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Reviewed Article:

Assessing Forming Techniques of Athenian Ceramic Alabastra

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Athenian black-figure and red-figure vases have not been the subject of many studies specifically devoted to vase-forming techniques, since researchers have primarily focused on their decoration. The study of the Attic alabastron, a perfume vase shape produced in Athens between the middle of the sixth century and the beginning of the fourth century BC, shows that different techniques were occasionally used by potters in the making of a vase or its

various parts. This paper will therefore focus on highlighting the different forming techniques that can be hypothesised through the observation and drawing of fine wares.

> When studying a specific shape like the alabastron, one can highlight workshop practices in terms of vase construction and techniques, based on observation, vase drawings and their serialization.

Introduction

Studies related to the craft of the potter whether it is the examination of manufacturing techniques of ancient Greek vases or clay analyses, have considerably developed over the last decades. Yet, experimental reconstructions and potter-centred analyses have mostly focused on Bronze Age pottery, Early Iron Age pottery, coarse wares, or kitchen wares (Knappett, 1999; Müller, Kilikoglou and Day, 2015; Choleva, 2020; Choleva, Jung and Kardamaki, 2020). They have hardly dealt with the manufacturing techniques of fine wares, such as Athenian black- and red-figure vases from the Archaic and Classical periods. Several reasons, inherent to the historiography of the discipline, can explain this lack of interest in fine wares forming techniques. The Attic *alabastron*, a perfume vase produced in Athens between the middle of the sixth century and the beginning of the fourth century BC, will serve as a case study to highlight what we can learn about workshop practices and forming techniques used by Athenian potters during that period, based on macroscopic observation, vase drawings and the serialization of drawings.

“The point of view of potters”

Athenian black- and red-figure vases have been the subject of research since their discovery in Etruscan tombs in the late eighteenth and early nineteenth centuries. It is likely that their initial status as aesthetic objects, collected primarily for their beauty by antiquarians was detrimental to their valuation as scientific objects, a situation that persists to some degree today. Indeed, for most Classical archaeologists and museum curators it would feel almost sacrilegious to break off a fragment of a vase painted by Euphronios, (raised in modern times to the rank of a leading artist) to perform a clay analysis, or obtain a fresh radial section of one of his vases. Greek figured pottery – or at the very least the pottery that was used to write the history of painting in Greece – is art, not craftsmanship, and art cannot be destroyed, even in the name of science.

There are other potential reasons for the lack of interest in developing a potter-centred approach regarding forming techniques of Athenian vases. Primarily, if we can risk an analogy with the art of painting, scholars who worked on Greek painted pottery were more interested in the painting itself than its ‘canvas’. Specialists mainly studied the iconography of figured vases, as well as their relative and absolute chronology (Roux, 2016, p.16). The work of John D. Beazley had a tremendous impact on the field in the first half of the twentieth century and

from that time onwards most scholars focused on identifying painters, some of whom were known from their signatures. Beazley's aim was to organize the entire Athenian black- and red-figure production by grouping vases with common stylistic characteristics. He then gathered them under the name of a single painter, either known from signature (*i.e.* Euphronios) or named by modern scholars (*i.e.* the Berlin Painter), or in the same group or workshop when individual hands were difficult to determine. However, Beazley made it clear that stylistic examination and grouping vases by painters and workshops were not his only goal. He wrote:

> *Now that the painters of nearly all important Attic vases, and most of the less important, have been determined, the whole material must be re-studied from the point of view of potters; and this time we must be prepared to hold the painters at arm's length. It will not be enough to note the general proportions of the shape: the eye must become accustomed to perceive minute refinements of curve and line. Then it will be possible not only to write the history of Attic vases from the point of view of the potters, but, in the long run, to shed fresh light on the painters with whom they collaborated* (Beazley, 1944, p.42).

He did not have the time to complete this task and it was not until the 1980s that research on this latter topic began to flourish. The interest for the potter's work consisted in most cases in researching in further depth the links between painters and potters or between different workshops, as well as the internal organization of workshops, and to perfect the attribution system originally developed on stylistic grounds (Algrain and Tonglet, forthcoming).

Secondly, the types of analyses that can be carried out on Athenian pottery are more limited than those available to other wares: observations of the surface and fresh radial sections of fine wares reveal less information than in the case of coarse wares. For example, it is almost impossible to study the surface treatments on Athenian vases of the sixth and fifth centuries BC since they have been thrown by potters on the wheel and rotary kinetic energy homogenizes traces. Besides, smoothing erased most of the traces linked to vase-forming techniques that may remain visible after the shaping of a vase. Traces of forming techniques are more likely to survive inside closed vessel shapes with a narrow neck: it was not visible to consumers but is usually also inaccessible to us. Diverse methods, such as tomography, could be helpful for studying technological traces on fine ware but their application is not easy, especially for large vessels, and is generally expensive. Therefore, the study of forming techniques may rely mostly on broken closed shapes. To the best of my knowledge, this type of study has never been carried out on Athenian pottery. Another example is the difficulty of studying from a macro- or microscopic perspective inclusions in the clay: Athenian clay was highly purified, leaving us with almost no aplastic components to study in radial sections. Likewise, quantifying the orientation of inclusions and voids is also extremely difficult. Thus, research and analyses have focused primarily on the composition of Athenian clay, black-

glaze, coral-red gloss and colours used to enhance figured decoration (Cohen, 2006; Aloupi-Siotis, 2008; Maish, 2008; Walton, et al., 2008; Newman, 2008; Bentz, Geominy and Müller, 2010; Coulié and Jubier, 2020).

Thirdly, in general, the *chaîne opératoire* of Greek pottery from the Archaic and Classical periods, in and outside Athens, is relatively well known thanks to excavations of potters' workshops, the study of wheel heads, depictions of workshops and experimental archaeology (Blondé and Perreault, 1992; Hasaki, 2019). The latter helped to determine the exact firing techniques and reduction-oxidation sequences leading to the characteristic colours of black- and red-figure vases (Noble, 1960). In the case of Athenian vases, several manufacturing technique reconstructions of various shapes have been proposed by modern potters and archaeologists (Noble, 1965; Schreiber, 1999). Nevertheless, although the throwing of experimental replicas has greatly contributed to our knowledge of Athenian pottery, this knowledge is incomplete. In fact, reconstructions proposed in publications for the forming of a given shape are often limited to one or two options. Thus, synchronic, and diachronic variations of the techniques that potters might have used for different shapes, which are highly significant, are unknown[1] . There is little research, if any, on the forming techniques or the identification of different approaches from one potter to the next, or between different workshops, based on traces left on the vases themselves[2] .

In 2014, Santacreu wrote that "a key aspect that often remains untreated in most works on prehistoric ceramic fabrics is the representation of people within the whole process of creation, use and deposition of the artefacts. This may be due, as Balfet noted, to the fact that in prehistoric archaeology the individuals have to be inexorably addressed exclusively through the study of their objects and their disposition in time and space" (Santacreu, 2014, p.125). Likewise, individuals from historical periods have mostly been addressed through the study of texts, images, and objects, but unfortunately, contrary to the study of prehistoric or Bronze Age pottery, they have not been addressed through the manufacturing techniques of objects, which are described in impersonal and generalizing terms. In scholarship, studies have focused on the final result of the *chaîne opératoire*, i.e. the vase, in terms of chronology, contexts of deposition, aesthetics, links with monumental paintings, distribution, profit, consumption... and rarely on the potter themselves and their work.

How to look at Athenian vases from the potter's point of view?

As mentioned earlier, one of the main goals of the studies carried out on the shapes of Athenian vases was to better understand the organization of Archaic and Classical workshops (Algrain, 2014, pp.12-14; also reference to the extensive bibliography). It was also the main goal of my doctoral research, which focused on the identification of potters' hands, with the alabastron as a case study. The Athenian alabastron, produced in Attica between the middle of the sixth century and the beginning of the fourth century BC, was a marginal perfume shape when compared to the lekythos (only 600 examples are known today compared to *ca*.

18000 lekythoi). This vessel, via trade contacts with Eastern Greece, derived from an Egyptian shape that was originally in stone (Algrain, 2014, pp.23-41). With an average height of 15 cm, its morphological features are a rounded bottom, a cylindrical or pear-shaped body, a narrow neck and a flat, wide lip. Oval, rectangular or square lugs are sometimes placed below the shoulder.

Schreiber, concurring with Noble (Schreiber, 1999, p.69; Noble, 1965, pp.25-26), explains that "the potter created the vase on the wheel in one piece" The vase was thrown from the base to the rim: the potter first formed the cylindrical body of the vase (See Figure 1a), then pressed the clay with their thumbs and index fingers to obtain a narrow neck (See Figure 1b) before flattening the rest of the clay to create the wide rim (See Figure 1c). When the vase had reached leather-hard consistency, "the potter inverted it and placed it into a chuck for turning" (Schreiber, 1999, p.69). This step allowed the potter to scrape the bottom of the base to give it its rounded shape (See Figure 1d). It was followed by a smoothing step, which most of the time erased the traces left by tools. However, on some alabastra from the end of the fifth - beginning of the fourth century BC from the Bulas Group[3] , not as well finished as earlier examples, one can still observe on the bottom, the flattened areas that occur when cutting the clay. On a vase from the Archaeological Museum of Barcelona, after using a tool to scrape the bottom and rounding it off, the potter did not bother to completely smooth the surface, which is why one notices an angle; the bottom was then covered with black glaze (See Figure 2a).

Therefore, alabastra made from the base to the rim often have a very thick bottom, which is easily identifiable in drawings of these vases (See Figure 2b). For instance, most of the alabastra made by the potter Pasiades had a pointed and thick-walled bottom (See Figure 3). With this technique, the rim was the last part of the vessel to be thrown on the wheel, before letting the vase dry to leather-hard consistency for turning and smoothing. Thus, the variation of the excess of clay left after throwing the vessel's body may explain why we find a wide range of lip shapes and lip widths in the production of a single potter (i.e. diameter ranging between 3.5 cm and 4.6 cm for Pasiades). In addition, Pasiades was one of the only potters to give a pointed shape to the bottom of his alabastra during the turning process. Therefore, it is easy to identify vases made by this particular potter, since other workshops that produced alabastra gave their vessels a rounded bottom (Algrain, 2014, pp.68-73).

Although Schreiber specifies different forming techniques when analysing other shapes, essentially linked to morphological variants, he does not mention other possibilities in his survey of alabastra. Yet, the macroscopic observation of fragmentary vases indicates that, in some cases, the neck and the lip were separately shaped and then attached to the body of the vase. On an alabastron fragment in the Louvre, we can clearly see that the neck and rim were made separately: due to the extreme narrowness of the neck, the junction between the two pieces could not be worked from the inside (See Figure 4). In fact, given the lack of

detailed studies and experimental research on the forming techniques of Athenian vases, one cannot rule out that the shaping technique of alabastra involved further variants. If Schreiber specifies that the vase was thrown from the base to the lip, it is also possible that the potters could have used another technique to make the body and the bottom of the vase. Indeed, ethnographic examples and even Schreiber's reconstructions show that round-bottomed vases, like the dinos, were thrown from lip to bottom: the potter guided the clay inward, gradually closing the bottom, until it came together, a technique that might also have been used for alabastra (Schreiber, 1999, pp.99-103; See Figure 5a-c). This alternative technique, which I witnessed in the workshop of Mercedes Luińa in Tarragona in 2007, was likely used by the potter Paseas to throw alabastra, resulting in vases with a thin-walled bottom (Algrain, 2014, pp.49-52).

Other manufacturing techniques may help to determine vessels that are likely to have been produced by the same potter or by the same workshop. Such workshop traits are sometimes identified through added elements like lugs, the short and ornamental handles directly inspired from the lugs of Egyptian stone alabastra, though in Egypt lugs were often drilled, probably so that one could suspend the vase or attach a lid with a rope. The function of this element was lost, and it became a mere decorative element in Greek examples. Different types of lugs were made by Athenian potters and the techniques used to make these lugs are a huge help in identifying workshop traditions. For instance, in the case of Amasis, who made the first known Athenian alabastron, the lugs are shaped into half disks. The first alabastra made by Pasiades have lugs with a triangular section. As residual fingerprints were left on some of these, it is likely that the potter applied pressure with two fingers, probably the thumb and the index, to make the lug stick to the wall of the vessel. The attachment of the lugs to the body were extremely fragile, and they tended to fall off (See Figures 6a and b).

Even if some potters were able to produce more elaborate lug models, after these first experiments most potters opted for less conspicuous and voluminous lugs, probably to avoid breakage, and chose the "pastillage" decoration technique, *i.e.,* the application of small-sized elements, usually previously modelled, on the vessel either by simple pressure or with the help of barbotine. Most lugs are small (around 5 mm) and square/rectangular, except for those made in the workshop that produced the "Group of Black warriors alabastra", whose potter(s) made oval/round lugs (Algrain, 2014, pp.65-90). On those vases that have lost their lugs, there are no traces of guilloche work that would have ensured their adhesion probably because they were too small, and the potters had applied them directly on the body of the vessel by pressing them down with their fingers or with a spatula (Roux, 2016, p.144). Tool marks are sometimes visible around square/rectangular lugs. These might indicate that the shape of the lug was cut directly on the vase, while exerting pressure on the sides of the lugs with the tool. Some workshops also chose not to add any lugs at all.

To simplify the grouping of vases (by painters or workshops), to compare morphological criteria and thus identify the result of the different techniques used by potters to produce a vessel, the serialization of profile drawings was used to organize Athenian alabastra (Algrain, 2014). This method has a long tradition in Athenian pottery studies and was first introduced by H. Bloesch for the morphological study of cups 80 years ago (Bloesch, 1940). Ideally, this method should be applied to a significant proportion of vases of the same shape. Serialization highlights the standardization of vases made by the same craftsperson or in the same workshop and helps us assess the work of potters. Morphological characteristics to be examined include general proportions of the body, vase height, width of the body and the lip, foot and lip profile, position and shape of handles/lugs, added elements, recurrent decorative schemes (Algrain and Tonglet, forthcoming).

The decorative scheme must be considered in the study of a potter's work, and this has been done systematically by several researchers (Brijder, 1983; Heesen, 2011). Scholars have sometimes tended to separate the potter and the painter too drastically in the study of Athenian pottery, considering the first to be a lowly craftsman and the other an artist. If the signatures on vases, mainly in the sixth century BC, mention that a vase could be made by two craftspeople, a potter, and a painter, mostly among high quality pieces, they also inform us that the same person could be both a potter and a painter. It would then seem logical that, in most configurations, the painter and the potter were the same person since the basis of the "colours" used on Athenian pottery was clay, or at the very least that the painter was trained as a potter and knew how to prepare colours him/herself. In this regard, the secondary decoration, *i.e.,* the scheme of black lines, bands and ornamental patterns framing the main figured decoration and sometimes decorating the foot and handle(s), may also be seen as a characteristic trait distinguishing potters and/or workshops (Mertens, 2006, p.186; Algrain, 2014; Algrain and Tonglet, forthcoming).

For instance, one notices clear differences between the alabastra made by Pasiades and those produced by the Diosphos potter-painter. Combining morphological characteristics to the decorative scheme means we can distinguish two different workshops, one producing vases with a pointed bottom, a fusiform body, round lugs, and a narrow secondary decoration zone, while the other produces vases with a rounded bottom, a cylindrical body, square/rectangular lugs and a broad secondary decoration zone of greater magnitude occupying nearly a third of the body (See Figure 7). The question obviously arises of the inter-individual and intra-individual variability that can be expected in the production of a potter. When can we be sure that a vase was made by one specific potter and what degree of variation indicates that we are dealing with another potter? An analysis of the distribution of the dimensions of the alabastra produced in four workshops may be a step forward.

Let us take as an example four potters working in workshops who each produced a significant number of extant alabastra: Pasiades and the Diosphos potter-painter in the first quarter of

the fifth century BC, the Emporion Painter in the second quarter of the fifth century BC, the Bulas Group at the end of the fifth - beginning of the fourth century BC. The scatter plot shows quite clearly low intra-individual variability in the dimensions of alabastra thrown by these four different potters who were identified based on macroscopic observation and profile serialization (See Figure 8). For these vases, the variability range tends to be around 1.5 cm, both for maximum diameters and rim diameters, except for the Emporion Painter for whom the variability range exceeds 2 cm when it comes to maximum diameters.

The scatter plot also shows high inter-individual variability, especially for potters working in different periods. Roux and Karasik, in their study on the identification of the individual production of potters in the Jodhpur region, based on mathematical representations of ceramic profiles, have demonstrated that "assessing the number of individuals from the variability of standardized ceramic assemblages should be possible given both low intra-individual variability and significant inter-individual variability" (Roux and Karasik 2018, 35). It would be interesting to apply their method to these ancient Athenian assemblages, which have already been well-studied and gathered in coherent workshops, in order to better define the number of potters involved in the production of Athenian vases and maybe confirm what we may learn from macroscopic observation and profile serialization.

Conclusion

Although many studies have paid attention to fine Athenian pottery clay and glazes, few have focused on potters' forming techniques and their technical gestures on the wheel. Some ceramologists have studied the morphology of specific shapes from the Athenian pottery repertoire in the hope of identifying, based on morphological criteria and techniques, the hands of potters to reconstruct workshops and groups of potters and painters working together. When studying a specific shape like the alabastron, one can highlight workshop practices in terms of vase construction and techniques, based on observation, vase drawings and their serialization.

Yet, most of these studies are not interested in the techniques used by potters. Their prime concern is a focus on the morphological criteria that allow them to classify and attribute vases to a painter and/or a workshop or establish links with known painters. We still need to move away from this painter-centred typological approach and to question potter-related inventions and innovations in ancient Athens. Forming techniques are an important aspect of these attributions, as this article will hopefully have shown, and would require more attention both from ceramologists as well as experimental archaeologists, with the aim of gathering data and studying techniques together with experimental reconstructions. To reach a position where we can study forming techniques from a synchronic as well as a diachronic perspective, we must start considering Athenian vases no longer simply as works of art but as the final products of a series of technical gestures and processes.

1 By synchronic variations, I mean the differences in vase-forming techniques between different potters and/or workshops of the same period. Diachronic variations refer to differences in vase-forming techniques of a shape through time.

2 Studies related to technical gestures and their reconstructions for other figured wares also tend to focus on the painter: for example, see Serino, 2021 for red-figure pottery of Magna Graecia and Sicily.

3 The Bulas Group is a group of vases named after Kazimierz Bulas who was the first to study them in depth in the 1930s. The scholar gathered different shapes characterized by their decoration technique (nets and floral patterns) and by their function as perfume vases cf. Algrain 2014, 145-147.

Keywords ceramics

Country Greece

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Sources for images

Fig 6a. Alabastron with the signature of Pasiades as potter. Paris, Louvre Museum, CA 1920 © Musée du Louvre / Maurice et Pierre Chuzeville. < https://collections.louvre.fr/ark:/53355/cl010259882 >

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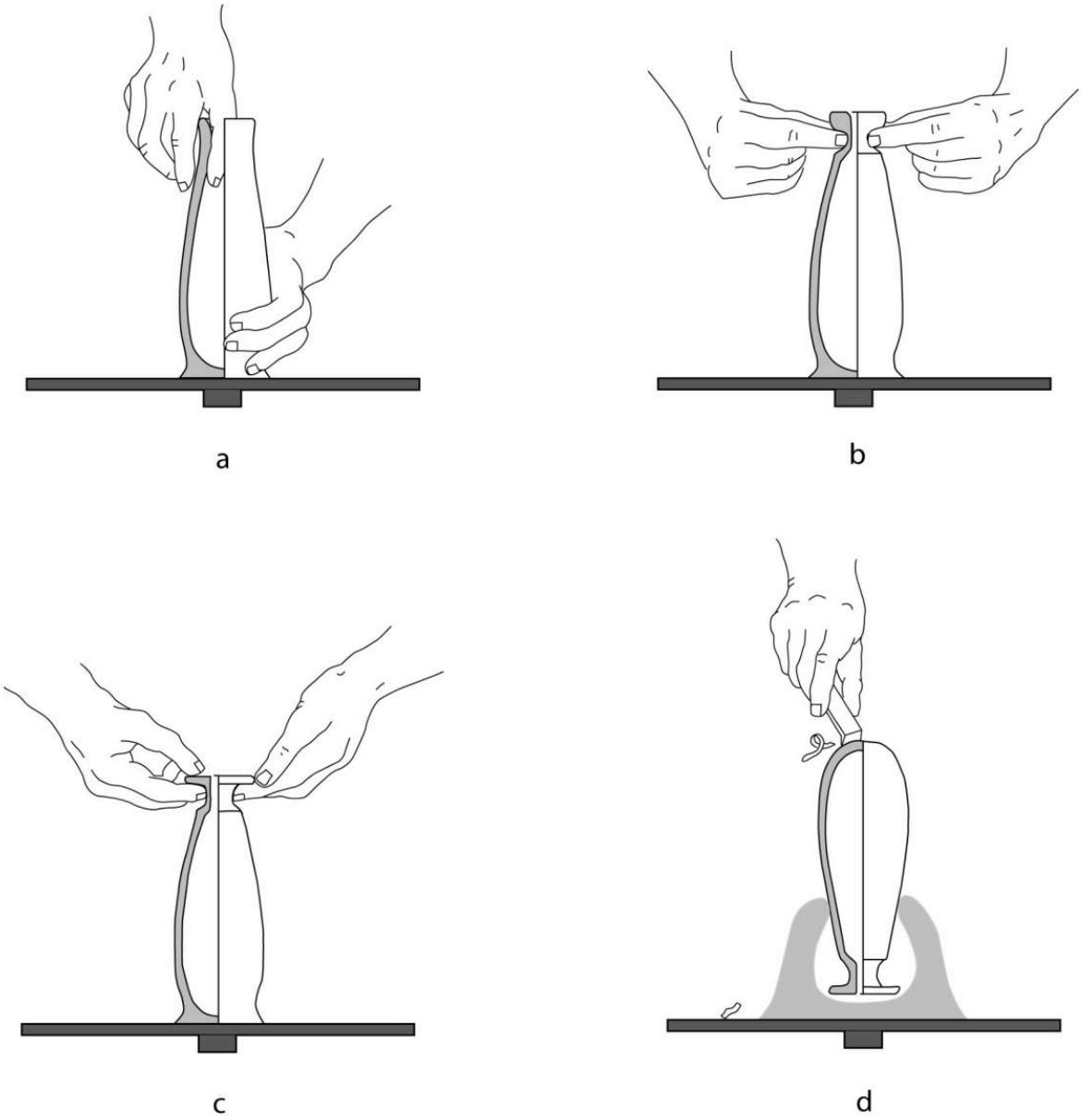

FIG 1. THROWING AND SHAPING TECHNIQUES TO MAKE AN ALABASTRON FROM BASE TO RIM. DRAWING BY AURÉLIE EÏD, AFTER SCHREIBER 1999, 25-26, ILL. 7A-D.

FIG 2A. BARCELONA, MUSEU D'ARQUEOLOGIA DE CATALUNYA, CA 801. PHOTO BY ISABELLE ALGRAIN, WITH THE AUTHORIZATION OF THE MUSEUM.

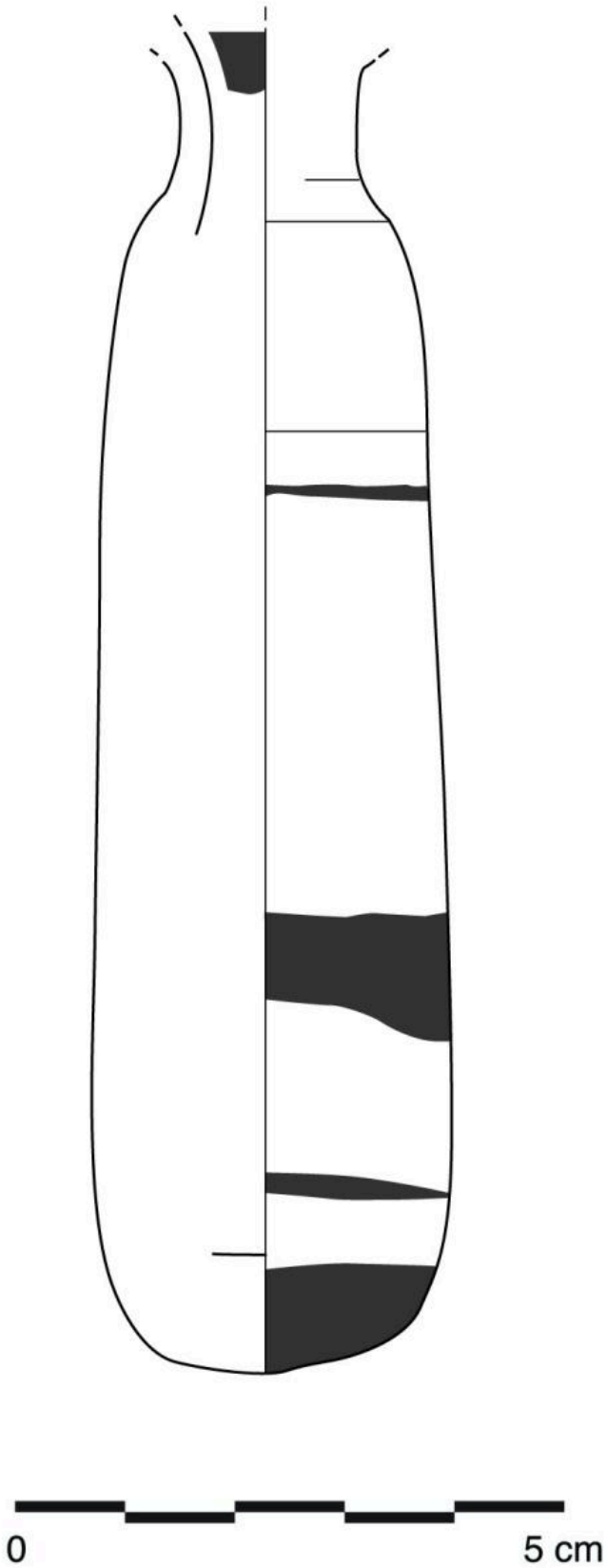

FIG 2B. PROFILE OF CA 801. DRAWING BY ISABELLE ALGRAIN AND AURÉLIE EÏD. DARK GRAY IS FOR BLACK.

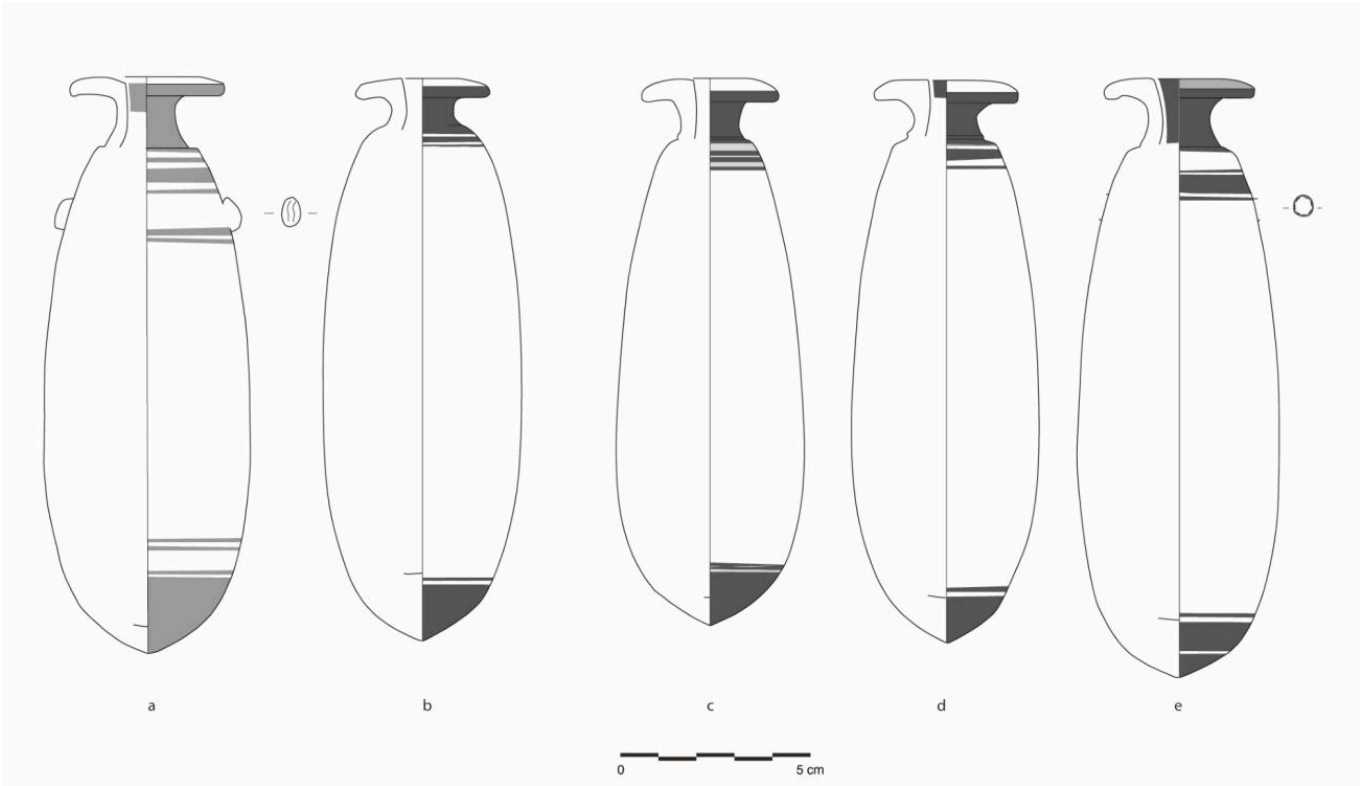

FIG 3. ALABASTRA MADE BY PASIADES WITH A POINTED BOTTOM. A) ATHENS, 3RD EPHORATE EPHORATE OF PREHISTORIC AND CLASSICAL ANTIQUITIES, A 7543; B) OXFORD, ASHMOLEAN MUSEUM, 1975.332; C) CAMBRIDGE, FITZWILLIAM MUSEUM, GR 5.1968; D) ATHENS, NATIONAL MUSEUM, 422; E) ATHENS, NATIONAL MUSEUM, 423. DRAWINGS BY ISABELLE ALGRAIN AND AURÉLIE EÏD. LIGHT GRAY IS FOR WHITE, MEDIUM GRAY FOR RED, DARK GRAY FOR BLACK.

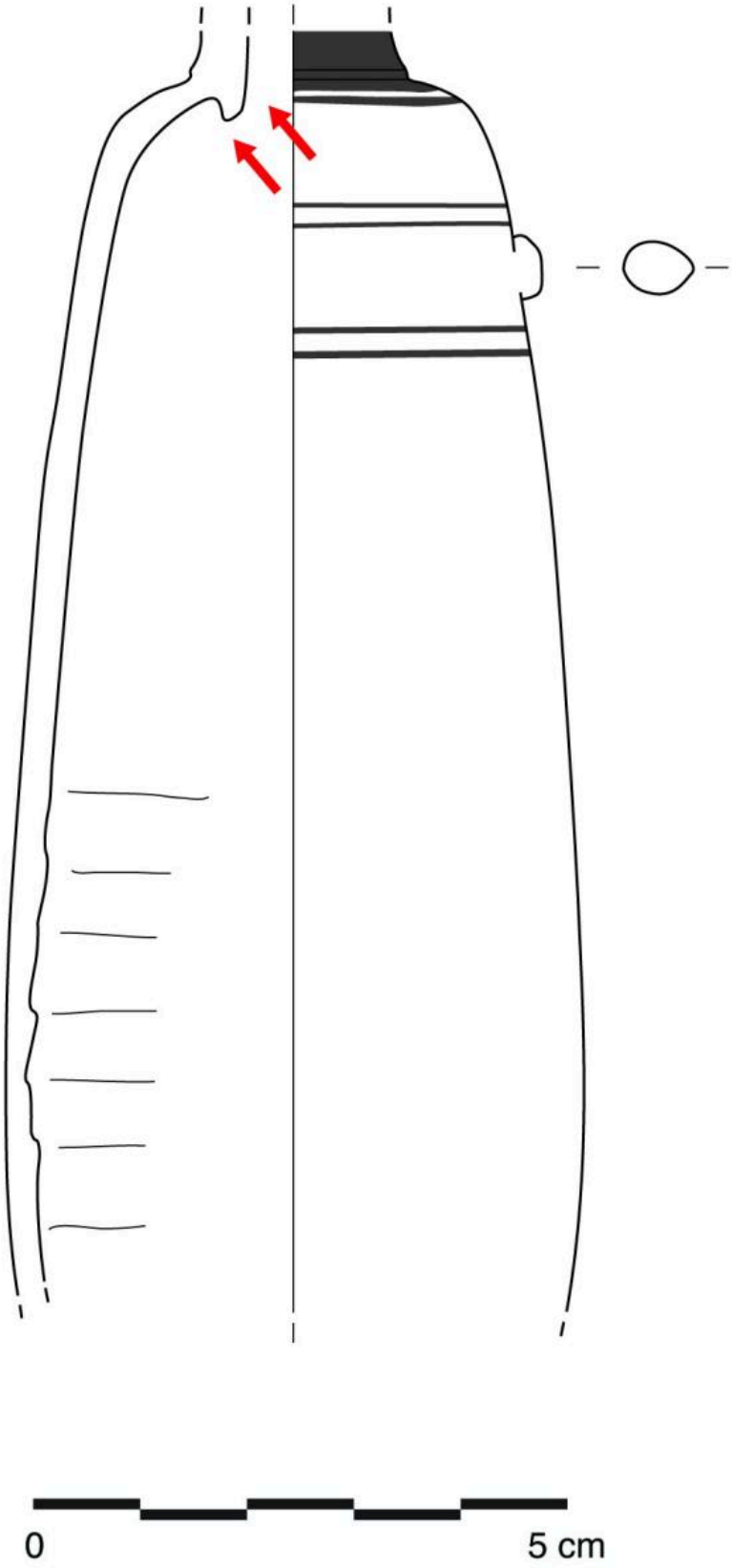

FIG 4. PARIS, LOUVRE MUSEUM, CP 10712. DRAWING BY ISABELLE ALGRAIN AND AURÉLIE EÏD.

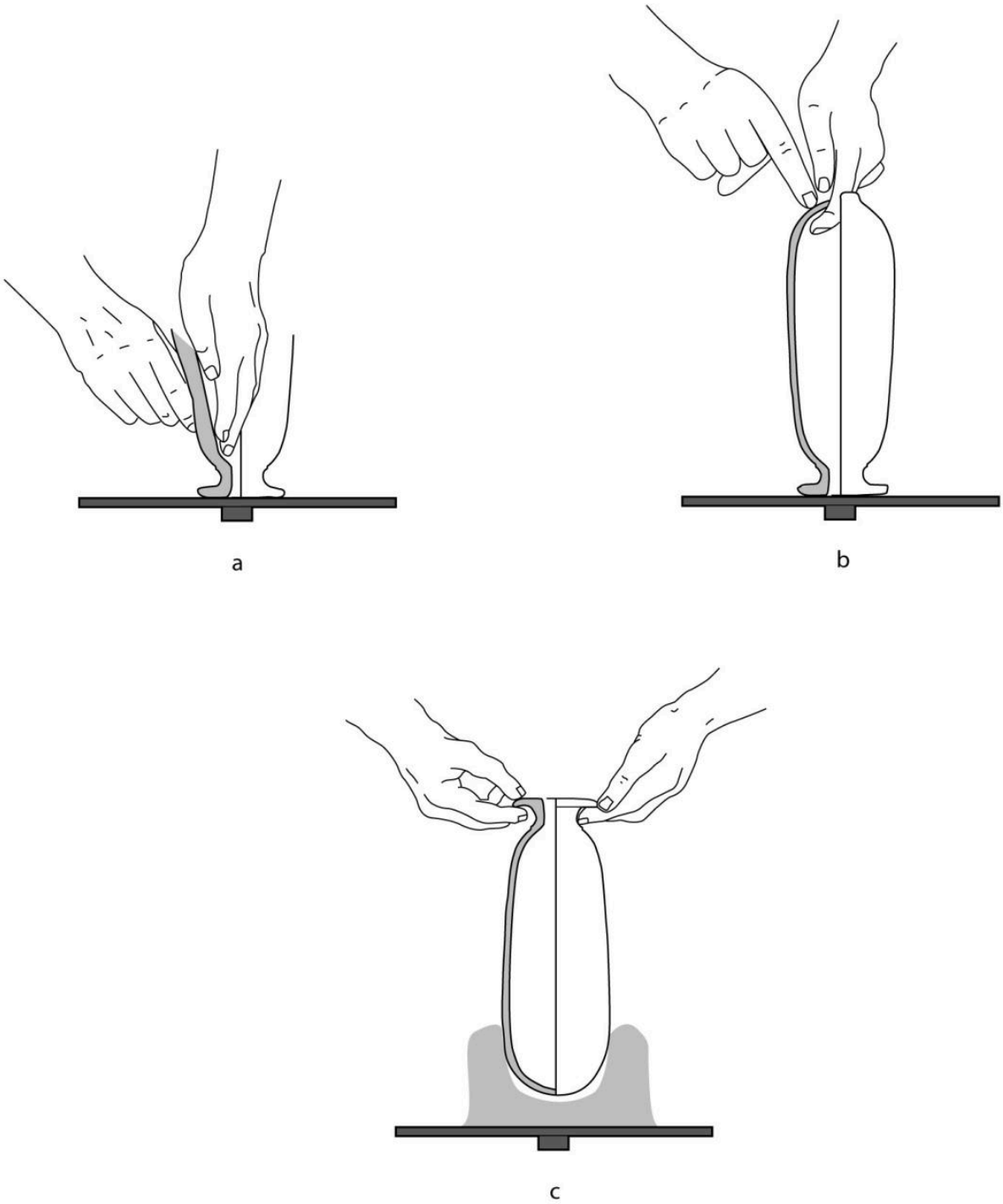

FIG 5. ALTERNATIVE THROWING AND SHAPING TECHNIQUES TO MAKE AN ALABASTRON FROM RIM TO BASE. DRAWING BY ISABELLE ALGRAIN AND AURÉLIE EÏD.

FIG 6A. ALABASTRON WITH THE SIGNATURE OF PASIADES AS POTTER. PARIS, LOUVRE MUSEUM, CA 1920 © MUSÉE DU LOUVRE / MAURICE ET PIERRE CHUZEVILLE. < HTTPS://COLLECTIONS.LOUVRE.FR/... >

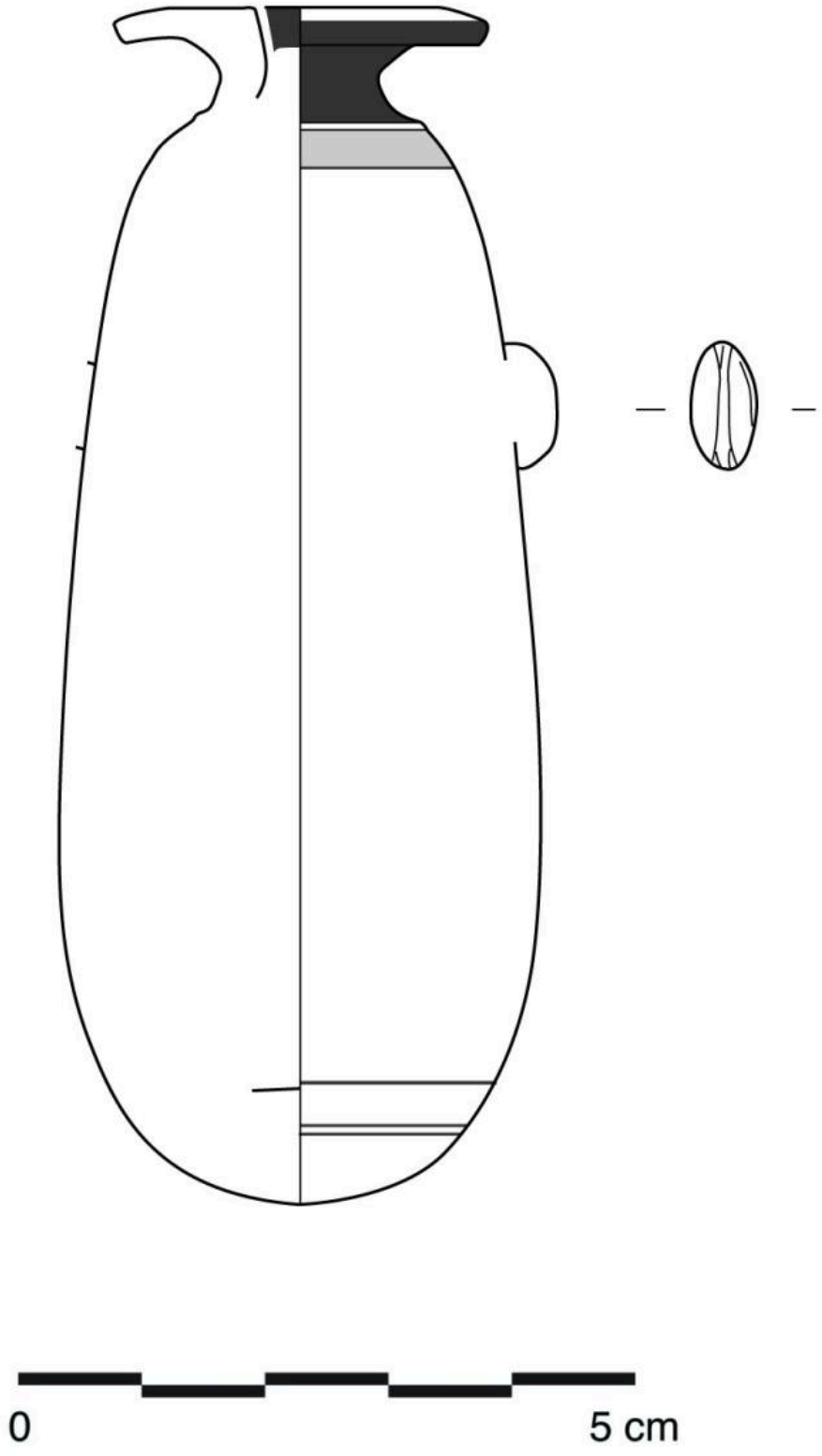

FIG 6B. DRAWING BY ISABELLE ALGRAIN AND AURÉLIE EÏD.

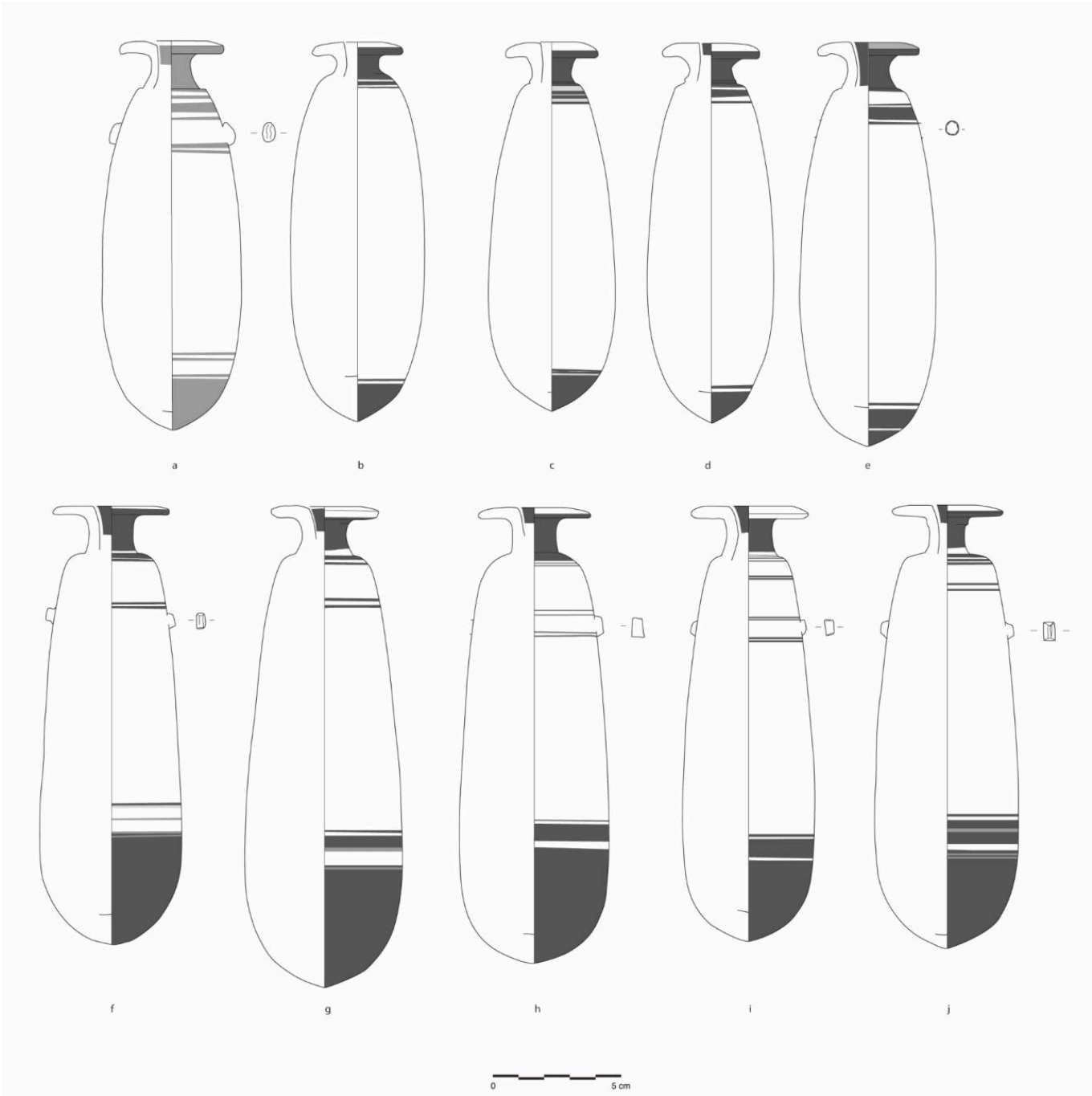

FIG 7. COMPARISON OF A SERIALIZATION OF PROFILES FROM VASES MADE BY PASIADES (FROM FIG 3) AND DIOSPHOS POTTER-PAINTER: F) LONDON, BRITISH MUSEUM, B 675; G) AMSTERDAM, ALLARD PIERSON MUSEUM, 318; H) PARIS, LOUVRE MUSEUM, CA 1706; I) PARIS, MUSÉE RODIN, CO 1257; J) GIRONA, ARCHAEOLOGICAL MUSEUM, 9. DRAWING BY ISABELLE ALGRAIN AND AURÉLIE EÏD. LIGHT GRAY IS FOR WHITE, MEDIUM GRAY FOR RED, DARK GRAY FOR BLACK.

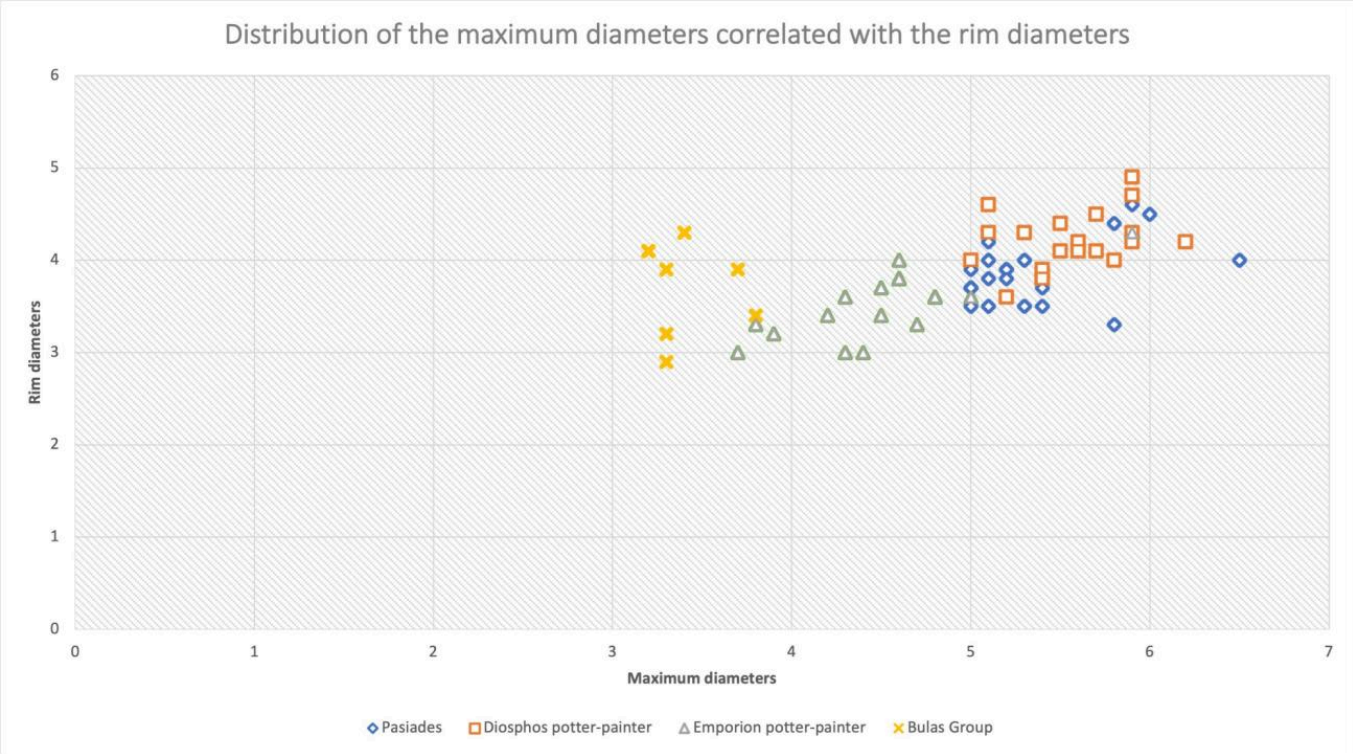

FIG 8. DISTRIBUTION OF THE MAXIMUM DIAMETERS CORRELATED WITH THE RIM DIAMETERS (IN CM) FOR VASES MADE BY FOUR POTTERS: PASIADES, THE DIOSPHOS POTTER-PAINTER, THE EMPORION PAINTER, THE BULAS GROUP POTTER.