The manufacture of final models of Roman mass produced pail handle attachments

Autor(en): **Poulsen, Erik**

Objekttyp: **Article**

Zeitschrift: **Cahiers d'archéologie romande**

Band (Jahr): **17 (1979)**

PDF erstellt am: **05.08.2024**

Persistenter Link: https://doi.org/10.5169/seals-835601

The Manufacture of Final Models of Roman Mass Produced Pail Handle Attachments

Erik POULSEN

The determination of workshops is one of the pressing problems in present day study of Roman figured bronzes. As the material is very diverse, one of the things that might reward study for a start, are the duplicates. They indicate a repeated production of similar objects or even a mass production. What should be considered, however, are the different ways, in which a repeated production can happen in the workshop; with moulds or with handmodelling of the final model before the final casting in bronze. Accordingly the duplicates in a workshop series will vary in the degree of identity, depending on the method employed.

There seems to me to be three circumstances in the course of production, which are of importance, when we want to interpret duplicates:

1) The provision of the pattern (the original model), which may be
   a) made in the workshop, or
   b) made centrally, and a number of similar models distributed to several workshops.
2) The manufacturing of the final or wax model, if such a thing is needed.
It may be
   a) mould made, or
   b) hand modelled.
3) The casting in bronze itself (*i.e.* the sort of casting-mould employed).
Either
   a) a clay coating applied to a final wax model (*i.e.* a lost wax casting). Or
   b) an open or bivalve mould (of metal, clay or sandstone including the moulding box with sand), where you do not need a final model. Or
   c) a piece mould; again no final model is needed, not in the same sense.

Now the methods or combination of methods employed to a given task was probably to a certain degree a matter of choice. The only restrictions to the whole operation were perhaps the size and shape of the object to be made. Therefore differences in procedures resulting in similar objects may be a hint to a specific workshop tradition, or a tradition of the craft within a certain geographical area.

I am going to speak about the final model for a lost wax casting in bronze, which I find is one crucial point, where the workshop creates similarity between the single items in the mass production.

The scholars, who have made most out of an examination of moulds that could have been used in a mass production are T. Schreiber[1], E. Pernice[2], and C.C. Edgar[3]. The stone moulds treated by Schreiber and Pernice are often made of steatite, limestone and the like. The moulds have carved patterns of vessel applications (handles *e.g.*) and tools. Experiment by Pernice showed that his stone moulds could not be used for a casting in bronze because of the temperatures required. But they must have been used for the preparation of a final model in wax, or—where the moulds seemed to have been exposed to some heat—he suggested that lead had been used for the model[4]. There was no direct indication of lead in the moulds; however, eventual traces of such may have been cleaned away in the museums keeping such moulds. A

recent find—and being Roman so much the more important to us—are the fragments of limestone moulds found in a workshop quarter on the hill of La Sarra in Lyon[5]. The two moulds (one for a Roman casserole and one for a plate) might support Pernice's suggestion that lead might have been used for final models. On the inside of the Lyon moulds was found oxydes of lead and tin, but no oxydes of copper so as to indicate a bronze alloy. If the moulds were not used to make pewter vessels, (and such seem to be rare indeed in the Roman world)[6], it means that in Roman times cast final models could be made in a lead-tin alloy, which were subsequently used in a so-to-speak lost lead casting process.

The moulds of Edgar in his Cairo catalogue seem in part to stem from a larger closed find done in Memphis in Egypt. Included in the find are stucco moulds for models and part of models of articles such as tripod folding rests and lamp stands, including figured applications and statuettes, which are found adorning such things *(pl. 137, fig. 1)*. Owing to the mould material Edgar considered the material of the model to be wax. We can infer from all this that different kinds of utensils and applications may have had a mould made final model, and among them handle attachments.

All the moulds of Schreiber, Pernice and Edgar have got a mainly Eastern origin as far as it is known. But if we turn to the bronze material, it seems surprisingly difficult to find objects, which could be interpreted in accordance with this[7], even if you take into account an individual overworking of the final models. Not to say anything about a relative scarcity of material, that may be due to final models being composed of model parts that have only in part been made in the same set of moulds, as suggested by Kent Hill[8].

Turning to western European material, it seems also difficult to find objects so similar that they could have been made with mould made final models. In fact, not even pairs of attachments as on the bronze pails, which must have been made in the same workshop. In this case a procedure with moulds should be very fit, not least for the Roman provincial attachments, that show no undercuttings[9]. Here I am going to present some observations on situla attachments. They have resulted from an examination of attachements in the National Museum in Copenhagen. The attachments are all Roman imports into Denmark, and so fall within the chronological system of Free Germany[10].

As is well known the import material into Free Germany and beyond is regarded to contain an early "Italian" Roman lot and a later provincial Roman lot[11]. As we shall see, a not uninteresting aspect in this connection. Most of the work hitherto done on these bronzes have treated them typologically, and the attachments hold a minor position compared with the situlae, to which they belong[12]. Now a type cannot by itself be taken as an expression of a single workshop, but only as a fashion. And the production of a fashion may have been shared by several, perhaps many different workshops.

Let us first look at the type in terms of fashion. Attachments of the same type can be grouped according to different designs of the fashion: We can compare two examples of the fashion with a human face in the center, two animal heads above and a broad border below. In the case of one of the Dollerup attachments *(pl. 137, fig. 3)*, the border is very broad making a sort of necklace and an inverted palmette. Compared to an example in the Calvet Museum in Avignon *(pl. 137, fig. 2)* we see that here the border below is narrower and does not exceed the limits of the head as it did on the Dollerup attachment. And the necklace has disappeared. There is a couple of more attachments in museums of the South of France of the same fashion[13], and they all exhibit the same design with the more narrow palmette, even if there is an indication of the necklace[14]. None of them has a known provenance, but I think they may well be local South French. As design they certainly constitute a closed group.

Attachments in the National Museum in Naples[15] show the same design of the fashion as the shown Danish example. However, there is a difference in the execution of the Danish examples from Dollerup and the Naples examples. The Naples ones are very high in the relief, the Dollerup one very low. This could have something to do with the workshop and its way of working. An examination of the attachments with regard to the reasons for the similarities and the differences between them shows that they also exhibit another difference. The conclusion is that the difference is due to the way of manufacturing the final model in the workshop.

Fig. 7 pl. 138 shows an attachment of another type, another fashion. It was found in Valløby (Zealand). It is shown here only for the sake of demonstration, because it is very instructive. It is a little later than the fashion with the animal heads and the inverted palmette. The attachment makes the impression of a not very carefully modelled final model with negligently incised details on the leaf. There are small pits pressed in the face: in the eyes, on the upper lip, and on the lower lip as so often seen on figured bronzes. Those mentioned all have a meaning in the physical appearance: eye pupils, cleft on the upper lip, and on the lower lip. Remarkable on the Valløby attachments (there are two of them) are the two pits added on the

cheeks. They can hardly be explained by the way of physical anatomy, unless it should be an old hag with hollow cheeks. But, if we measure the attachments from the small pits and to different points, limiting for example the hair, there turns out to be a symmetry in them[16].

Here we can return to the Dollerup attachments. They total four attachments on two situlae. They have only the "natural" pits, that is four each *(pl. 137-138, fig. 3-6)*. *Fig. 8 pl. 139* shows the symmetry in the attachments. The four figures in a line correspond to the four attachments. If we compare the measurements of all four Dollerup attachments, it is seen that there are some measures, which recur from one attachment to the other. Other measures are quite independent. This must mean that the wax models can neither have been made in a mould nor been modelled freely from a master model. It can only be inferred that the attachments have an intended fixed relation to a master model. And there can be no doubt that the pits have acted as measuring points, by transferring measures from the master model to the wax. The Dollerup attachments all appear rather accurately transferred from the master model with many measures, even if the result in between looks a little odd. One of them *(pl. 138, fig. 4)* is quite skew to look at, (note the partings in the hair), but in the main it doesn't affect the numeral symmetry in the attachment. Nor the numeral identity between the four of them. *Fig. 9 pl. 139* shows some of the measurements on the four Dollerup attachments. The skew one is the second column from the left.

Turning to the Naples attachments with the head in high relief, there are—on the pieces I have examined—no such pits as in the Danish attachments with the face in low relief. The measurable symmetry in the attachments (from the partings in the hair f.ex.) and the measurable identity between a pair are likewise much less; or, as in one case non-existent. On the other hand, attachments belonging together on the same situla look rather similar.

Through these observations we can see a difference in the way of manufacturing in the attachment material (and within typological similar attachments): 1) Firstly, attachments with a very plastic head, almost in the round, where the wax models for the casting in bronze have been freely—or almost freely—modelled from a master model with few or no measures transferred from it. (The Naples attachments). 2) Secondly, a group with the head in low relief, where the wax models have been copied by hand transferring rather many measures from the master model. The difference is reasonably due to the level or skill of the craftsman or artist: A high level in the Naples attachments, and a low one in the Dollerup.

It seems that the early part of the imported Danish pails with figured handle attachments with a human face on them can be divided into two groups in accordance with the caracteristics just mentioned. 1) To the first group with high relief attachments belong one of the pails found in Hoby *(pl. 140, fig. 10-11)*, the Sønder Jernløse pail *(pl. 140, fig. 12-13)*, and the Askeby pail *(pl. 141, fig. 14)*, enumerated in chronological order. With the terminology of Eggers: period A, per. B 1, and per. B 2, respectively. Common for them are also few of the mentioned pits (2-3). The quality of the attachments on the Hoby and the Sønder Jernløse situlae is very fine, not to say distinguished. Those on the Askeby pail are inferior, in fact rather like those on the two Naples pails shown. The attachments on the Naples pails lack the measure pits, but otherwise go with this group. By the Askeby pail we have reached almost or about the same time of production as the Naples pails, belonging late in the lifetime of Pompeii. The quality has decreased, but not the skill of the artist (or craftsman). The lowering of quality may mean nothing else but an increasing mass production of this kind of things. The group as a whole must belong to the same tradition of manufacture, and the same general area of production, viz. Italy, and possibly partly or wholly Campania, (I don't know).

2) The other group, then, consists of the low relief attachments. They are the Lykkesholm Peatbog attachment *(pl. 141, fig. 15)* and the four Dollerup attachments *(pl. 137-138, fig. 3-6)*. The same tradition of making seems to continue in the later attachments, among them those mentioned from Valløby *(pl. 138, fig. 7)*. Chronologically they belong to Eggers' period B 2 and Valløby to per. B 2 - C 1, (and here we arrive at about AD 200). Compared to the first group, the manufacturing of the second, the low relief group, has demanded much more effort spent on the wax model with a rather labourious measuring from the master model. In contrast to the care observed, the relative artistic level is mediocre compared to the first group. The low relief group can hardly be interpreted as a mass production following the first group on the same spot. Unlike the Italian of both good and bad quality, the low relief attachments were made in a much more troublesome way. The question is therefore if we should not interpret them as the products of a provincial industry just coming up, as simple plagiarisms of southern types. In view of the places of finding, some place of origin in Gaul or Germany might be suggested. As we have seen, the bronze manufacture in South Gaul behaved probably fairly independently in relation to "Campania" in their design of a fashion. So I believe that the low relief attachments are northern provincial products, imitating closely, in any case in the beginning, Italian—Campanian—types.

The question would then be where in the northern provinces? The method employed here focusing the making of the attachments leaves us a possibility to identify the dependence of attachments of the same type on the same master model, and so the same workshop. The question of origin would then be an interpretation of dispersion. But to answer the question requires more material and more work.

To refer also different types of provincial attachments to the same workshop, the observations on them put forward here may also be significant. The relevant particular in this connection is what might be the habitual way in which the wax model was copied from the master model in the workshop. It may be important which measuring pits have been used and left on the attachment. The aforementioned Valløby attachments show a pit in each cheek, pits that can scarcely have been inspired by observations of anatomy. Whether these additional pits may be characteristic of one particular workshop or even one individual artisan, is an intriguing question. An attachment in the Landesmuseum in Trier *(pl. 141, fig. 16)*[17], of a different type shows a similar disposition of pits. Regrettably it adds nothing to an answer about a location of the workshop, as its provenance is unknown. But, as these attachments are later than the Dollerup, it shows that the same method of manufacturing the final model continued, and became a tradition in the northern provincial area.

I would like to make an addition to note 6. After I have made my text, it has come to my knowledge that pewter is not as rare as I have believed. There has been found pewter in France, *e.g.* in Chalon-sur-Saône, where a plate of the finds done there is on exhibition in the Musée Denon. So I would now be inclined to think that the Lyon moulds have most likely come from a pewter workshop. Of course, this does not affect the theory of Mr. Pernice.

I am grateful to Mr. Bonnamour, keeper of the Musée Denon in Chalon, for our talk about pewter. The authority on pewter would be Mr. Donald Brown, the Ashmolean Museum in Oxford.

Notes

[1] *Die alexandrinische Toreutik* (1894).

[2] Untersuchungen zur antiken Toreutik, 2: Über antike Steinformen, *JŒAI* 7, 1904, 180f.

[3] *Greek Moulds* (*Catalogue gén. des antiquités du Musée du Caire* 8, 1903).

[4] The only stone to withstand high temperatures is sandstone. Cf. *e.g.* Voce in H.H. Coghlan, *Prehistoric Metallurgy*[2] (1975) 136. Terra-cotta and metal moulds can also be used for bronze casting.

[5] A. Mutz, *Metalldrehen* (1972) V.

[6] The Lyon moulds are dated to the late Ist cent. AD by Dr. Picon according to the text of A. Mutz. Pewter vessels were made in southwest England mainly (or only?) in the Bath area, it seems. I know of no examples outside England. The pewter vessels found in Roman Bath are not dated by N.J. Sunter in B. Cunliffe, *Roman Bath* (*Reports Res. Comm. Soc. Ant. London* 24, 1969) 67f., but prof. Cunliffe himself in his *Roman Bath discovered* (1971) 87f. states that the pewter industry reached its peak in the 4th cent. J.F. Healy, *Mining and Metallurgy in the Greek and Roman World* (1977) 243 also mentions pewter only in connection with Britain with a reference to R.F. Tylecote, *Metallurgy* (1962) 104. In the Roman Baths Museum in Bath there are exhibited 7 limestone moulds for bowls and plates. They were excavated around the turn of the century in Lansdowne near Bath. They are published in the *Somerset Proceedings, Bath Branch* 1904-08, but not in any detail (written comm. from Judith Startin, Bath). D.E. Strong, *Greek and Roman Gold and Silver Plate* (1966) 202 n. 2, has a footnote on pewter vessels, again a British example. R.J. Forbes, *Studies in Ancient Technology* 9 (1972) 159 has nothing very precise about it either, only a general comment. His reference is, again, to British litterature: J.A. Smythe, in: *Trans. Newcomen Soc.* 18, 1937-38, 255. See also *Brit. Mus. Guide to the Antiquities of Roman Britain*[3] (1964) 41f. The site of Bath is very near to British tin sources, which explains its use in that area. Perhaps Spain could be another place in question.

[7] Edgar found only two statuettes in the material of the Cairo Museum presented in his catalogue. Edgar, *Greek Bronzes* (1903) nr. 27647 and 27648.

[8] *E.g.* in *Cat. of Class. Bronze Sculpt. Walters Art Gallery Baltimore* (1949) XXIf.

[9] Preroman Etruscan attachments should be mould made according to Pernice in the first half of his article cited (*supra* n. 2): "Über Teilformen und Gipsabgüsse" 167f.

[10] H.J. Eggers, *Röm. Import* (1951).

[11] Classic works: H. Willers, *Neue Untersuchungen über die röm. Bronzeindustrie* (1907); A. Rádnoti, *Bronzegefässe* (1938); Eggers *op. c.*

[12] See previous note.

[13] Three in Avignon: H. Rolland, *Bronzes antiques de Haute-Provence* (Suppl. *Gallia* 18, 1965) nr. 295, 296, 326. One in Vienne: S. Boucher, *Vienne, Bronzes antiques* (1971) nr. 307. And we can add one in the Antiquities Museum in Cassel: M. Bieber, *Die antiken Skulpturen und Bronzen in Cassel* (1915) nr. 413 pl. 51. Provenance unknown.

[14] As on the Vienne example.

[15] Naples, Museo Nazionale, pail of Eggers' shape 25 inv. nr. 68859, and pail of shape 26 without nr. Nr. 68859 is probably = H. Willers, *Die röm. Bronzeeimer von Hemmoor* (1901) fig. 45, 6.

[16] The detailed examination of the attachments in the Danish National Museum see *AArch* 48, 1977 (1978) 50f.

[17] H. Menzel, *Die röm. Bronzen aus Deutschland*, 2, *Trier* (1966) nr. 252. Landesmuseum inv. nr. G.T.62. Similar are two attachments related in type to Valløby from Göldenitz (Schleswig-Holstein), *Offa* 6-7, 1941-1942, 95 fig. 4. Also the shape of the situlae belonging to the Valløby and Göldenitz finds are similar, Eggers' shape 29, a fairly rare type.

List of illustrations

Pl. 137, fig. 1: Lamp stand in Copenhagen, Nat. Mus. Coll. of Near Eastern and Classical Antiquities. Inv. 821-822. Found in Rome at the Staz.Termini.

Pl. 137, fig. 2: Situla attachment in Avignon. After H. Rolland, *Bronzes antiques de Haute-Provence* (Suppl. *Gallia* 18, 1965) nr. 295.

Pl. 137-138, fig. 3-6: The attachements on the two situlae found in Dollerup. Copenhagen, Nat. Mus. Coll. of Danish Antiquity inv. C.23887 and 23891. Museum photo.

Pl. 138, fig. 7: Attachment from Valløby. Copenhagen, Nat. Mus. Coll. of Danish Antiquity, inv. 1373. Museum photo.

Pl. 139, fig. 8: Sketch showing the dependence of the four Dollerup attachments on the same master model. Drawn by Mr. Poul Christensen.

Pl. 139, fig. 9: Table comparing some of the measures taken on the four Dollerup attachments.

Pl. 140, fig. 10-11: Two attachments from Hoby. Copenhagen, Nat. Mus. Coll. of Danish Antiquity, inv. 17950. Museum photo.

Pl. 140, fig. 12-13: Situla from Sønder Jernløse. Copenhagen, Nat. Mus. Dept. of Danish Antiquity, inv. 19471. Museum photos.

Pl. 141, fig. 14: The situla from Askeby. Copenhagen, Nat. Mus. Dept. of Danish Antiquity, inv. 11229. Museum photo.

Pl. 141, fig. 15: Attachment found in Lykkesholm Peatbog. Copenhagen, Nat. Mus. Dept. of Danish Antiquity, inv. C.5863. Museum photo.

Pl. 141, fig. 16: Attachment in Trier, Landesmuseum, inv. G.T.62. Provenance unknown. Museum photo.