RECONSTRUCTION OF MONASTERY SAINT JEREMIAH COMPUTER-AIDED DESIGN MODEL

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ABSTRACT

A three-dimensional computer-aided design reconstruction of the monastery saint Jeremiah Saqqara is presented. This monastery is the one of the largest Cistercian monastery in seventh century in Egypt. However, the majority of the monastery has disappeared after building collapse with almost no existing documentation. In order to allow visitors to better understand the monument and to assist the current conservation works, a reconstruction of the monastery is presented. The adopted approach for reconstruction includes the identification of an ideal plan of the Cistercian Order, comparison with similar buildings of the same period and architectonic styles, and the available documentation is used to create a virtual reconstruction of the monastery.

1. INTRODUCTION

The 7th century is considered the most important period in the Coptic art which is distinguished with the fresco paintings. In this century, several fresco paintings were applied available in the surrounded environment of the church and monastery. This monastery was discovered by James E. Quibell, when, between 1906 and 1910, he excavated an area of some eighteen thousand square meters from the sand, unearthing a vast church, a funerary building, a refectory, monastic cells and other buildings. At that time, a large number of elements, including decorative items, an Ambon (pulpit), columns and capitals, friezes and other architectural fragments were removed from the site to the Coptic Christian Museum in Cairo, where a chamber known as "the Hall of Saqqara" exits for the sole purpose of displaying these items. Later, the site was almost completely ignored by archaeologists until 1970. In that year, Peter Grossmann, a German archaeologist conducted some brief explorations of the site, but in the intervening years before and after that limited effort, sand largely recovered the site. Nevertheless, it remains a very interesting site to those interested in early Christian monasteries. (Dunn, 2012). The monastery of saint Jeremiah is situated at Saqqara, the ancient necropolis of Memphis where the causeway of the pyramid of Unas marks its northern boundary. The monastery ceased around the middle of the ninth century the main church is the most important building in the monastery around which the cells of the monks were assembled (Fig.1). The monks in the monastery of saint Jeremiah lived in large communal buildings each monk had only a cell and shared meals with other monks in the refectory like other monasteries with large communities the compound included a kitchen, wine press, a bakery one or more refectories, work -shops and storerooms. The majority of the architectural sculptures of the monastery of St. Jeremiah are reused pieces brought to the site from late roman sepulchral buildings presumably mausoleums (Fig.2). The re-used architectural material includes engaged columns column capitals, friezes and niches, the builders of monastery of St. Jeremiah a found rich beautiful architectural sculptures in late antique funerary buildings and used them together with new carvings combining them in new context a considerable numbers of the wall paintings were un covered in the oratories (rooms for prayer) of the monk's cells , the main motifs are the enthroned Christ and the holy virgin Mary with the Christ child on her lap. Small niches show the bust of Christ, one hand raised in Bedediction and the other holding a book one of the most interesting

scenes is the virgin nursing the infant Christ while many saints are seen in the paintings (Dunn, 2012).

Figure 1. Plans of church the main important building in saint Jeremiah monastery using auto CAD computer program

1.1. The reasons of disappearance of the Monastery

Though there is an absence of evidence to suggest the reason, this monastery was probably abandoned in about the middle of the 9th century, as evidenced by coins found during the excavations. However, we might reasonably assume that it may have had something to do with close proximity to Cairo, the Islamic capital of Egypt.
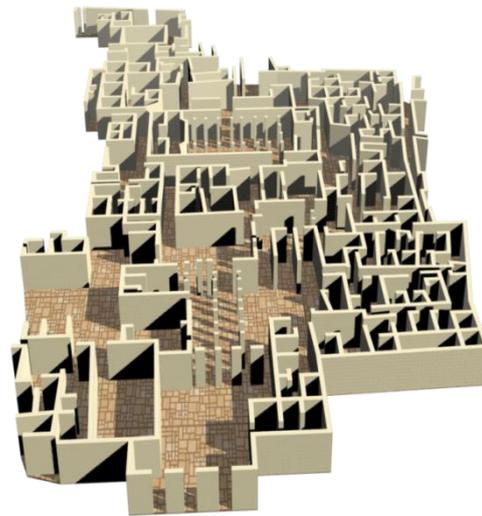

Figure 2. Plans of the whole monastery auto CAD program

1.2. The remaining objects of the Monastery

There are many objects exists in the national museum of Egyptian civilization presented in 14 mural paintings and in the Coptic museum presented in 8 niches -5 mural paintings –water pot and columns of the church and many parts of life tools. The first phase of construction goes back to about the early part of the 6th century AD. This earliest development merely established the essential elements needed for communal living. Later in the 7th centu-

ry, the community was extended, apparently to provide a level of dignity and prestige to the monastery. In this phase, the main church was enlarged using fine, free stone that was decorated with small friezes together with painted decorations. A substantial refectory was also built and a funerary building from the pharaonic era was converted for the same use by the monks. This early monastery was a Cenobitic (living together) complex, where monks lived a much more communal life than, for example, those at Kellia (the Cells). While at Kellia, monks lived in either solitude or later small groups, here the edifices were designed to provide living quarters for a fairly large number of monks, which with his own cell to which he had access through a common antechamber. For the needs of a large community, other building consisting of refectories, warehouses, stables, cisterns ovens to bake bread, oil presses and artisan shops were also constructed. In addition, evidenced by inscriptions, painted figures and tomb discoveries, the complex also had an area for women. As with other more familiar communal monasteries such as St. Anthony's in the Eastern Desert, a high defensive wall was then built to protect the community, some fragments of which remain in its southern most section (Gabra, 1993).

2. ACQUISITION AND MODEL GENERATION

2.1 Input data

The available data of monastery St. Jeremiah is presented only in excavation by Quibell (1910).
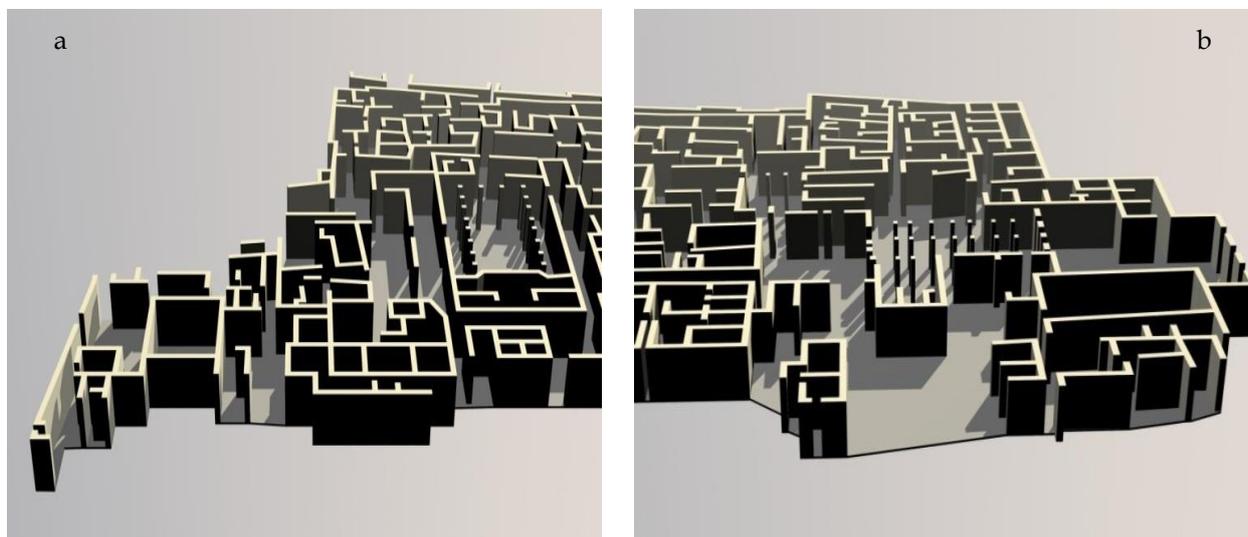

Figure 3 (a,b) The western part with the church (a) and the eastern part of the monastery (b)

2.2 The auto CAD program

Automatic architectural reconstruction is a continuing goal of photogrammetry and computer vision research. More specifically, the building model delivered by a digital reconstruction system should be a structured surface representation similar to the one a human photogrammetric operator or CAD-designer would produce (Heuvel, 2003; Schindler et al., 2000).

3. THE AIM OF THIS TECHNIQUE

This program used the original plans and the remain photographs to prepare a suitable complete imagining of the monastery of saint Jeremiah. To give the visitors the opportunity to imagine the places of the objects. That can help in creating an image of the monastery with its content. The places of mural paintings on walls inside the monastery can help the visitors to see how the monk lived inside painted place in spite of the surrounded circumstances (Besora et al, 2008).

The major aim of the reconstruction of the monastery is to create a suitable environment of exhibition inside the museum as in Fig. 4 displaying the place of the mural painting inside the monastery The visitor can interface in the touch-screen which presents a view of the monastery and a few buttons and widgets. Besides the touch-screen, a number of brief instructions in three different languages is available. The representation of the mural painting without the surrounding walls of the Monastery is intended to highlight its similarity with the Arcs of the Roman Empire. Visitors can approach by pressing on the perspective arrows , that technique can create a suitable view of how monks were living in that monastery and how they were praying in their niches and what were the surrounded walls with their paintings

(Lourenço et al,2008; Streilein et al, 1998), so the auto CAD program helps in creating available vision of how the monastery was and where existing it's content that's a very simple way for reconstruction of the monastery can be as we mentioned above by touch screen or in unavailable places that figures can be printed on separate walls just to help the visitor to have a sense of the objects in the monastery and on the other hand that reconstruction is keeping the memory of that important monastery as the only available remains of the monastery of saint Jeremiah. (Amado, 2009; Besora et al, 2008).
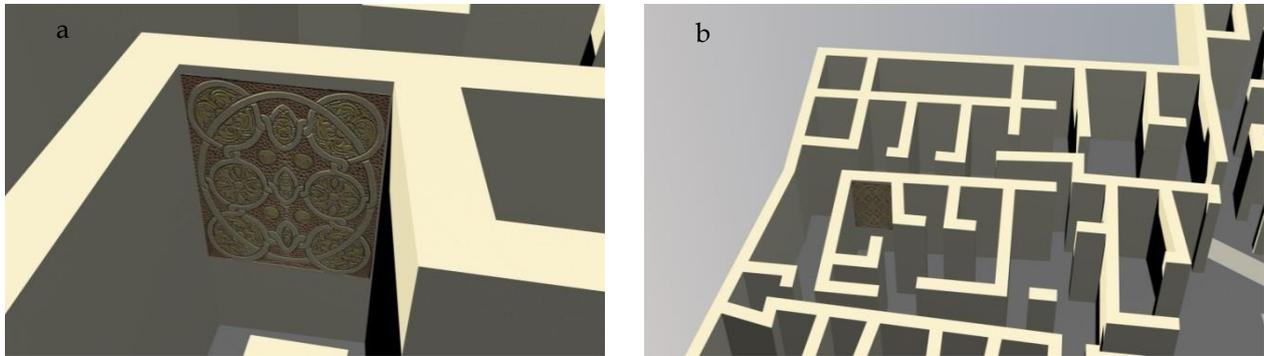

Figure . 4 (a,b) The place of the mural painting on wall inside the monastery

4. CONCLUSION

A comprehensive program involving inspection, diagnosis, safety assessment and remedial measures of a Cistercian cloister was presented. The monastery is not preserved and the objects related to it were kept in the national museum of Egyptian civilization and in the Coptic museum, and it is available to document the monastery from the rest documentation of Quibelle (1907).

This application is useful in the exhibition for the visitor but also the management of this monument. The application is based on the creation of a database that makes possible the reconstruction of all information related to past, present and future interventions of any objects backs to the Monastery, in a way that it is easily accessible.

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