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THE TEMPLUM STUCCO... FOR RECREATIONS.

Nicola Salvioli, a Florentine restorer specialising in bronzes, weapons, armour, jewellery, and all things metal, shares insights into the creation of some digital sculptures using **TEMPLUM STUCCO** and **SILO 111**.

The TEMPLUM STUCCO has recently evolved into **TEMPLUM AQUA**, a reversible two-component epoxy-based composite, formulated with selected fillers, white in colour, pigmentable and with low toxicity.

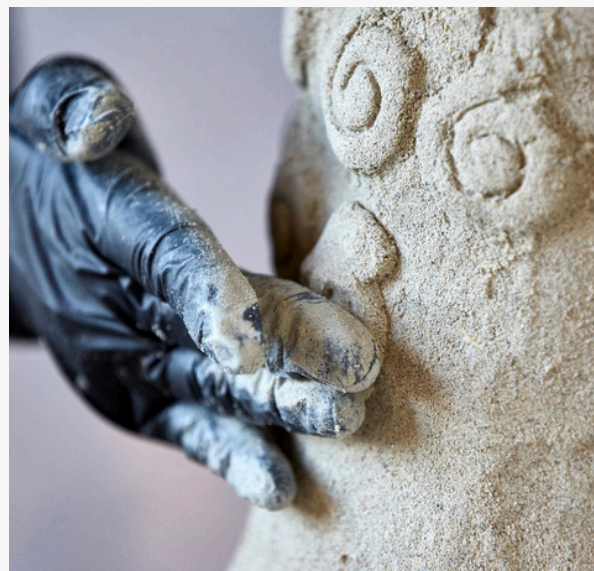
In recent years, the field of Cultural Heritage conservation, as well as art production, has increasingly embraced opportunities provided by the industrial and medical sectors. These advancements enable the creation of artefacts using digital sculpting models or reproductions from 3D scans, eliminating the need for direct moulding of the originals, though such moulding remains possible under certain safe conditions.

"Recreations" refer to "copies" of artworks that are not made using traditional methods (moulding or pantography). Instead, they are physically generated from a digital model or clone, which undergoes necessary editing to produce a material counterpart. This can be achieved through subtractive (milling) or additive manufacturing techniques (milling or printing). Through years of experience with silicone moulds and, more recently, digital techniques, we have performed small integrations for restorations or medium-sized recreations for temporary or permanent replacements. These works primarily simulate metal objects, reflecting the focus of our restoration practice. Two noteworthy and significant experiences include the creation of replicas for the Lamassu of Nimrud and Michelangelo's David, both originally carved from stone.



The Lamassu, an Assyrian winged bull with a human head, originally located among the ruins of the royal palace in Nimrud (modern-day Iraq, near Mosul), was destroyed by ISIS jihadists in March 2016. Thanks to the efforts of the Fondazione Incontro di Civiltà(2), we recreated this monumental sculpture, which was the last of its kind preserved in its original location. Although a 3D model was not available, an extensive photographic research allowed for photogrammetry and subsequent digital sculpting. This process refined the model, enabling the 1:1 scale milling of the artwork in polystyrene (494 x 94 x 497 cm). The piece was engineered for future transportation and installation in outdoor exhibitions, including its displays at the Colosseum in autumn 2016(3), UNESCO Headquarters in Paris during winter 2018/19, and the Basra Museum in Iraq since spring 2022. The bull was originally made from Mosul marble, a name derived from the extraction area of the scientifically unclassified material - An alabaster with a chalky appearance, yet non-calcareous in nature, resembling a chalk stone. It is characterised by large yellowish crystals nestled among smaller greyish ones, due to the presence of a delicate organic substance amidst the crystals. A soft and easy to work stone, resistant to arid climates. Given the stone's texture and the practical constraints of weight, mobility, and weather resistance, replicating its variegated appearance(4) was nearly impossible. We therefore prepared a chromatically similar mix using various **TEMPLUM STUCCO** types(5). This mix was applied to the polystyrene surface, meticulously modelled by hand and specialised tools, to recreate the material degradation and tool marks of Assyrian artisans.

In certain sections, river sand and pigments were dusted onto the mix before it dried to mimic chromatic alterations and light effects on the original material. After its final installation, the recreation was protected with **SIL0 111**.



△ Lamassu di Nimrud - Toro androcefalo 2016

For the David project, commissioned by the Ministry of Culture and Tourism and the Italian Pavilion at Expo 2020 Dubai (held in 2021), an extraordinary high-resolution 3D scan(6) was carried out, resulting in a true digital twin of Michelangelo's masterpiece. Copies of the David have existed since the second half of the 19th century, obtained by several techniques (in Florence from the cast, the bronze one in Piazzale Michelangelo and from the pantograph on plaster the marble one in Piazza Signoria) and there are also copies available in several materials and formats. However, since this recreation aimed to showcase Italian craftsmanship through cutting-edge techniques, the result was a Model Zero, created from multiple 3D-printed acrylic components, assembled and prepared for transport (by road and air) from Florence to Dubai. Not a clone or a mere copy, this physical reproduction—scaled 1:1 at 714 cm including the base—was a three-dimensional document showcasing the painstaking craftsmanship, the details of the new "marble skin" about 4 mm thick, the advanced material degradation, the defects of the non-prime marble, and the traces of the great genius' workmanship.



The 14 printed pieces were carefully coated before and during assembly with various TEMPLUM STUCCO(7) mixes to match the marble's colours. These were shaped by hand using wooden, metal, or plastic tools. As with the original, gaps and surface fills were completed with TEMPLUM CERAMICA. The entire structure was treated and sealed with lightly pigmented SILO 111, adding further surface nuances. For the base, similar to the Lamassu project, we refined the application of TEMPLUM and TEMPLUM EPO TOP to achieve the polished sheen characteristic of marble slabs. Transported whole, the David was then moved to fit into the large memory tower months before the Italian Pavillion was completed, enduring the extreme summer heat and dust of the UAE construction site and becoming a highlight of Expo, admired by thousands of visitors over the event's six months.

Nicola Salvioli



References

- 1- N. Salvioli, I. Tosini "Verifiche tecniche di aggiornamento sui materiali da calco sui metalli" (Technical Verification of Mould Materials for Metals) in *Il Paradiso ritrovato. Il restauro della Porta del Ghiberti* (Paradise Regained. The Restoration of Ghiberti's Door of Paradise), ed. A. Giusti; Mandragora; Florence, 2015.
- 2- Fondazione Incontro di Civiltà, chaired by Francesco Rutelli, former Minister of Culture.
- 3- N. Salvioli; "Lamassu. Mediazioni geometriche. Tra il levare e l'aggiungere" (Lamassu. Geometric Mediations: Between Subtraction and Addition) in *Rinascere dalle Distruzioni. Ebla, Nimrud, Palmira. (Reborn from Destruction: Ebla, Nimrud, Palmyra)*, ed. P. Matthiae and F. Rutelli, Rome, 2016, pp. 50-57. A documentary of the same name was broadcast on SKY Arte.
- 4- Although a macrocrystalline gypsum rock similar to that found in Iraq exists in Italy, specifically in quarries in the Apennines near Bologna, its use would have required either chiselling or grinding. The latter process would have produced a monochromatic gypsum paste that lacked the natural effect and inclusions characteristic of the original material.
- 5- Various mixes were prepared using grey sandstone, pietra forte, travertine, and Carrara marble in defined proportions, achieving similar reflective properties and tonal variations depending on the lighting.
- 6- The 3D scanning was conducted by the University of Florence with support from several technical sponsors who provided the necessary equipment.
- 7- The materials used included Templum Marmo Carrara, Templum Travertino, and various stone powders.