared by the nuns. The structure of the cell roofing is characterised by wooden trusses with double ridge beams and clamped-in-height principal rafters (Fig.4), while that of the cloister galleries is made of trusses that alternate rafters with struts to rafters without struts. The secondary frame is made of purlins, roof battens, on which bamboo canes tied with vegetable fibres rest, and bedding earth mortar on which the tiles are laid. All the rooms on the first floor are false ceiled with cielorraso (a canvas of natural finished with lime). In the service spaces, where preserved, the primitive cielorraso follows the shape of the trapezoid roof (Fig.5), whereas in the cells, where it was rebuilt in 1946, it is flat.

Among the most severe alterations and degradation phenomena (Normal UNI 11182, 2006), they can be noticed some collapses of portions of the roofing due to the lack of waterproofing that causes infiltration, rots the beam heads and, last but not least, is responsible for attacks of fungi and xylophagous insects. Relevant structural instabilities are also in place in different areas of the complex: thus the second order of the cloister is at risk of collapse. There are also cement patches and out of plumb masonry in the enclosure due to bottom sagging caused by water that saturates the soil, and by vibrations due to traffic. There is also widespread infiltration due to leaks both in the water and sewer systems caused by the capillary rising of water. These leaks have eroded great part of the plaster and brought to cracks, exfoliation and stone chipping, not to forget luxuriant vegetation and biological colonization. With regard to surfaces, they are characterised by superficial deposits, discoloration and scales due to heavy vehicular traffic on the surrounding roads and the consequent high rate of air pollution.

In St. Teresa convent, the worship and cultural activities are envisaged to be divided into private (covering a surface of 1.500m²) and public (4.640m²).
private environments used by the nuns (side cloisters with convent life environments) will cover 1,500m², whereas the public environments will be divided into three distinct areas and assigned to worship (church, sacristy and choir): 530m²; to museum (cloister with rooms on the first floor and cells on the second floor): 3,250m² and, finally, cultural centre with educational workshops (spaces adjacent to the area where the first church was): 860m² (Fig.6). Basically, architecture is ‘good’ when it, first, understands the building, second, it fully respects the authenticity of the primitive text, third, when it recognizes the right intervention, always trying to get a surplus figurative value by the combination of historical and modern operations and, finally, when it works by adding, in a spatial context that already has its own character, rather than subtracting the primitive ‘matter’. Basically, it is necessary to think in terms of organic projects thus enabling any possible synergy in order to reduce the intrusiveness of the measures that will have to be taken for the convent enhancement, accessibility and comfort. The main criteria to be followed consist in the minimum operations, that have also to be visible and modifiable, compatible with the historical ‘matter’ and durable [Carbonara, 2004]. In redesigning the inner spaces, one should not deny the primitive unitariness of the inner architectural space, and should give them character by maintaining the ‘continuous view’ of different heights, of the scenographic perspectives and decorations, thus giving to the users the consciousness of living in a place re-shaped according to contemporary procedures. In addition, it is advisable to think of removable panel partitions, laid on the ground and not too tall, so to allow a ‘dissociated reading’ of the two spaces, as well as to appreciate the historic environment.

Essentially, it is expected a series of diagnostic tests prior to the definition of the conservation plan. In general, all the materials that are found in good condition will be recovered (plaster, wood canes, bricks, etc.) and replaced, if compromised, with salvaged materials or with elements presenting characteristics similar to the primitive. First of all, it is necessary to restore the structures damaged by moisture through the creation of a system that connect the
external drain, adjacent to the perimeter walls, to the ventilated crawl space for indoor use. Concomitantly, it will be created a continuous underpinning as well as an underfloor heating system, and other technological networks, required for the new use, will be installed. The floors will be then reassembled according to their primitive tread surface. The straightening of the out of plumb walls will be performed through propping that, once brought back plumb, will be consolidated with ridge beams. To avoid imbalance in the static diagrams of load-bearing structures, eccentric loads will not be introduced; the resistent sections will not be reduced; the walls will not be thoroughly or partly demolished and breaches to install technological systems will not be made. The reintroduction of adobe walls will be made by adding earthen mortar having characteristics similar to those of the support and, if necessary, by adding pieces of brick to settle the bottom and to form the surface for the adhesion of plaster layers. For the consolidation of the damaged parts, we will preferably adopt traditional techniques such as the 'stitch-unstitch' technique. We will have to pay attention to the toothings by inserting wooden wedges or common joists for the most relevant detachment. Fundamentally, the conservation of the primitive plaster is essential both as preservation of the historic 'matter' and as protection surface. Therefore we will expect to preserve the plaster that is in good condition and to consolidate it in its detached parts (Various Authors, 1987; Lasalandra, MA, MA, 2008; Achenza, M., Sanna, U., 2010). The reintroduction of the lacking material will be done through earthen mortar stabilized with slaked lime and natural fibres. The painting will be made with milk of lime and earth that will define the nuance. The roofing will be restored after the removal of the scaffolding and not forgetting to reuse the items in good condition and properly treated, and to replace the damaged ones, in the respect of the impost and the structural scheme. However, we could also create a ventilated roofing by inserting damp proofing sheets, some natural insulator and waterproof slating. Finally, all the pitches will be equipped with copper descending gutters and downpipe bends to prevent damage to the decorative elements of the façades. The strengthening of the wooden structures, to be assessed 'case by case', might be performed by using flat metal

Fig. 5 - Space called 'The Calvary' (photo R. Nadalin); Fig. 6 - Compatible functional redesign (reworked D. Concas)
profiles in the intrados of the beam, by increasing the section through a shelf, or by reconstructing the heads through wooden protheses anchored with steel bars to preexisting elements, making sure that their bearing structures will be ventilated. With regard to the consolidation of the floor, the integration of ridge beams, without affecting the loss of heat, is expected. Wherever it is present, cielorraso will be restored through sheets of natural fibres, finished off with lime, according to local techniques. Sometimes a mistaken sense of respect towards the building leads to introduce concealed canalization to hide from view. This means cuts in the walls that end to add up, intervention after intervention, thus increasing exponentially tampering, and affecting the load-bearing structures. Consequently, the electrical system will be built at floor level in the rooms on the ground floor where we will place a crawl space and risers with in view three-wired cotton braids and porcelain insulators. According to the material characteristics of the historic building, there will be works...
to facilitate access to people and paths. We will introduce changes that will improve the fruition of the space, being this an advantage for elderly people, parents with pushchairs, people with motor or sensory disabilities: among these changes, the fitting in of a lift.

Preventive conservation in the convent-museum (G. D. C.)
A global evaluation about the preventive conservation has been introduced to carry out the plan of the building re-habilitation with the implementation of technological equipments. All of the halls of the museum path, already active, have been analysed, in order to detect any factor of risk undermining the collection on display. The analysed halls were the entry, the patio, the ante-choir the chapter house (Fig.7), the calvary (Fig.5), the choir (Fig.8), the church (Fig.9).

The actual management of the museum organization, in its various areas of activity, was compared with the theoretical objectives dictated by the preventive conservation strategy, in order to formulate a project adapted to suit museum needs and that, with some adjustments, could raise the quality level of protection and lower the risk level, identified each time. In the definition of the objectives, during the training for the implementation of local staff, reference was made to the Italian Museum standards (art.150, c. .6, D.Lgs.vo no. 112/1998) and to English standard guidelines set by the British Museum & Galleries Commission for the different types of collections.

The main topics of the preventive discussed during the training to the staff, that was composed mainly of conservators, although there were also Carmelite nuns, can be summarized as follows:
1) architecture and equipments, 2) identification of the collection; 3) management of the public.

The architectural environments of the new museum have been identified as being the first filter towards environmental, climate and anthropic risks. To the before mentioned architectural rehabilitation plan, it is not wise to add the insertion of high technology, of lighting systems or air conditioning, considering the impossibility of meeting the maintenance costs (the above mentioned systems would mostly be imported) and management costs. The microclimate values should be carefully evaluated after the interventions, and possibly hindered through common sense. Connected to the consolidation work, the use of space should be functionally reorganized: for example the patio, where paintings on canvas are displayed on the walls and polychrome wooden sculptures are displayed in showcases (Fig.10), that thus exploit the niches in the walls: this space has to be reconsidered as an environment to protect in order to fulfil its task, by adding glasses between the arches to avoid rain, wind, earth and animals coming from the garden, and also sunlight filtering curtains. Natural or artificial lighting must have low levels of luminance, UV and IR and must be characterised by low power consumption and low heat dissipation, to reach a luminous flux evenly distributed on the works and sufficient for the public. The opening of the windows (protected by shutters or equipped with UV and IR filters), necessary to renew the air, should be filtered through fly screens to prevent the entry of insects but also of bats. These are
the principal cause of bio-degradation, since the stretcher of the paintings usually becomes their shelter, and their metabolites irreversibly mark the paint film of almost every painted canvas. Fire fighting systems must also be considered, provided with monitoring systems and extinguishing systems that must be adapted to the housed collections and must guarantee safety to the public (given the massive presence of wooden structures). Antitheft alarms are entrusted with the task of avoiding that the uncontrolled entry through the church might allow to sneak in the museum through audible alarms and security personnel. The showcases are another protective filter within the museum against theft and vandalism with safety locks, easily accessible for the staff to ensure maintenance and cleaning. However, lighting inside them must be avoided to prevent uncontrolled effects on the microclimate or high luminance. The standard values of T and RH have to be reached and controlled by constant monitoring: the alarm and the troubleshooting also must be immediate whenever the parameters get out of control.

The store-rooms confined to some areas on the first floor and with artworks badly stocked have been totally cleared out, and the objects extracted each time have been filed, dusted, packed with acid-free paper writing the inventory code on the paper too for the identification. The storage has been reorganized in healthy and large hall on the ground floor, each element has been raised from the always permitting the access to the artworks and the walking about, as well the cleaning activities, aimed at preventing uncontrolled biological infestation.

The entire collection on display in the path halls and on the storage, with the exception of the precious silverware, have been archived in a database, catalogued, photographed and described according to the technique of execution and the condition, described in the stratigraphy, and finally every artwork has a specific project of conservation intervention with its respective economic evaluation.

The canvas paintings were 117 of various sizes for an estimated total surface of about 234m²; the sculptures were 69 of various sizes; the wall wooden carved and gilded retablos were 10 of various sizes for a total area of approximately 470m². In addition there are 94m² of floral themed wall paintings to copy the wallpaper, 188m² of 19th century French wallpapers considered so precious for their rarity that they decorate the choir and the chapter house; 11 carved wooden benches and a wooden choir with 21 seats. It is clear that the restoration of the collection would not only allow to preserve some rare historical and artistic heritage, but also to activate an important economic activity, that would create job opportunities for many skilled conservators and restoration workshops, located in the convent, that may turn to be among the most important activities characterising the new centre. To conclude, the opening to the public, that used to arrive massively during organized tours with guides, suggested the preparation of information panels and similar educational material to be read during the queuing time, and useful to fully enjoy the visit at the convent-museum.
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