

The V&A's mysterious Mamluk *minbar*

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Abstract

This paper concentrates on the historical importance of a large furniture object, a pulpit from a mosque (minbar). During the development of 3D imaging practice in the V&A Museum, this large object was selected as a candidate object to test modelling technology. During the course of this trial an Islamic scholar was consulted to assist in the collation of legacy data concerning the minbar. A comparison was made between the V&A object and the possible site of origin in Cairo. The resulting 3D model of the V&A minbar was compared to range scans of the possible mosque of origin in Cairo. An understanding of the potential for virtual re-patriation was recognised as a possible outcome of this collaborative technical approach. This investigation led to the discovery of an interesting and unusual history of the acquisition of the object which is discussed in this paper. 3D scans of calligraphic panels assisted in the translation of previously unknown descriptions.

Categories and Subject Descriptors (according to ACM CCS): I.3.3 [Computer Graphics]: Picture/Image Generation—Line and curve generation

1. Introduction

The *minbar*, or pulpit, is a piece of ritual furniture whose shape and purpose is intended to remind the faithful of the essential mission of the Prophet Muhammad and whose etymology gives a sense of a raised place. The concept of ascending, or being on high, to convey messages, dates back at least 7,000 years, as the biblical Hebrew word for this ritual object has been traced by scholars to a Ugaritic cognate meaning the back of an animal or person. It was reported that in approximately 628 CE, the Prophet was about to stand on a palm trunk to make himself heard by the faithful when he was presented instead with the first *minbar* of Islam. The abandoned palm-trunk whined like a camel and only quietened down when the Prophet stroked it. Why the *minbar* took on the form of a baldachin with a bulbiform dome or even camel-litter is something which scholars have yet adequately to research, and there are obviously direct links to early church furniture.

The purpose of the *minbar* is understood by the restrictions formed by its shape. Common to most *minbars*, the front doorway, with its elaborate *muqarnas* cornice and crenellations, obscures most of any speaker standing under the cupola and we would perhaps be wrong to think of it primarily as an item which elevates the speaker to a position

of visibility. Rather, the item of furniture thus serves to elevate and broadcast the voice of the speaker, with a sight of him being of secondary importance. Although Mamluk *minbars* were generally made of wood, sometimes other materials were used. Such as the stone *minbar* in the mosque of Shaykhū in Cairo. Occasionally the *muqarnas*-work is polychrome or gilded and recent examination of the V&A *minbar* has shown traces of gesso-like coating with evidence of paint and gilding.

The V&A *minbar* uses the typical Mamluk method of joining together small panels set in wood beading, partly to ensure little wastage of valuable wood and also to minimise any distortion caused by fluctuations in temperature. Mamluk *minbar* design and decoration had not changed greatly since the end of the Fatimid period and a 12th-century *minbar* of the āli alai mosque bears the same decoration of a geometric repeat pattern based on 12-pointed stars with polychrome accents. The polygonal star motif has been termed 'unquestionably the most beautiful and intricate of all Islamic patterns' as it pleases the eye with an seemingly endless series of charming shapes produced by lines extending and intersecting from the angles of the star. The constant flow of satisfying lines and shapes effectively prevents the eye from settling on one spot and moves the viewer's line of



Figure 1: *The V&A minbar*

sight along the edges of intricate polygons which all bear a geometric relationship to the star.

On many mosque floor-plans the *minbar* is the only movable object shown and as such it would seem unreasonable for a mosque to part with one. Yet, the V&A *minbar* represents a mystery which appears to have started in 1867 at the Exposition Universelle, held in a space of 165 acres in the Champ de Mars, Paris.

A khedivial commission had been formed of leading scholars in Egypt who appointed the French architect Jacques Drevet (1832-1900) to draw up building plans for the Egyptian section and Khedive Ismail himself, who had studied at St. Cyr, went to Paris in June 1867 accompanied by his minister of public works, Ali Pāshā Mubārak, who was to write the seminal work on the urbanisation of Khedive Tawfiq's Cairo, *al-Khia al-Tawfiqiyya al-Jadīda*. This highly organised work included a detailed précis of extant buildings of historic importance, in which Mubarak lists the

Sultān Shāh mosque in what is now down-town Cairo and recounts how its *minbar* was sold off to a tourist who had it shipped to Europe. The price recorded was twenty-five thousand Dīwānī piasters, a sum approximating £20,000 in modern terms. The unfortunate guardian of the mosque, and the carpenter who disassembled the *minbar*, were exiled to the Mediterranean coast. This is the only record of a *minbar* leaving Egypt before the 1867 Exposition Universelle.

Of his visit to the Exposition, Adalbert de Beaumont wrote in the *Revue des deux Mondes* of a certain Dr Meymarie, a resident of Cairo, who had the happy idea of collecting woodwork, doors, shutters and other bits and pieces 'from the mosque of Ibn Tulun'. De Beaumont implies that this too was the provenance of the *minbar* which he saw at the Exposition. However, records show that in 1867 the trustees of the V&A called upon the services of Owen Jones, the renowned architect, draftsman and author of the spectacular *Grammar of Ornament* [Jon08], who went off to Paris armed with an envelope full of cash, of which he used £2,261 to purchase for the museum 'some of the finest specimens of Cairene wood-carving of the 14th and 15th centuries that can be seen anywhere, together with a complete pulpit from a mosque.' It would appear, although it remains to be proven, that these were pieces whose provenance was the spectacular collection assembled by the enigmatic Dr or Monsieur Meymarie or Meymar and which were sold off, like so many of the exhibits at the close of the Expositions, in a great hurry and at a *prix d'occasion* and indeed a line drawing published at the time under the title 'le déménagement de l'exposition' shows a chaotic scene of visitors rushing around grabbing bargains reminiscent of the last day of the Chelsea Flower Show!

The French architect and historian, Mercedes Volait, has tentatively identified this mysterious character as the director of the Waqf (Public Endowments) Department, usayn Pāshā al-Mimār, whose final name means 'architect' and who built up a significant collection of antique pieces during his lifetime. However the mystery deepens when we note that the *minbar* was identified by the museum's own list of acquisitions as having a Damascene provenance, while the architect James Wild claimed it came from the mosque of al-Muayyad in Cairo. Other theories state that it was given by Sultan Lagīn to the mosque of Ibn Tulūn in 1296 but perhaps one should still run with Lane-Poole in his *Cairo: Sketches of Its History* [LP09], who carefully states that it bears the superscription of the Mamluk sultan Qāyrbāy (r. 1468-1495) which reads 'Glorified be Sultān al-Mālik al-Mulk al-Ashraf Abū al-Nar Qāyrbāy, may God prolong his rule.' The sultan, who left behind a plethora of monuments representing the peak of Burgī Mamluk architectural and decorative style, is apostrophised in various ways in extant inscriptions and the wording here may indicate that the *minbar* was a gift from him rather than implying that it belonged in his eponymous mosque.

2. The structure of the *minbar*

Examining the *minbar* itself, it is clear that the complicated arrangement of small panels forming the geometric patterns emanating from a sixteen-point star, and the carving of the panels themselves with foliate arabesques of varying designs, is work of the very highest technical ability and indicates a deep understanding of mathematics. The intricate measurements and planning needed to execute the hexadecagonal patterns are undermined aesthetically by the clumsy calligraphic carving, where it appears almost as if the carver ran out of space towards the end of his line, as in the long panels the lettering on the left side has a squashed feeling to it. This might indicate that the itself was made by one set of specialist woodworkers, who left space for the calligraphic panels which came from a workshop whose output shows much less finesse or that these panels were added at speed when *minbar*'s final location was specified.

Recent cleaning of the by V&A technicians and conservators has shown that only 60% of the object is original, the rest being support panels and frames apparently added by V&A specialists some time after 1867. This indicates that it had not been shown assembled in France and was most probably exhibited as separate pieces for the quality of its ivory carving and geometric patterns. The same experts also found rot and fire damage on edges of sections of the which would again indicate that the piece was not assembled when this type of damage occurred. The different geometric designs on the balustrade panels, which emanate variously from pentagons and decagons, as opposed to the dodecagons of the large side panels, might also indicate that the whole V&A does not represent the object at the moment of its original assembly.

This piece of ritual furniture, which has sat forlorn in exile, benignly neglected and under-documented, for almost 150 years and is now pushed against a wall and almost unapproachable at the edge of the V&A's Jameel Gallery, is fortunately being given a second life. The Egyptian Center for the Documentation of the Cultural and Natural Heritage, CULTNAT [CUL12], which is affiliated with Bibliotheca Alexandrina and supported by the Ministry of Communications and Information Technology, is collaborating with the V&A on a three-dimensional reconstruction as part of a European-funded research project with 3D-COFORM [3D-12], recognised experts in the field of three-dimensional documentation. Under the expert guidance of James Stevenson, the V&A's head of photography, this object has been chosen partly for its cultural importance and partly because its enormous size and architectonic shape present particular challenges in high-resolution scanning. It is hoped, and planned, that eventually, significant objects from Egypt's cultural heritage, which due to reasons of European scientific interest was seen as ripe for study and alienation after Napoleon's 1798 invasion, will be made available digitally to the public. Eventually, as CULTNAT is also imaging whole build-

ings including the mosque of Qāyṭbāy, objects will be repositioned, virtually, inside the buildings from which they were once removed.

The V&A *minbar*, one of the greatest and most understudied objects in the museum, will thus be re-united with its former location through a project of digitisation, and this perhaps will provide some contemporary answers to the large question of whether objects of great historical and local value will ever need to be returned to their places of origin or whether it will be enough for us to be able to visit, as with the three-dimension reconstructions of Rome or Persepolis, the sites virtually, and to place the objects in situ in order better to understand their architectural, archaeological, social and religious ecosystem.

3. Scanning the *minbar* in 3D

For a better understanding, analysis and possible object comparison between the *minbars*, the V&A undertook a 3D scanning campaign. The results of these 3D images would bring new research methodologies to scholars, helping them to transcribe the inscriptions on the *minbar*'s front panels as well as helping the comparison between different *minbars*. As the *minbars* are located in both London and Cairo, 3D imaging offered the opportunity to make comparisons between the objects in these two sites.

For 3D imaging technology, the V&A's *minbar* raised many questions about how to scan the different component parts of the object. The intricate level of carving, the size of the object itself and the dark wooden colour suggested that several techniques would be necessary for the 3D analysis of this object. 3D-COFORM [3D-12] tools were used, as well as the Next Engine scanner.

The first tool used to scan the *minbar* and start a preliminary construction of the object in 3D was Arc3D [Arc12]. Developed inside EPOCH [EPO12], Arc3D works by taking a series of pictures around the object within a metre distance from each other without changing the settings on the camera. It is a 2D image based solution, with the resolution and definition constraints that such techniques have when used to create 3D images. Despite the amount of fine detail provided by this technique, it is not sufficient to analyse fine details of the object, though it gives a very good general result, such as general structure, features recognition, size, etc.

Different models were created using this technique, general ones and details of some of the panels. Some of the panel details were scanned with the Next Engine laser scanning technology [Nex12]. Our interest in understanding 3D technologies made us consider other tools outside the project for tool comparison amongst the scenario. The Next Engine utilises two cameras and a laser projector, which lights the object from top to bottom and left to right so the cameras can interpret the distortion of the light when this hits the object. Several details of the panel were scanned and in this



Figure 2: Interior scan of the Qāyṭbāy mosque in Cairo. The can be seen to be in similar style to the at the V&A.

case a more accurate 3D model of the panels with inscriptions was created as well as the left side of the *minbar*. This data helped the study and translation of the panels, as well as providing detailed recognition of some of the features the *minbar*.

Another technique applied on the V&A *minbar*, was with a structured light scanner. The scanner is manufactured by Breuckmann [Bre12]. This technique can be considered as high-end 3D scanning because it produces 3D data with low micron resolution as well as a highly accurate representation of the object. Though similar to the laser technology, in this case instead of a laser projected onto the object a pattern of black and white parallel bars is projected on to it. We acquired several parts of the to provide the scholars with a comparison of these different resolutions of 3D data.

All this data was processed and visualised in Meshlab [Mes12] which has been developed by CNR ISTI. It allowed us to work with different techniques in a single platform, making the comparison between techniques simple.

Parallel to this acquisition campaigns at the V&A, our partners in 3D-COFORM [3D-12], Center for Documentation of Cultural & Natural Heritage in Egypt (CULTNAT) [CUL12], scanned the mosque in Cairo where the V&A was thought to have a comparative object. They produced a 3D scan of the interior of the mosque that included the *minbar*. It was produced with a time-of-flight scanner able to record and produce 3D information of large objects and buildings.

3.1. Conclusions

The opportunity to incorporate the V&A *minbar* inside a possible original location was highly beneficial for the scholars. Moving the object from one location to another would never happen in reality. These techniques and the comparative analysis that can take place was a valuable exercise in merging studies through new 3D technologies.

The potential of virtual repatriation of cultural objects is an interesting idea which will inevitably happen when the

volume of 3D libraries of cultural objects become available. Whether this eases or raises issues of actual repatriation is interesting to speculate upon.

Attempting to scan an object of this size at the V&A, with the available tools, was a challenging and not entirely successful task. Other tools such as time-of-flight scanners were necessary to capture such an architectural sized object. As with any large scale technical exercise on a cultural object the task is usually best undertaken during a combined series of activities on the object such as loan or re-display. Scanning an object of this nature when it is in a fixed position in the gallery is always challenging. Not only can the object be in a difficult position, but the engagement of other busy museum staff cannot always be relied upon. When an object is the subject of a range of activities then fitting in the 3D exercise alongside these other tasks works much better. However the exercise was successful in that it stimulated a new historical review of the object. This led to the translation of previously undecipherable calligraphic panels and formulated a more understandable history of its provenance. The use of 3D technology created a more detailed examination of the object than would have been usual with 2D imaging alone.

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