

Production Techniques

The production process for terracotta statuettes and statues has been thoroughly described in many publications, so only a brief summary of the most recent studies on the subject is provided here. The technique for the manufacture of the *arulae* (altars) and reliefs is described in the individual entries.

Statuettes were generally made with single or bivalve molds that were, in turn, made from a clay model, also known as an archetype, patrix, or prototype. The prototype also made it possible to fashion individual sections of models, which, when combined with other cast parts, could form a new type.¹ After the firing of the model, the mold was obtained by pressing clay into the model until it reached the proper thickness.² A very important step during the production of a mold was the retouching of the individual details; in some cases, this work was very substantive and could differentiate the new cast from the archetype.

If the object to be reproduced was very large and it presented a number of points that were undercut or parts that projected out sharply (for example, forearms or bent legs), it was preferable to create a number of partial molds, or half molds, added *à la barbotine*—that is, adhered with a clay slip—after the positive cast had been molded but before it was fired; this approach offered a number of obvious technical advantages but also permitted a variety of compositional solutions. In much the same way, special accessories could be added to the clothing, hair, or ornaments. In some cases, the back section of the positive-cast statuette might consist of just a simple sheet of clay, or it could be rounded off and worked roughly by hand to give the impression of the curved back of the cranium; or there could be a fully modeled back, made with a bivalve mold. In the latter case, to facilitate the assembly of the two parts, a guideline was marked on the mold, consisting of incised lines or a light relief on the edge. Signs, numbers, or letters might be marked on the mold, or even on the positives, usually on the back, as is the case with the five statues of mourning women from Canosa (cat. 38–42); these were for the artisan's use during the production process.

When the first-generation molds became worn, new ones could be made. In cases where it was no longer possible to reuse the original model, new molds could be made from an existing positive. These second-generation molds were thus somewhat smaller than their predecessors, and subsequent generations were smaller still as the process continued.³

Once the mold was fired, it was ready for serial production. Clay was pressed into the interior to the desired consistency and thickness. The clay was allowed to dry partially and therefore to shrink, facilitating the extraction of the positive from the mold. In some cases, the head

was not part of the figure mold but was added to the figure once the latter was extracted from the mold. The head might be a solid piece or, if large, hollow. It could be attached through straightforward assembly or by use of a necklike tenon, as in the head of a male banqueter (cat. 7).

Details, such as earrings or wreaths, were generally done freehand. Before firing, the coroplast had a last opportunity to retouch the figure with a spatula or other sharp tool. Usually the hair was defined during this phase. The holes of various sizes and shapes that we often find on the back of the figures were not only for ventilation during drying and kiln-firing but could also help in modeling the figure; if they were for ventilation alone, they could have been much smaller than is often the case.

Next came the firing of the positive casts, during which great care had to be taken to ensure that the artifacts were at the proper distance from the heat source and that the temperature was properly regulated in order to prevent cracking or other forms of damage. A layer of clay slip or white pigment (white lead kaolinite, or calcite) was usually applied to the entire figure, rendering it waterproof and improving its appearance by eliminating obvious porosity, as well as providing a good undercoat for the decoration. Analysis carried out at the British Museum on the white ground present on a group of statuettes from various locations demonstrated that this procedure must have been done after firing. This was certainly true when kaolinite was used, as it breaks down at temperatures above about 500°C.⁴

After firing, the figure would be decorated with colored pigments: black (lampblack for the Seated Poet and Sirens group, cat. 1–3) was generally used for the eyes and eyebrows; dark red (red ocher) for the hair or for coloring male flesh; red (mercuric sulfide, or cinnabar) for hair, lips, and some parts of the clothing; pink (red ocher and chalk; or cinnabar, lead white, and chalk) for female complexions and for accessories or parts of the clothing and drapery; dark blue (Egyptian blue) for various accessories (or, for instance, on the beard of the head of Hades, cat. 60); and dark brown (umber, iron oxide) for accessory parts.⁵

Production techniques could differ for mid-sized and larger statues. Recent studies of statues of mourning women from Canosa now at the Musée du Louvre showed that the statues were made by laying clay pieces over a conical tubular clay structure; arms and head were then inserted into special holes made in the structure (see cat. 38–42). In the case of the Seated Poet and Sirens group (cat. 1–3), the figures were the result of a careful process of manual modeling around an armature, possibly of wood; a number of parts were then added, some cast from molds and others hand-worked. The figures were then assembled and finished by rendering details with careful tool work during the retouching phase.⁶

Notes

1. The use of these terms is not necessarily consistent in the literature on the subject, inasmuch as they imply varying degrees of resemblance to the finished product. On the use of the terms *series*, *group*, and *type*, R. V. Nicholls defines a *group* as including works that are linked together by shared features traceable back to the same artisan or workshop. Arthur Muller, on the other hand, uses *group* to designate works that can be linked by features of a technical order but which may not necessarily originate from the same workshop. *Type* generally signifies a number of pieces that share the same image, while a *series* is a set of products derived mechanically from a single prototype. See R. V. Nicholls, "Type, Group and Series: A Reconsideration of Some Coroplastic Fundamentals," *BSA* 47 (1952), pp. 217–26. The work of Nicholls, along with the considerations of Jastrow (E. Jastrow, "Abformung und Typenwandel in der antiken Tonplastik," *OpArch* 2 [1941], pp. 1–28) laid the groundwork for the classification of coroplastic art through the identification of prototypes and variants, a system that has been thoroughly debated and explored in the publications of coroplastic material originally from votive deposits in central and southern Italy. This method has progressively been imposed upon the systems of classification based on stylistic and iconographic analysis. For a summary of the problem, see BONGHI JOVINO 1990, pp. 19–59, and F. Blondé and A. Muller, eds., *L'artisanat en Grèce ancienne: Les productions, les diffusions: Actes du colloque de Lyon, 10–11 décembre 1998* (Lille, 2000), pp. 437–63.
2. On the technical production of the molds, see A. Muller, "Artisans, techniques de production, et diffusion: Le cas de la coroplastie," in Blondé and Muller, *L'artisanat en Grèce ancienne*, op. cit., pp. 91–106.
3. The clay shrinkage amounts to about 9 to 10 percent. For the most part, it takes place during the drying phase and varies according to a number of factors, such as the quality of the clay and the duration and temperature of the firing.
4. See in this connection: BURN AND HIGGINS 2001, pp. 18–20 and Appendix 2 for the analysis of the white grounds. See also V. Brinkmann, "The Polychromy of Ancient Greek Sculpture," in **COLOR OF LIFE** 2008, pp. 18–39.
5. For the use of color on Hellenistic terracottas, see JEAMMET ET AL. 2007 and Brinkmann, "Polychromy of Ancient Greek Sculpture," op. cit.
6. For the technique of production of the statues from Canosa and of the Seated Poet group, see the pertinent entries: respectively cat. 38–42; cat. 1–3.