

A Method against Obsolescence of Three-Dimensional Archaeological Collection. Two Cases of Study from Qubbet El-Hawa Necropolis, Aswan, Egypt

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Abstract : Qubbet el-Hawa Project has been documented archaeological artifacts as 3d models by laser scanning technique since 2015. Currently, research has obtained the right methodology to develop a high accuracy photographic texture for each geometrical 3D model. Furthermore, the right methodology to attach the complete digital surrogate into a 3DPDF document has been obtained; it is used as a catalogue worksheet that brings archaeological data and, at the same time, allows us to obtain precise measurements, volume calculations and cross-section mapping of each scanned artifact. This validated archaeological documentation is the first step for dissemination, application as Qubbet el-Hawa Virtual Museum, and, moreover, multi-sensory experience through 3D print archaeological artifacts. Material culture from four funerary complexes constructed in West Aswan has become physical replicas opening the archaeological research process itself and offering creative possibilities on museology or educational projects. This paper shares a method of acquiring texture for scanning's output product in order to achieve a 3DPDF archaeological cataloguing, and, on the other hand, to allow the colorfully 3D printing of singular archaeological artifacts. The proposed method has undergone two concrete cases, a polychrome wooden ushabti, and, a cartonnage mask belonging to a lady, bought recovered on intact tomb QH34aa. Both 3D model results have been implemented on three main applications, archaeological 3D catalogue, public dissemination activities, and the 3D artifact model in a bachelor education program. Due to those three already mentioned applications, productive interaction among spectator and three-dimensional artifact have been increased; moreover, functionality as archaeological documentation has been consolidated. Finding the right methodology to assign a specific color to each vector on the geometric 3D model, we had been achieved two essential archaeological applications. Firstly, 3DPDF as a display document for an archaeological catalogue, secondly, the possibility to obtain a colored 3d printed object to be displayed in public exhibitions. Obsolescences 3D models have become updated archaeological documentation of QH43aa tomb cultural material. Therefore, Qubbet el-Hawa Project has been actualized the educational potential of its results thanks to a multi-sensory experience that arose from 3d scanned's archaeological artifacts.

Keywords : 3D printed, 3D scanner, Middle Kingdom, Qubbet el-Hawa necropolis, virtual archaeology

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