

## TWO SIZES TOO SMALL: TWO CATEGORIES OF MINIATURE POTTERY IN MINOAN CRETE

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*Often assumed to be ritual votives or toys for children, miniature ceramic vessels in the Bronze Age Aegean have been afforded little thorough study. Their presence at peak sanctuaries, sacred caves and shrines on Crete has led to their uncritical association with ritual activity, even outside of sacred areas. When miniature pots are found in domestic spaces, they are often dismissed as objects of household ritual or simple toys. Yet miniature vessels, diverse in form and context, are so common in archaeological investigations of Minoan settlements that they merit further comprehensive study. Considered alongside the abundance of small-scale Minoan material culture, including figurines, seals, miniature wall paintings, and models, miniature pottery appears to be one facet of a larger semiotic ideology – one well-versed in the language and power of the miniature. By analysing 504 miniature pots from 13 sites in central and east Crete, this paper explores the wide range of miniature vessel types used in the Protopalatial and Neopalatial periods and applies contextual analysis to draw out their meanings. Contextualisation and data analysis reveal two distinct categories within the corpus of miniature pots: ‘micro-miniatures’ and ‘small miniatures’. While micro-miniatures were indeed inherently cultic, small miniatures served a variety of practical functions within the world of Minoan Crete and should not be assumed to relate to ritual. To differentiate between the categories, the relationship between the miniature and its prototype, as well as its semiotic meaning are considered. By applying Peircean understandings of iconicity and indexicality to these two categories, the use and significance of Bronze Age miniature vessels are further illuminated, in ritual and beyond.*

### THE AMBIGUITY OF MINIATURES

Miniature pottery presents archaeology with an intriguing taxonomic challenge. If a miniature pot replicates the form of a ‘full-sized’ version, it might be classified alongside it; yet if that miniature functions quite differently, it might just as easily be placed in its own class. In other words, is form more important to taxonomy than function, or vice versa? This ambiguity, as well as the seemingly mundane ubiquity of its larger ceramic prototypes, resulted in notably less attention and study placed on miniature pottery of the Bronze Age Aegean. This lack is particularly evident when contrasted with the striking abundance of small-scale objects in the art and material culture of Minoan Crete. From intricately carved gold rings and gemstones to miniaturised wall-paintings to anthropomorphic and zoomorphic figurines, Bronze Age Cretans seem to have favoured the making of objects at diminished scales, their understanding guided by a particular semiotic ideology. Minoan miniature pottery, however, has not been given the same degree of scholarly investigation as other forms of small-scale material, despite its common discovery at Bronze Age Cretan sites of all kinds.

The presence of miniature vessels at peak sanctuaries, sacred caves, and shrines on Crete has led to their uncritical association with ritual activity, even outside of sacred areas, and when they are found in domestic spaces, miniature pots are often dismissed as objects of household ritual or simple toys. However, recent scholarship focusing on miniature pottery in other chronological and geographical contexts has successfully revealed the complex ways that these objects could communicate with their users, as well as the diversity of their meanings within specific cultural contexts.<sup>1</sup> Indeed,

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<sup>1</sup> Recent studies of miniature pottery in other areas and time periods of Greek history include investigations of miniature pottery in Archaic sanctuaries of the Argolid and Corinthia (Ekroth 2003), miniature pottery in Arcadia (Hammond 2005), scale manipulation in the pottery of early Greek sanctuaries (Gimatizidis 2011), miniature pottery in Iron Age Greek sanctuaries and graves (Luce 2011), the phenomenon of miniaturisation in ancient

some important recent studies have begun to re-examine Cretan miniature pots in more nuanced ways (i.e. Tournavitou 2009; Simandiraki 2011; Knappett 2012; 2020, 46–51), and it is to this corpus of work that I offer this paper as a contribution.

In order to better understand the use and significance of miniature ceramic vessels on Minoan Crete, I conducted a first-hand study of 504 miniature pots from 13 sites of the Protopalatial and Neopalatial periods (c. 1900–1450 BCE) in central and east Crete: Choiromandres, Gournia, Haghia Triada, Karoumes, Knossos, Kommos, Malia, Mochlos, Myrtos Pyrgos, Palaikastro, Phaistos, Pseira, and Sissi. At each of these sites, I combined primary archaeological data with theoretical approaches in order to understand how scale manipulation was understood and utilised in Minoan Crete. By analysing the qualitative (form, fabric, decoration, manufacture) and quantitative (measurements) data of these vessels and situating them within their broader contexts and assemblages, this study revealed two distinct categories within the corpus of miniature pots, categories that embodied different relationships between the miniature and its prototype. The application of Peircean definitions of iconicity and indexicality to these two categories further illuminated the significance of Bronze Age miniature vessels, proposing a more nuanced understanding of their contextual uses in both the ritual and mundane environments of Minoan Crete.

#### A BRIEF HISTORY OF APPROACHES TO MINIATURE POTTERY IN BRONZE AGE AEGEAN ARCHAEOLOGY

The earliest mention of miniature vessels in the publications of Aegean archaeology can be found in Heinrich Schliemann's 1880 volume, *Ilios: The City and Country of the Trojans: The Results of Researches and Discoveries on the Site of Troy and throughout the Troad in the Years 1871–72–73–78–79*. In his discussion of the 'fourth city' of Troy, a settlement which would later be understood to date to the early second millennium BCE, Schliemann (1880, 534) referred to 25 miniature vessels as 'Lilliputian tripod vases, pitchers, and jugs'. He wrote that this pottery type was

very abundant in this fourth and in the fifth pre-historic cities at Hissarlik, and appear to have been used as toys for children. They are rare in the third, the burnt city, and, when they occur there, they are of a better fabric, or at least they are of a much neater appearance, which is no doubt due to the intense heat they have been exposed to in the great conflagration. (Schliemann 1880, 534–5)

There is no further explanation of their find contexts or broader assemblages. Instead, Schliemann made an assumption that would come to find traction in the field of archaeology – he assumed a fixed scale between an object and that of its human user.

The notion that miniature objects must surely be associated with children, essentially miniature people, remained a dominant interpretation in Aegean archaeological discourse into and throughout the twentieth century. In 1908, when Harriet Boyd Hawes published the finds from her excavations at Gournia and the Ierapetra Isthmus on Crete, she noted that the hypothetical Minoan potter of Gournia, 'in the course of his more serious work, ... made scores of diminutive vases (e.g., Nos. 1–8), which look like children's toys' (Boyd Hawes et al. 1908, 29). Here she cited Schliemann's 'Lilliputian' vessels, relying on his description and interpretation to explain the high number of miniature pots found at her own site. Indeed, she felt certain that the Gournia miniatures, like those at Troy, were used domestically, but at a lived scale quite different than that of adult human beings. This interpretation is evident even within the early observations she made in the field. She denied any ritual use for these objects, noting, 'I cannot think them votive, as scarcely a house was without them, whereas none are recorded from the

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Greece (Pilz 2011), miniature pottery in Archaic to Hellenistic period Greek sanctuaries (Barfoed 2015a), miniature pottery from the Sanctuary of Zeus at Olympia (Barfoed 2015b), and miniature pottery of ancient Corinth (Pemberton 2020).

Shrine, and several of the shapes (*e.g.*, No. 2) are far more appropriate for children's housekeeping than for religious offering' (Boyd Hawes et al. 1908, 29). Her use of the terms 'doll's vase' and 'doll's amphora' in reference to two miniature vessels listed in the site's field catalogue underscores her confidence in this interpretation.<sup>2</sup>

For the early excavators of Minoan Crete, the ability of small-scale objects to permeate the otherwise 'normal scale' of the domestic world could only be explained as the material culture of small-scale humans who lived alongside adults in their 'adult-sized' world. Despite the high quality of many of these pots, often of fine manufacture or bearing painted decoration, the diminished scale of the object dominated its interpretation, and small was seen as equivalent to little more than play.

An association with children was not, however, the only way that miniature vessels were contemporaneously interpreted in the archaeological record of the ancient Mediterranean. When miniature vessels were found in ritual or religious contexts, their role as children's playthings was dismissed, and their interpretation as religious objects emphasised.<sup>3</sup> Materially, these objects were the same, but the change in context automatically brought a change of interpretation – one which would become engrained within the field of Bronze Age Aegean archaeology.

In 1903, John Myres investigated a peak-top shrine just south of the Minoan settlement of Palaikastro. His excavations uncovered hundreds of fragmented and intact figurines, both human and animal, as well as pottery sherds scattered amongst low walls. Among these artefacts were a few miniature ceramic vessels, including two miniature jugs and at least three 'miniature deep-rimmed bowl-form vessels' (Myres 1902/3, 379). Myres recognised their resemblances with the miniatures known from sacred places on Crete and believed the form to be 'probably analogous to the miniature vases which occur copiously in one of the caves on Mt Juktas, and in the altar of burnt offering on the principal acropolis of Idalion'.<sup>4</sup> The peak was understood to be a sacred site, the first of many Minoan peak sanctuaries on Crete, and its material deposits to be ritual equipment characteristic of such sites.

Inspired by Myres' peak-top discoveries and attracted to the visible built architecture on the peak of Mt Juktas, Evans (1921, 154–9) began preliminary excavations at the top of this ridge south of Knossos in 1909 and unearthed terracotta human figurines, animal figurines, votive limbs, a relief vessel, and 'prayer pellets'. Despite the dearth of miniature pots during Evans' peak-top excavations, he extrapolated Myres' ritual categorisation to small-scale vessels found in the vicinity of the Knossos palace; small juglets found in the small chamber of what was called a 'private house' (Evans 1935, 138–40) and in the terrace of the Temple Tomb (Evans 1935, 1015) were seen as ritual paraphernalia used in these areas of 'domestic cult'. Evans' contention that miniature juglets indexed ritual activity perpetuated the classification of small-scale vessels as ritual objects, and when a third peak sanctuary was identified in 1935 at Karphi (Pendlebury, Pendlebury and Money-Coutts 1937/8), the multiple miniature vessels uncovered atop the peak were understood to be votive objects like those at Petsofas. These early excavations and material interpretations set the stage for future scholarly understandings of miniature pots. By the late twentieth century, corroborated by the findings at sites such as Vrysinas and Traostalos, miniatures were considered to be characteristic of peak sanctuary material.

This emphasis on the ritual nature of miniatures has, however, extended beyond explicitly ritual spaces. Although excavators sometimes suggest that miniature vessels found in domestic spaces may have functioned as toys, this hypothesis remains speculative, with small-scale pots often seen as evidence for ritual action because of their connection to peak sanctuaries and the perceived correlation between miniaturisation and ritualisation. But is this accurate? To what

<sup>2</sup> Boyd Hawes (1903–5) records that a 'doll's vase' was discovered in the 'Brick Wall Suite', while a 'doll's amphora' came from the House of the Closed Door.

<sup>3</sup> It is interesting that, although two sites at which small-scale pots are directly connected with children come from religious sanctuaries, Brauron and Pamisos, when miniature vessels are found at religious sites of the ancient Mediterranean, they are rarely suggested to be children's ritual objects.

<sup>4</sup> Myres (1902/3, 379) does not provide many details, but it is important to note that Idalion is a Cypriot site, with few publications at that time aside from short summaries in *The Daily Graphic*, 7 Nov. 1894 and 28 Dec. 1894.

extent can miniatures inherently be classified as ritual? Fortunately, some recent research has sought to analyse Aegean miniatures as part of broader assemblages understood in their own contexts – in other words, avoiding the trap of immediately delimiting analysis by assigning the label of ‘votive’ or ‘toy’. Jean-Claude Poursat (1994, 253), for instance, suggests that miniature vessels may have been used as economic tokens in Protopalatial Crete. His interpretation is grounded in the discovery of approximately 200 miniature vessels in the storerooms and archives of Quartier Mu at Malia. Their particular shapes and associations with sealings and tablets suggest that miniatures could have been part of a token economic system known in Mesopotamia and continued in Minoan Crete. Similar associations were noted in Early Magazine A at Knossos, where 23 miniature vessels were found with noduli and possible counters. Given the similarities, Judith Weingarten and Colin Macdonald (2005, 399–400) suggest that these too were economic tokens used in an archive.

Thus, miniatures have begun to be included within broader material studies and investigated relationally. For instance, if miniature pots appear in contexts unassociated with children or religion, how might they be explained? For these small-scale, portable objects with few function-specific features, an analysis rooted in both context and object relations is key to understanding these multifaceted objects.

#### DEFINING A MINIATURE

Before exploring the data, it is relevant to investigate what is meant by ‘miniature’ and how a miniature pot is defined. Aegean prehistorians often work from the foundations laid by Classical scholarship, and since there was little effort to define Bronze Age miniatures in early scholarship, there is a great deal of overlap between the fields and a reliance on the definitions and concepts put forth by Classical scholars. Leslie Hammond (1998, 18; 2005, 417) and Oliver Pilz (2011, 15), for instance, both define miniature vessels as reduced-scale replicas of counterpart vessels. Hammond, however, specifies that a true miniature must be less than or equal to 10 cm<sup>3</sup>, while Pilz does not attach any measurement requirement to his definition. Incorporating function into their definitions, Signe Barfoed (2015b, 170), Anna Simandiraki (2011, 47), and Iphiyenia Tournavitou (2009, 213) all define a miniature as a small-scale replica of a larger vessel, but that the scale must be so small that it renders the miniature non-functional. Tournavitou (2009, 213), however, argues that miniatures may not necessarily be non-functional, but that their functions differ from their prototypes, a stipulation which aligns with this study.

Although changes in use or functional differences can be important characteristics of miniature objects, the direct correlation of reduced scale with defunctionalisation reductively privileges functionality in defining the meaning of miniatures. I disagree with the notion that a change in function makes a miniature non-functional, or that scale reduction renders an object entirely useless. Instead, I contend that there are different kinds of uses, even if the function of a miniature changes with its scale reduction. Barfoed (2018, 117) has recently attempted to differentiate between various types by distinguishing between the ‘active’ and ‘passive’ uses of miniature votive vessels. She identifies a miniature vessel as ‘active’ if it is able to contain an offering, while one which is ‘passive’ cannot hold anything, instead functioning only as a votive.

In my opinion, Barfoed’s classifications are more usefully understood when combined with Oliver Pilz’s notion of ‘practical use’. A votive may still serve a function – as a gift to a deity, a representation of a broader ideal, or a symbol of something absent – but this function may not necessarily align with our own understandings of utilitarian activities. In this way, Pilz (2011, 19–20) argues that scale reduction can eliminate or transform an object’s ‘practical use’, while its ability to function in the world remains. He takes this slightly further by differentiating between various levels of meaning: denotative and connotative. Pilz argues that because miniature objects are iconic signs of their normal-sized counterparts, they can express

connotations more directly and immediately than large-scale objects. This enables them to function as effective communication tools, regardless of their ability to hold useful quantities of goods.

In her recent study of the miniature and small vessels from Corinth, Elizabeth Pemberton (2020, 286) applies a similar definition, maintaining that a miniature is ‘a much-reduced version of a larger prototype that cannot function as the prototype’. This definition acknowledges the multiple potentials of a shape’s function depending on its scale and context. It recognises that practicality and functionality are not one and the same, and indeed, as Marshall Sahlins (1976) so famously argued, the practical is culturally specific. An example of this multivalence of function can be seen in another type of miniature object from Corinth: the very small lamps found at the Sanctuary of Demeter and Kore. Nancy Bookidis noted that almost all lamps, regardless of size, had traces of burning. Evidently, all of the lamps, even those 5 cm in length or smaller, must have been filled with oil and lit. All were ‘functional’, but the light given off by the tiny lamps would have failed in achieving the practical objective of illuminating an interior. Therefore, they likely served ritual functions, perhaps, as Bookidis (Bookidis and Pemberton 2015, 17) suggests, ‘to draw the attention of the gods during sacrifice’.

To be a true miniature, I argue that an object must be a smaller form of a larger-scale original. If a small object does not have an identifiable larger-scale prototype, then it may simply be a small object, not a true miniature. In contrast to some definitions of this term that see a miniature as an object too small to serve a function (i.e. Luce 2011, 54; Tournavitu 2009, 213; Knappett 2012, 98), I argue that miniatures always serve functions, but that there are multiple kinds of functionality. While a reduction in scale may change the function of a miniaturised object, regarding miniatures as small, ‘non-functional’ objects is, I maintain, too restrictive an identity. Instead, this study’s data analysis has revealed that it is possible to divide miniaturised vessels of Bronze Age Crete into types based on ‘practical use’ and the continuation of the prototype’s function.

## GEOGRAPHICAL AND CHRONOLOGICAL PARAMETERS OF THE STUDY

The study presented here investigates the use and significance of miniature ceramic vessels in one particular geographic and chronological area: Protopalatial and Neopalatial settlements in Bronze Age Crete. My analysis of 13 settlements in central and eastern Crete identifies a variety of site types and more specific internal contexts (see [Table A1](#) for a full list), both challenging long-held assumptions about miniatures and revealing patterns and insights into their uses and meanings within Bronze Age Cretan life. In archaeological scholarship, miniature pots have rarely received any focused study of their own, and are usually published within their site’s ceramic assemblages, lost among grander, more elaborate ceramics, or relegated to chapters on ‘small finds’ or ‘miscellaneous objects’. It is a paradox that a counter to this criticism – an increase in specialised study – often results in the publication of these objects in separate chapters, a format which seems to draw them out from the larger picture of ancient life and material culture. This study admittedly ‘removes’ and separates miniature ceramic vessels from other archaeological finds; however, my approach aims to understand these objects contextually, investigating their frequencies, contextual emplacements, and associations with other kinds of artefacts.

In conducting this analysis, I combined primary archaeological data with theoretical approaches to achieve a comprehensive study of scale manipulation in the Bronze Age Aegean. The research began with a first-hand study of 504 miniature ceramic vessels from 13 sites in central and east Crete ([Fig. 1](#)): Choiromandres, Gournia, Haghia Triada, Karoumes, Knossos, Kommos, Malia, Mochlos, Myrtos Pyrgos, Palaikastro, Phaistos, Pseira, and Sissi.

The material study involved the recording of both quantitative and qualitative data, including measurements, vessel form categorisation, details of manufacture, and decorative



Fig. 1. Map of Crete labelled with the 13 sites relevant to this material study. Map by Jonathan M. Flood.

notes. This data was then contextualised and each context assigned one of 10 types: cooking and food preparation; feasting, dining, and tableware; unspecified domestic material; ritual; exterior; storage; fill; manufacturing; dump; or unknown. It can of course be difficult to assign a single contextual label to a room or area, as spaces were often of multi-purpose use and could be associated with multiple household ‘spheres’. Christakis (1999, 9), for instance, in his study of pithoi and food storage, notes that storage containers were not kept exclusively in storerooms, but could also be located in areas used for food preparation, processing, and consumption. This intermingling can make it challenging to attribute clear spatial or contextual labels, but the current study considered a miniature’s broader assemblage, associated finds, spatial data, and any additional information gleaned from excavation in order to assign a single label as confidently as possible. Fig. 2 illustrates the contextual associations of miniature ceramic vessels included in this study.

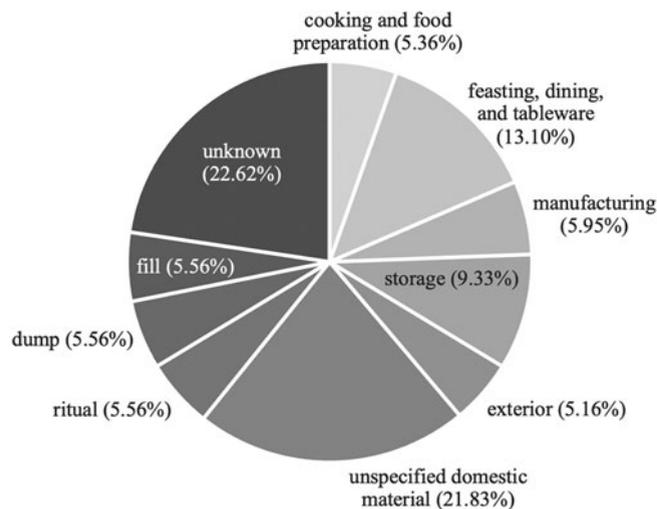


Fig. 2. The distribution of this study’s miniature vessels (n=504) in context types.

## RESULTS OF THE STUDY

**Vessel forms**

Each of the 504 miniature pots was categorised into one of 13 vessel forms: amphora, bowl, cup, goblet, jar, juglet, kantharos, pithos, saucer/plate, scoop, tray, tumbler, or other.<sup>5</sup> As true miniatures are scaled-down versions of larger types, each of these 13 vessel forms find morphological counterparts in larger ceramic forms.<sup>6</sup> Of course, the state of preservation could affect the identification of these forms, with fragmentation sometimes making it difficult to understand the original shape of the object. Fortunately, 75 per cent of the miniature vessels preserved full profiles, and nearly half of all the miniatures were 90 per cent or more complete.<sup>7</sup> One-hundred-and-thirty-nine of the vessels, 27.58 per cent, were 50–90 per cent preserved, while less than half of the original shapes were preserved in 123, or 24.40 per cent, of the miniatures included here. The forms of this latter category could be particularly difficult to identify if the preserved fragments bore no indication of the vessel's overall shape. Certain types prove especially difficult to distinguish based on their similarities of form. Cups and bowls, for instance, have few differences and can be variously labelled by different cataloguers, while the base fragments of jars and juglets, without the characteristic upper bodies and handles, are very similar in appearance. When possible, specific forms were identified to the best of my ability based on their surviving characteristics.

An investigation of these forms in both chronological periods of my study reveals some interesting trends. While cups make up the majority of miniature vessel forms in the Protopalatial period, comprising 36 per cent of the period's corpus, in the Neopalatial period this majority shifts to 34 per cent miniature jugs while miniature cups decrease to 21 per cent of the period's corpus. This inverse relationship is even more striking when open and closed vessel shapes are compared. This is particularly true because the differences between bowls, cups, goblets, and tumblers, and to a lesser extent between jars, jugs and pithoi, can be tenuous due to the similarities in form, differing terminologies of cataloguers, and the often fragmentary nature of the objects. Instead of selecting one potentially arbitrary form, it proved insightful to compare open and closed vessels (see Fig. 3), where 251 open forms such as bowls, cups, goblets, kantharoi, saucers/plates, and tumblers make up 49.80 per cent of the entire study corpus and 223 amphorae, jars, juglets, and pithoi comprise 44.25 per cent of it.<sup>8</sup> The 30 remaining miniature objects – scoops, trays and other – have been categorised as 'other'.

When these forms are divided into chronological periods, the quantitative differences are striking (Fig. 4). Miniature open vessels are much more prevalent in the Protopalatial period than the Neopalatial, and the inverse is true of closed vessels. In the Protopalatial period, open vessels make up 62 per cent of the studied assemblage, 140 of the 226 objects, while closed

<sup>5</sup> Miniatures categorised as 'other' are unique forms that did not conform with the other 12 vessel types or are unusual in shape. These include miniature lids, teapots, lamps, strainers, and tripod legs.

<sup>6</sup> The only vessel type to be included in the study but not regarded as true miniatures are so-called 'milk jugs', a type which, though a juglet, has a form unique to its small scale.

<sup>7</sup> These high percentages are likely the result of the archaeological process and identification. Smaller objects are more likely than larger ones to remain intact after their deposition and during excavation. Furthermore, since the miniature vessels examined in this study had already been excavated, selected, and catalogued, it is unlikely that excavation would have kept extremely fragmentary finds, or that, even if they had, such small pieces would have been catalogued.

<sup>8</sup> It must, however, be noted that these values are unique to this dataset and were not found to be statistically robust. Open vessels comprise 49.80%  $\pm$  15.8% of the corpus and closed 44.25%  $\pm$  14.9% (error bars calculated assuming an underlying Poisson distribution); as these values are within 1 $\sigma$  (standard deviation) of each other, it is not possible to be confident that such statistics would be replicated in another dataset. A larger dataset could usefully investigate significant statistics of open and closed vessels among Minoan miniatures.

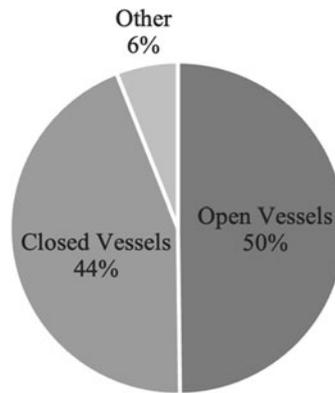


Fig. 3. A comparison of the percentages of the open and closed vessels of miniature pots (n=504) included in this study.

vessels comprise 33 per cent, or 75, of the miniatures.<sup>9</sup> In the Neopalatial, the number of closed vessels rises to 129, or 53 per cent, of the total, while open vessels decrease to 40 per cent, or 96, of the total 242.<sup>10</sup> It is tempting to speculate that developments in technology and a growing ability to manufacture more difficult closed shapes on a diminished scale could explain this chronological shift; however, the number of very small juglets and jars changes very little between the periods. Instead, the increase in the number of small juglets and jars seems to owe much to the rise of small yet functional juglets and jars measuring between 5 and 8 cm in height.

It is difficult to determine the characteristic measurements of these individual forms because the specific type can vary greatly. A cup, for instance, can be a tall, straight-sided goblet with a rim diameter not much greater than its base diameter, or it can be a flaring tripod cup with a small

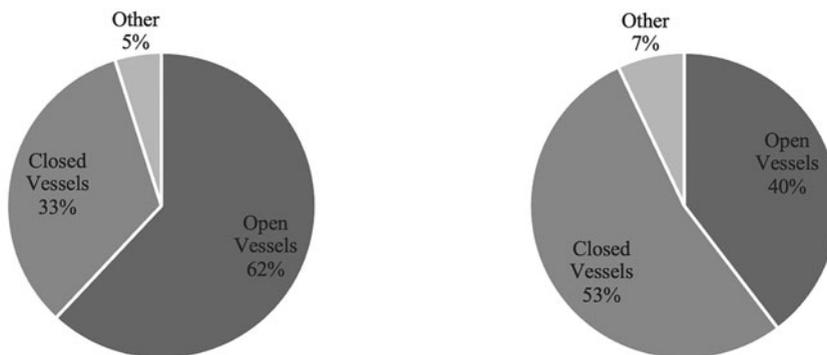


Fig. 4. A comparison of the percentages of the open and closed vessels of (left) Protopalatial (n=226) and (right) Neopalatial (n=242) miniature pots included in this study.

<sup>9</sup> Unlike the comparison of these forms in the overall corpus, the percentages of open vessels as compared in the Protopalatial and Neopalatial periods are statistically significant at a 95% confidence level, since  $40\% \pm 9.8\%$  and  $33\% \pm 8.7\%$  are separated by  $2\sigma$  (standard deviation).

<sup>10</sup> Similarly, a comparison of closed vessels in the Protopalatial ( $33\% \pm 8.7\%$ ) and the Neopalatial ( $53\% \pm 11.4\%$ ) periods is statistically significant at a 95% confidence level, since they are separated by  $2\sigma$  (standard deviation).

Table 1. The minimum, maximum, and average measurements of open and closed vessels included in this study. Table by the author.

	Open vessels			Closed vessels		
	Minimum	Maximum	Average	Minimum	Maximum	Average
<b>Height</b>	0.5	6.6	2.87	2	18.4	6.51
<b>Diameter of rim</b>	1.2	11	4.64	0.9	9	3.72
<b>Diameter of base</b>	1	8	2.77	1	6.3	3.41
<b>Maximum diameter</b>	N/A	N/A	N/A	2	13	5.47

base but broad rim. Such variation is illustrated in the minimum, maximum, and average measurements presented in Table 1.

Furthermore, it is challenging to assign the particular measurements or clusters of measurements to vessel forms without getting more specific about the type of vessel within that form; even then, differences in manufacture, individual preferences, and geographic and chronological variations result in a range of styles and sizes within ceramic typologies. Generally speaking, however, small-scale open vessels tend to be smaller than closed vessels, particularly in height. This pattern can be seen in the graph of Fig. 5; the heights of most open vessels measure under 5 cm, while those of closed vessels are about 3.5 cm or above. Of course, these delineations are not strict boundaries between types, as outliers exist beyond these ranges in both types; however, the clustering pattern demonstrates an overall trend rather than stringent typological criteria.

### Manufacture

It is sometimes assumed that such small vessels could not have been manufactured on the potter's wheel, yet the overwhelming majority of the miniature pots in my study were wheelmade objects. Of the 504 vessels, 411, or 81.55 per cent, were made on the wheel, with 13.2 per cent, or 67 objects, made by hand.<sup>11</sup> The manufacture techniques of the remaining 26 pots are unclear.

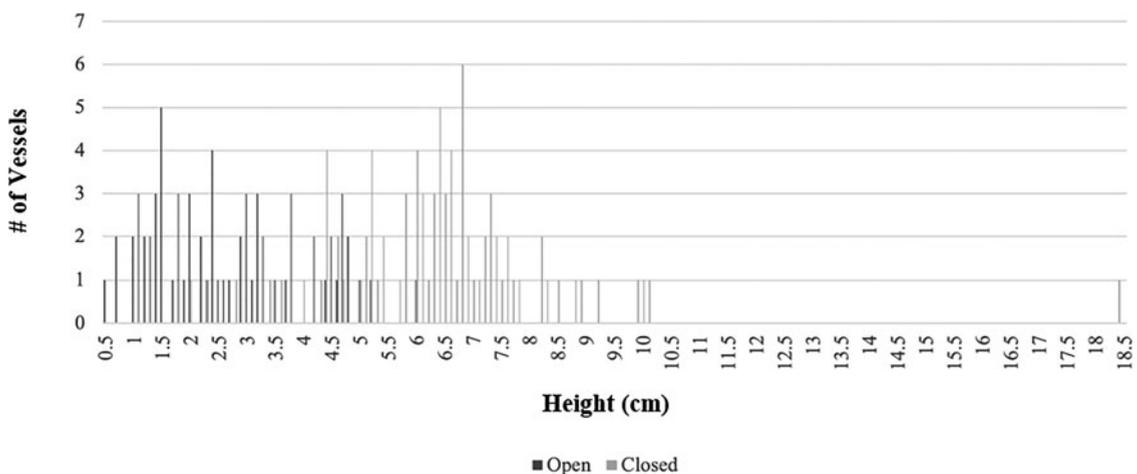


Fig. 5. A comparison of the heights of open and closed vessels with preserved full profiles included in this study.

<sup>11</sup> These values are statistically significant at a 99.7% confidence level since the percentages of wheelmade vessels ( $91.6\% \pm 20.3\%$ ) and handmade vessels ( $13.2\% \pm 8.2\%$ ) are  $3\sigma$  apart.

Wheel manufacture therefore seems to represent the predominant technique for all miniature vessels, with open and closed forms split almost exactly evenly within this type of manufacturing – 47.75 per cent of the wheelmade vessels are open, whereas 46.96 per cent are closed. As a whole, the contextual associations of wheelmade miniature pots are very similar to those of miniature vessels more generally. This is, of course, unsurprising given the ubiquity of wheelmade miniatures in the corpus. Handmade manufacture is therefore of much greater interest, its choice seemingly intentional and a deviation away from the wheelmade norm. With 64.18 per cent of this study's handmade miniatures taking open vessel forms, compared to the 28.36 per cent of handmade closed vessels, it seems apparent that open forms were the preferred shape of handmade manufacture.<sup>12</sup> This seems logical, as it is much easier to form a small cup or bowl by hand without the aid of a wheel than it is to shape an amphora or juglet.

Contextually, the handmade miniatures presented here skew slightly differently than the contexts of all miniatures in the corpus. Of the 67 handmade pots, 22 of them, or 32.84 per cent, come from feasting, dining, and tableware contexts. This is far more than the 13 per cent of the entire corpus found in the same context type, and such a large proportion could be significant. Closer analysis, however, reveals that 21 of the 22 handmade miniatures that fall into this context type come from a single deposit: Deposit A in Early Magazine A at Knossos. This unique deposit includes 23 small vessels described as 'miniature tumblers' or 'miniature goblets', all plain and crudely handmade (Macdonald and Knappett 2007, 66–7). The inclusion of this large assemblage of small handmade vessels appears to skew the manufacturing data of this study. Future studies should therefore be cognisant of any correlation between handmade miniatures and vessel type, feasting/dining contexts, and open vessel forms.

### Fabric

Related to the manufacture of vessels is of course the clay itself and the ceramics' fabrics. Similar to the uneven division of manufacture techniques, far more of the miniature pots – 435 of the 504 total, or 86.31 per cent – were made of fine and semi-fine fabrics than semi-coarse or coarse. The fact that the majority of miniatures were made in fine fabrics suggests that this was the typical production choice for miniature vessels; yet the intentional manufacture of 67 miniature pots, 13.29 per cent of the total, in coarse or semi-coarse clay suggests that the fabric could be modified.<sup>13</sup> Perhaps the fabric choices reflect differences in contextual use. Indeed, 36 of 67, or 53.73 per cent, of the fine fabric wares were found in contexts related to cooking and food preparation; feasting, dining, and tableware; or unspecified domestic material, suggesting an association with food-related activities.

Furthermore, the sites that yielded coarse-fabric miniatures are notably clustered. With 15 of the 67 miniatures from Gournia, 22 from Mochlos, and 11 from Pseira, 71.64 per cent of the miniature vessels manufactured in coarse fabrics come from sites in the Mirabello Bay region. This distribution pattern is markedly different from that of fine-fabric miniatures, which appear across the island (see Fig. 6). The choice to use semi-coarse clay for the manufacture of small-scale pots may, therefore, relate to the nature of local clays, although the clays of particular forms may also have been influenced by the primary functions of certain vessels such as cooking pots.

### Decoration

The corpus of miniature ceramic vessels examined here can be divided almost evenly in half between those decorated and those undecorated/plain. Of the 504, 271 (53.77 per cent) bear no

<sup>12</sup> These values are statistically significant at a 99.7% confidence level since the percentages of open handmade vessels (64.18% ± 6.6%) and closed handmade vessels (28.36% ± 4.4%) are more than 3σ apart.

<sup>13</sup> These values are statistically significant at a 99.7% confidence level since the percentages of fine and semi-fine vessels (86.31% ± 20.9%) and coarse and semi-coarse vessels (13.29% ± 8.2%) are separated by more than 3σ.

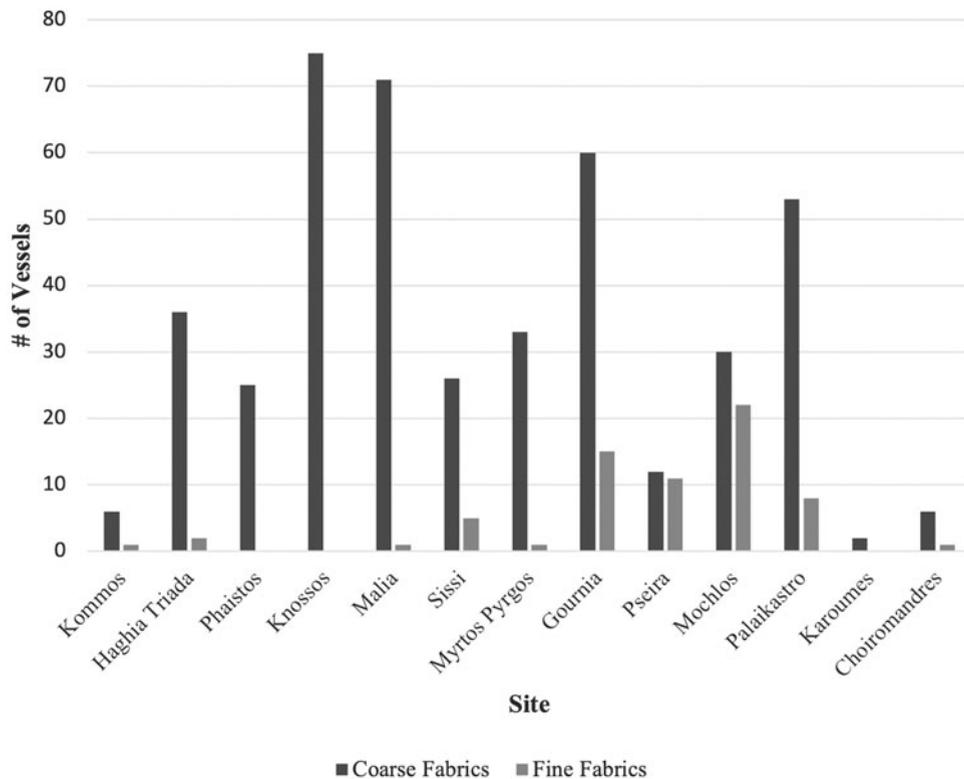


Fig. 6. A comparison of the quantities of miniature vessels with coarse or fine fabric types at each of the 13 sites included in this study.

sign of decoration, while 46.23 per cent, 233 miniatures of the total corpus, exhibit some form of decoration, whether slip, polychrome or monochrome paint, or other. Monochrome colour, in the form of paint or a slip, is the most common decorative form, noted on 193 miniature pots, or 38.29 per cent of the study corpus. Polychrome paint is much rarer, applied to just 7.34 per cent, or 37 of the miniature ceramic vessels. Of these 37 polychrome pots, all are wheelmade of fine fabric, suggesting that these vessels were made to be fine, high-quality pieces.

Decorated miniatures are found in all contexts (Fig. 7), and it is unfortunate that they appear in the two highest quantities in unknown and unspecified domestic contexts. It is therefore impossible to gain further insight into the uses of the miniatures in these contexts, though it is notable that the third largest quantity appears in feasting, dining, and tableware contexts. This finding makes sense given the use of finer ceramics and luxury items in communal meals and the potential desire for conspicuous consumption when entertaining, perhaps even in diminished forms (Hamilakis 2008, 10–13).

#### CATEGORIES OF MINIATURES: MICRO-MINIATURES V. SMALL MINIATURES

Through the analysis of the miniature vessel data, it appears that two distinct instances of scale manipulation are evident. With some of the ‘larger’ miniatures included in the corpus, differentiating between a miniature and simply a small pot can prove difficult. Broadly, a vessel that is smaller than its original form can be defined as a miniature.

The tallest vessel included in this study provides a good example of this interpretive dilemma. This miniature, a Middle Minoan (MM) III oval-mouthed amphoriskos from

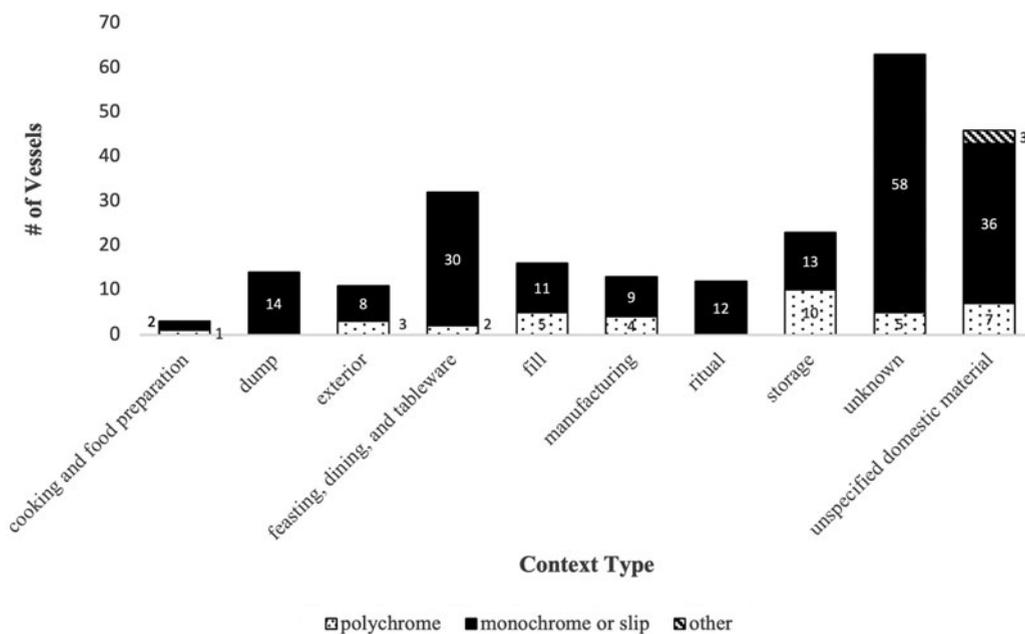


Fig. 7. The quantities of decorated miniature vessels in each context type included in this study, with further breakdown of decorative type (polychrome, monochrome or slip, and other).

Kommos, is large compared to the other 503 small-scale vessels in this study corpus, yet at 18.4 cm tall, it is a small amphora. According to the definition, it is a miniature – a diminished version.<sup>14</sup> It stands, however, in stark contrast with the much smaller miniature vessels included here. For the sake of extremes, it can be compared with the shortest miniature included in this corpus: a miniature spouted bowl from Gournia measuring only 0.5 cm in height with a rim of less than 2 cm in diameter. There can be little question that such a miniscule bowl is a miniature object, but if the amphora is also a miniature, what specifically makes them different and how were they used? Why might a potter have chosen one size over the other?

Through this contextual investigation and detailed analysis, it became clear that the miniature ceramic vessels of Minoan Crete exhibited a wide range of diversity, not just in decoration, fabric, manufacture, or form, but also in context and size. Indeed, when considering the definition of a miniature as a smaller form of a larger-scale original and the variety of vessel sizes evident within the corpus of miniatures, it is difficult to distinguish between large miniatures and small pots. I therefore argue that this analysis revealed two distinct types of miniature ceramic vessels within Minoan settlements of the Protopalatial and Neopalatial periods: ‘small miniatures’, or those that are diminished versions of their prototypes but are still large enough to serve practical uses in daily life similar to those of the originals, and ‘micro-miniatures’, or those too small to be useful in any practical sense. Despite the long-standing assumption that all miniature pottery served ritual functions in Minoan contexts, I argue that micro-miniatures held inherent cultic connotations while small miniatures were fluid in their uses, sometimes incorporated into ritual

<sup>14</sup> Many of the miniatures discussed here can be noted as smaller than their canonical types because the latter conform to largely standardised sizes, their dimensions clustering around particular dimensions. Some ceramic forms, however, appear to have been manufactured in a range of sizes and lack an element of standardisation when it comes to measurements. Such is the case with the *cruche trilobée*, for which it is very difficult to identify a canonical size and therefore a diminished version of such a vessel.

environments or activities to be used as cultic material, while in other situations they simply served as small containers in non-ceremonial spaces. When a small miniature appears in ritual contexts or is used as ritual equipment, its ritual associations are drawn from the surrounding context and the assemblage, not from its diminished scale or inherent affordances.

A micro-miniature, on the other hand, serves a very different purpose than that of its original, full-scale version. Removed from mundane life by its diminutive size, a micro-miniature retains none of the practical use of its larger form and essentially becomes an icon,<sup>15</sup> representing something that is not present. This study investigates the characteristics of micro-miniatures and reveals the harnessing of such potent material in settlement contexts in order to better understand how the unique affordances of miniaturisation are particularly suited to religious thought and ritual action.

My analysis identified 183 micro-miniatures and 309 small miniatures among the 504 total vessels of my sample.<sup>16</sup> Although precise measurement boundaries are difficult to ascertain because vessel shapes can differ greatly between forms, the heights of small and micro-miniatures, when compared, cluster into groups (see Fig. 8). The bell curve distributions of each category demonstrate that each type is a statistically complete sample, supporting the robustness of these classifications. The heights of each do overlap as measurements differ depending on the vessel type within each group, but the distributions of each type demonstrate where the majority of objects in that type cluster. The heights of small miniatures range anywhere from 1.5 to 18.4 cm but average 5.79 cm with a median of 5.4 cm,<sup>17</sup> while micro-miniatures are smaller, ranging between 0.5 cm and 6.9 cm, with a median of 2.2 cm and average 2.38 cm. A comparison of the heights with rim diameters and maximum widths corroborates the distinct groupings of these measurements (Fig. 9).

In a similar pattern to what was seen with open and closed vessels in the Protopalatial and Neopalatial periods, certain vessel forms are far more prevalent in specific miniature types. In the corpus of micro-miniatures, cups and bowls comprise the majority of vessel types (62.30 per cent, which can be compared to their percentage within the overall corpus, 40.08 per cent),<sup>18</sup> while juglets and jars are found in higher quantities in the corpus of small miniatures (51.78 per cent of small miniatures, compared to the 37.10 per cent of all miniatures)<sup>19</sup> (see Fig. 10). A large reason for this pattern may simply be the ease of manufacturing simple, open forms such as cups and bowls at small dimensions. Indeed, nearly 40 per cent of all handmade miniatures – 25 of the 67 objects, or 37.31 per cent – are micro-miniatures, and the prevalence of cups and bowls amongst handmade miniatures has already been noted above.

It is easy to assume that a smaller surface area might increase the difficulty of decorating micro-miniatures; yet, the results of this study do not reflect such a bias. Within the group of 183 micro-miniatures, 77 objects were decorated in some way. In other words, 42.08 per cent of miniatures manufactured in very small proportions were slipped or painted. While it is true that some

<sup>15</sup> See Knappett (2012) for more on miniatures as icons.

<sup>16</sup> As the height distribution in Fig. 8 demonstrates, micro-miniatures are generally smaller in size than small miniatures; yet it is not possible to define their sizes with specific measurements as different types of vessel forms range in size. This does, admittedly, make it difficult to determine when a miniature is a 'micro' or a 'small'. I came to my conclusions by combing through my data and considering the form of the miniature, its size, its size compared to a prototype's size, the context in which it was found, and whether or not its size and context would allow for it to function practically in a similar way to its prototype. If this function had changed drastically or could not be maintained for practical use because of a reduction in size, I considered the miniature to be a micro-miniature; if not, it was labelled as a small miniature.

<sup>17</sup> To make it a clearer graph, Fig. 8 leaves one miniature vessel, the only one with a height over 13.9 cm, out of its data set.

<sup>18</sup> These values can be seen as statistically significant at a 68% confidence level, since the percentage of micro-miniature cups and bowls (62.30% ± 14.2%) and those within the full corpus (40.08% ± 14.2%) are 1σ apart.

<sup>19</sup> Similar to cups and bowls, this comparison of juglets and jars is statistically significant at a 68% confidence level since the values of small miniature juglets and jars (51.78% ± 12.7%) and juglets and jars in the full corpus of 504 miniatures (37.10% ± 13.7%) are 1σ apart.

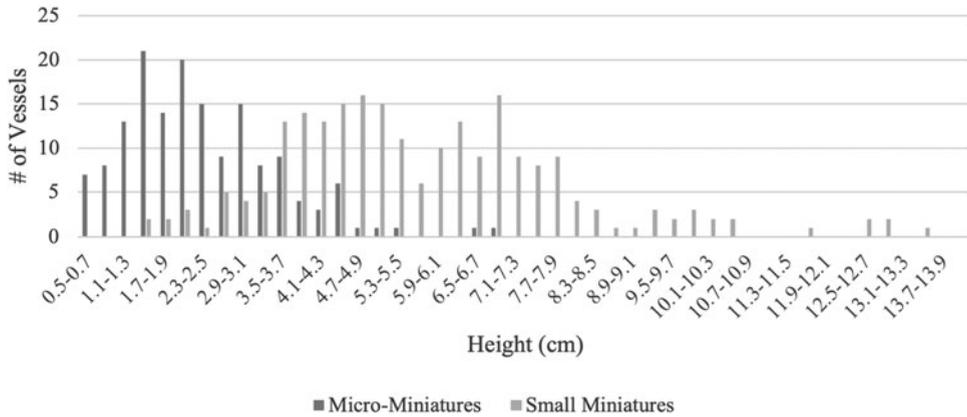


Fig. 8. A comparison of the heights of small and micro-miniature vessels with preserved full profiles included in this study.

decorative features, slips for instance, are easier to apply to small objects than others, the application of complex decorative motifs on some micro-miniatures – polychromy or light-on-dark decoration, for instance – demonstrates that small-scale materials were not exempt from more challenging fine details. If technical difficulties did not factor into the choice of vessel form for the creators of micro-

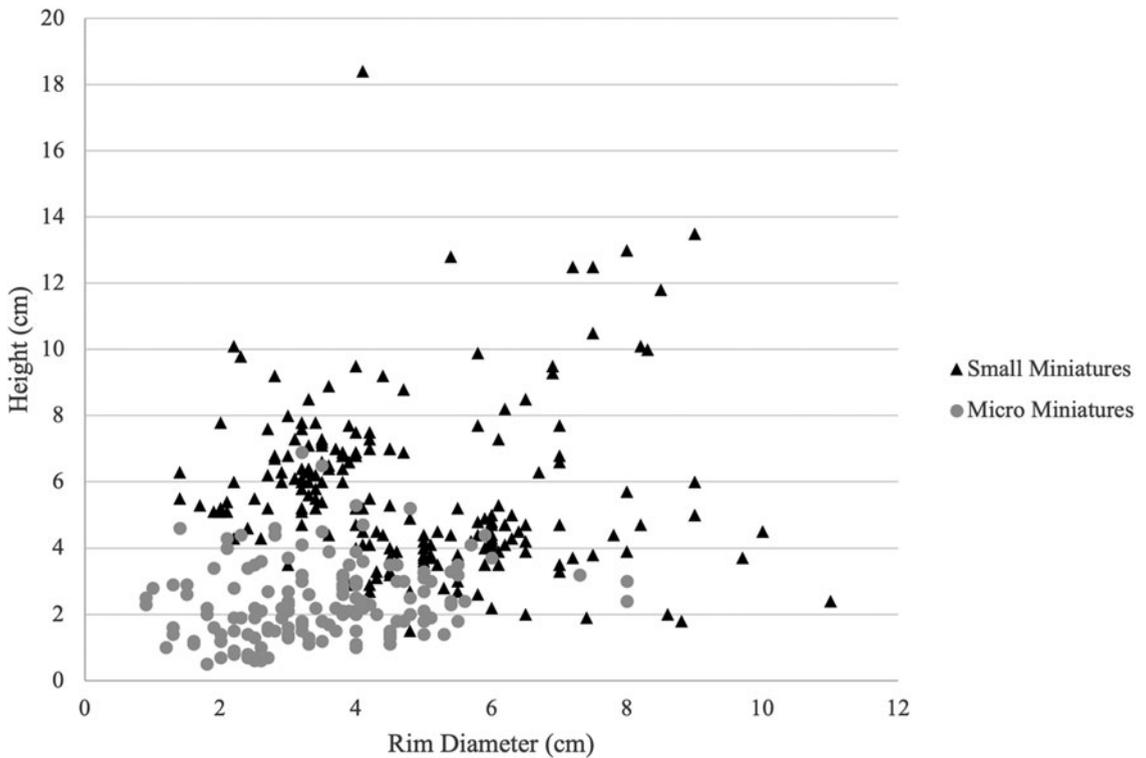


Fig. 9. The heights and rim diameters of small and micro-miniature vessels with preserved full profiles included in this study.

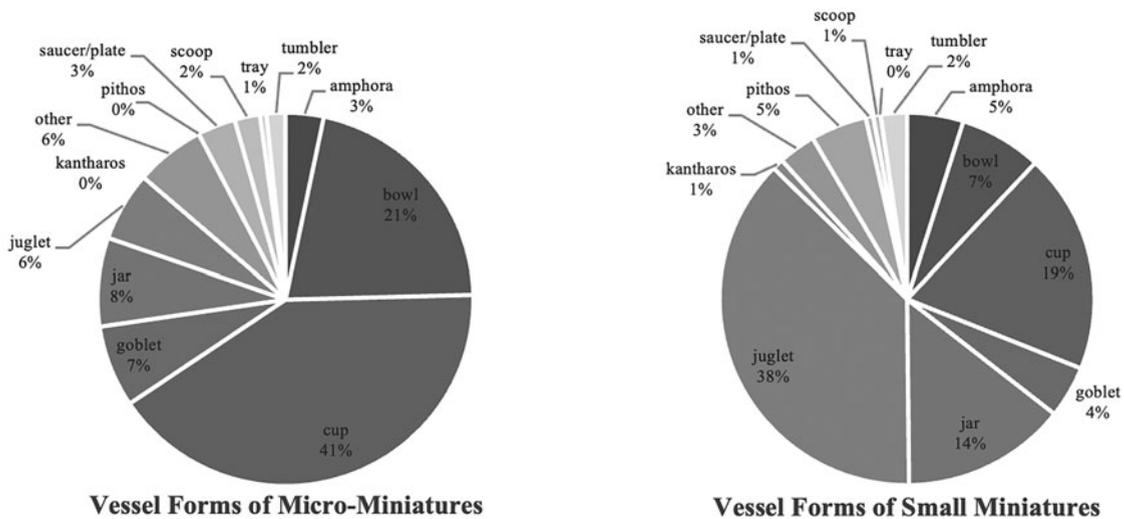


Fig. 10. The percentages of vessel forms present in this study's micro-miniature (left) and small miniature (right) ceramic vessels.

miniatures, perhaps the contextual associations of these vessels can reveal more about their characteristics, features, and uses.

Geographically, both small and micro-miniatures appear across the island of Crete but in differing quantities and with regional preferences. Both micro and small miniatures appear at all 13 sites included in this analysis and are known from others not incorporated into the data, including Zakros,<sup>20</sup> Petras,<sup>21</sup> and several sites from around Chania in west Crete.<sup>22</sup> At Kommos, however, miniature pottery is an interesting category of material culture. The excavators of the site note that miniature vessels were rare (Betancourt 1990, 167), with only seven adhering to the chronological and contextual parameters of the present study. Six of those seven were recovered in Middle Minoan levels of the Central Hillside houses, suggesting the earlier yet limited use of these forms in domestic contexts.

A strong regional pattern can be seen in the distribution of miniature tripod vessels. Comprising 10.12 per cent of this study's total sample, or 51 of 504 miniature pots, miniature tripod vessels are a large portion of total vessel forms, yet their increased quantities at sites in the Mirabello region and into east Crete (see Fig. 11), and marked absence from the data of sites along the south coast of Crete, suggest that this form was a regional preference, at least in miniature form. At sites where they do appear, they are found in a range of contexts, but their general association is with food and cooking.<sup>23</sup>

<sup>20</sup> Although much of the Zakros excavation project is still in preparation to be published, with miniature vessels under study by Anna Simandiraki-Grimshaw (personal communication, 3 July 2017 and scholar's personal website, [www.anna-simandiraki.co.uk/dr.-anna-simandiraki-grimshaw-projects](http://www.anna-simandiraki.co.uk/dr.-anna-simandiraki-grimshaw-projects), accessed April 2022), seven miniature pots appear in a 2010 paper on the 'Zakros pits deposit' (Platon 2010, fig. 24:17). The article notes that these seven 'miniature clay models of vessels' were found with seven milk jugs in Neopalatial pit deposits on one of the two hills of the Zakros settlement (Platon 2010, 252).

<sup>21</sup> Some of the miniature vessels uncovered at Petras have been published by Simandiraki-Grimshaw (2012).

<sup>22</sup> Little Protopalatial and Neopalatial material has been published from excavations in and around Chania, but Simandiraki-Grimshaw (personal communication, 3 July 2017) reports that she holds permits to study and publish the miniature vessels from several of these archaeological projects.

<sup>23</sup> At the time of this study and the writing of this article, a new study of the small-scale pots from the Room of the Knobbed Pithos had not yet been published and so were not included in the present data. It is, however, worth noting that the results of this study were recently published (Knappett, Macdonald, and Mathioudaki 2023) and that the miniature tripod vessels included in it should inform the theories set forth here.

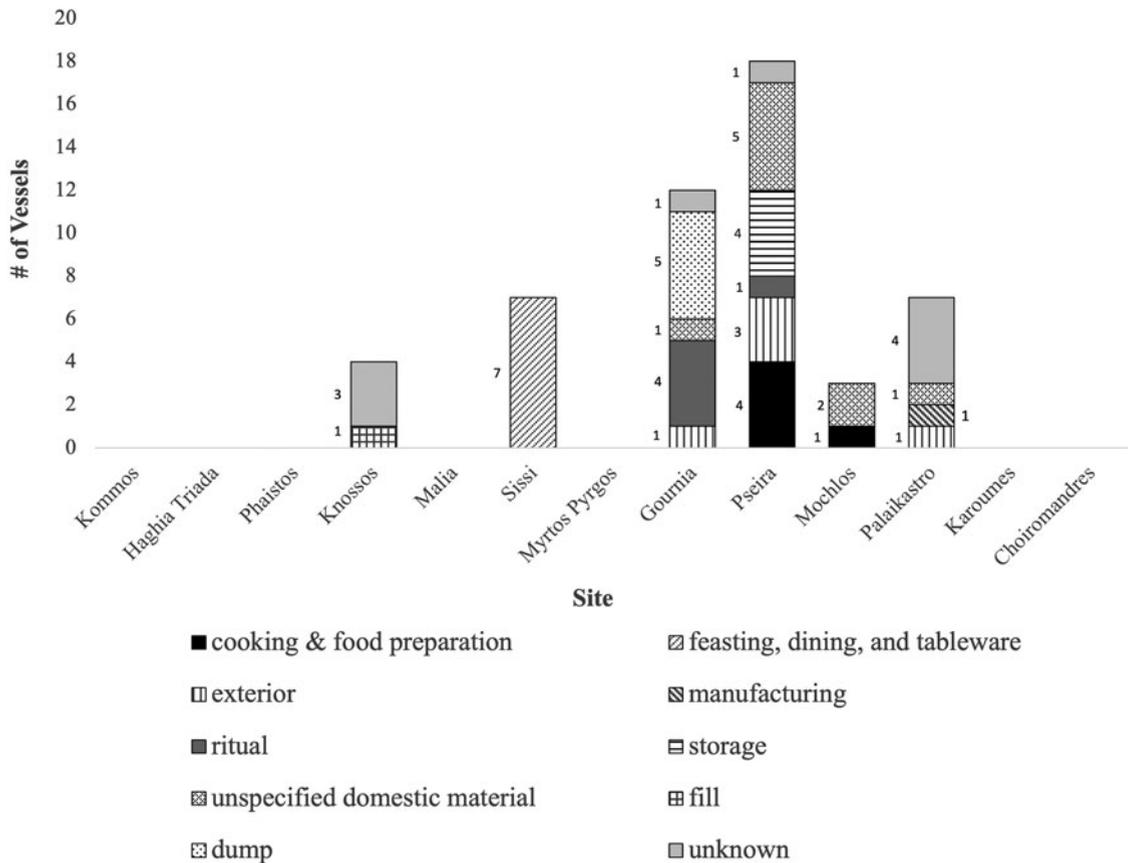


Fig. 11. The quantities of tripod vessels at each site included in this study, and their contextual associations at each.

The distribution of both small and micro-miniatures among the 10 context types identified in this study reveals surprisingly little about the contextual associations of these two broad categories (Fig. 12). The uneven distribution of the two types within contexts related to cooking and food preparation is striking, as eight per cent of all small miniatures were found in such areas compared to just one per cent of micro-miniatures.<sup>24</sup> Five per cent of all miniatures in this study fell into these contexts, an average demonstrating the uneven dispersal of the miniature types. Similarly, the types of miniatures within manufacturing contexts are notably disproportionate. In this context type, however, the uneven quantities are reversed, with spaces of manufacture yielding nine per cent of the overall corpus of micro-miniatures, but only four per cent of small miniatures.<sup>25</sup> In the study corpus overall, miniature objects from manufacturing contexts comprise six per cent of the total.

Perhaps most surprising is the unequal distribution of the small-scale types within ritual contexts – but not in the way one might initially expect of micro-miniatures. With seven per cent of all small miniatures falling into explicitly ritual contexts, only three per cent of micro-miniatures are found in this same context type.<sup>26</sup> Analysed another way, of the 28 miniatures included in this study that were found in explicitly ritual contexts, only six of them, or 21.43 per cent, were micro-miniatures. This low proportion stands in contrast with the remaining 78.57 per cent, all of which were small

<sup>24</sup> This comparison is statistically significant at a 99.7% confidence level because the percentages of micro-miniatures (1% ± 1.4%) and small miniatures (8% ± 5%) are separated by more than 3σ.

<sup>25</sup> The statistical significance of this comparison is slightly less robust, since these values are significant at a 68% confidence level, with the percentages of micro-miniatures (9% ± 4.1%) and small miniatures (4% ± 3.5%) 1σ apart.

<sup>26</sup> A comparison of micro-miniatures in ritual contexts (3% ± 2.5%) and small miniatures in ritual contexts (7% ± 4.7%) is statistically significant at a 66.8% confidence level since the values are more than 1σ apart.

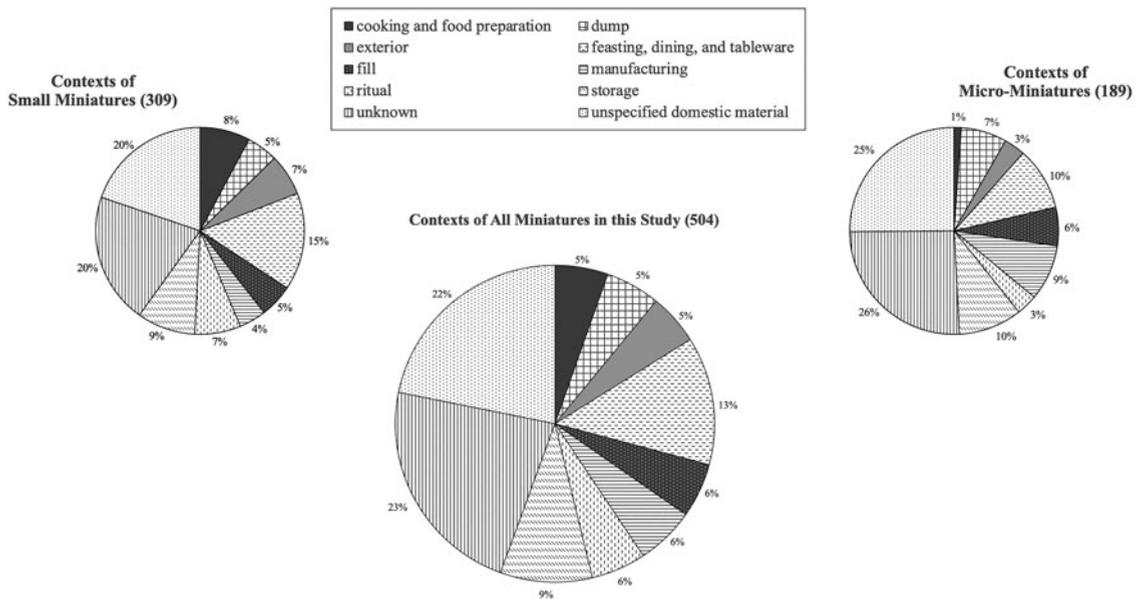


Fig. 12. The distributions of ‘small miniatures’ (top left) and ‘micro-miniatures’ (top right) in context types, compared to those of all miniatures included in this study (bottom).

miniatures. This unequal divide seems, at first, surprising, but if micro-miniatures functioned as iconic indexes, their associated rituals activating their indexical power and causality, their very presence would have created the sacred context. Micro-miniatures did not need to be placed into a ritualised setting, for their indexicality would have manifested it themselves.

This pattern was quite subtle. An investigation of site-specific occupation contexts associated with miniatures revealed the presence of micro-miniatures in unexpected places. Given the known connection between miniature pottery and peak sanctuary cult in the Aegean world, the inclusion of micro-miniatures in assemblages of larger utilitarian objects, their sometimes unusual placement within discrete spaces, and their functional disconnect from the assemblages and spaces surrounding them, it is apparent that micro-miniatures were representations of Bronze Age cult or markers of ritual action.

### Micro-miniatures in context

One clear example comes from Room 11 of Building AMI at Palaikastro. The space has not been explicitly labelled as a workshop or place of manufacture, but the installation of a drain within the room’s utilitarian plaster-lined floor along with the discovery of weights, a stone mortar, ground stone tools, and a strainer, jug, and pithos suggest that this Late Minoan (LM) IB space served an industrial purpose of some kind (Knappett, Livarda, and Momigliano, [in preparation](#)). While the many objects found in this context corroborate the room’s utilitarian nature, a micro-miniature amphora (Fig. 13) does not match the rest of the assemblage and could not have served a utilitarian purpose alongside the rest of this material.

A second case study comes from another area of Palaikastro. In the Northwest Building of Block M, a curious arrangement of features and installations characterises Rooms 41 and 42, including a plaster-lined and low-walled tank, a *patatiri* (grape-press), and a large pithos, seemingly forming part of an MM IIIA area of wine manufacture (Knappett and Cunningham 2012, 155). In Room 41, the excavators unearthed a micro-miniature (possibly tripod) jar beside the plaster-lined tank. Just 2.7 cm in height with a rim measuring the same in diameter (Knappett and Cunningham 2012, 155, fig. 5:17), the jar could not have been used effectively in the wine-making process. The known importance of liquids, libations, and drinking in the ritual practices of Bronze Age Crete makes the presence of a cult object like a micro-miniature reasonable.



Fig. 13. Miniature amphora from Room 11 of Building AM 1 at Palaikastro, LM IB, height: 4.6 cm (PAL.0083). Photograph by the author, courtesy of the Palace and Landscape at Palaikastro Project.

Finally, a closet under staircase IIB at Malia, in Building A's Room III 2 in Quartier Mu, yielded two micro-miniatures alongside an MM IIB assemblage of regular-sized pottery, mostly pouring and drinking vessels, including jugs, cups, goblets, two pitchers, and a plate (Poursat and Knappett 2005, 226). A miniature spouted cup and miniature cup, possibly a rhyton, are distinct from their associated materials, not corresponding with the sizes or functions of any other vessel in the closet. Furthermore, it is notable that this closet was positioned next to a possible shrine.

### Small miniatures in ritual contexts

By considering the contexts of these micro-miniatures, their tiny dimensions, and impractical uses, it is clear that they did not directly relate to the materials around them; they stood alone, representing ritual thought or action. While micro-miniatures could be regarded as ritual implements regardless of context, I argue that small miniatures could also have served cultic functions, but only within definable ritual environments. The Vat Room Deposit at Knossos, for instance, is an explicitly ritual context, yet it yielded no micro-miniatures. Instead, this sealed cist beneath the floor contained luxury materials and unique objects, including obsidian, rock crystal, ivory, gold, and ostrich egg shell,<sup>27</sup> as well as six small vessels catalogued as miniatures: a jug, a spouted jar, and four miniature spouted juglets (Panagiotaki 1999, 17 and 55–6). The cups range from 4 to 4.9 cm in height, while the jug and jar measure 7.8 cm and 5.2 cm high respectively. Though small, each container could have held some quantity and been used in ways comparable to its larger prototype. The appearance of the pots in a subterranean cist, however, alongside luxury items and unique objects interpreted as votives, removes these vessels from their usual functions, accentuating their ritual valence.

Room 13 of the Southwest Wing of the Gournia Palace provides an equally clear context in which the traces of ritual practice are manifested in the archaeological record. Two large deposits of cups, bowls, bones, and pumice filled the small space of the approximately 1 x 1 m room, one deposit dating to MM IIIA and the other to LM IB. Situated east of a kernos and baetyl on the western edge of the palace (Watrous et al. 2015, 429–31), the position of the room and its depositions next to these sacred objects points to past drinking ceremonies and the ritual

<sup>27</sup> The complete assemblage of objects found in the Vat Room Deposit includes 119 pieces of obsidian, fragments of more than four stone vases, four broken pieces of rock crystal and a spherical bead, five hippopotamus ivory plaques which could have come from Egypt or the Near East, 17 pieces of marine shell, fragments of ostrich egg shell, small fragments of gold which are probably from evidence of overseas contact, pieces of copper and bronze, two sealings, faience inlays and beads, and 1639 spherical beads (Panagiotaki 1999, 38).

disposal of its equipment in a sacred space. Among the hundreds of regular-sized ceramic vessels found in the MM IIIA and LM IB deposits of Room 13, some were labelled as miniature objects. In the MM IIIA assemblage, only one of the eight miniatures included in the present corpus could be identified as a micro-miniature, and without a full profile, it is difficult to be confident of this categorisation. The explicit ritual setting in which it was found, however, means that a micro-miniature would not have been needed to imbue the deposit with cultic meaning, and the other seven small miniatures contribute to what was already an extraordinary group of materials. These bowls, jars, and jugs are small, but large enough to have functioned in ritual drinking. Similarly, just two vessels of the LM IB deposit were labelled as miniatures: a miniature handled cup, which at 4.7 cm high is a drinking cup on the smaller end of the vessel's spectrum, and a fragment of a possible pithos rhyton.

Finally, a small LM IA area containing small-scale ceramic vessels was uncovered in the foundation trench of the south wall in Corridor E of the Minoan Unexplored Mansion at Knossos (Popham et al. 1984, 12). In this trench, three juglets and six miniature conical cups were deposited alongside two lamps and two canonical conical cups. The juglets measured 8–8.5 cm in height, large enough to hold small quantities of liquid and to function as pouring containers, while the six miniature conical cups, measuring 2.5–3 cm in height, were micro-miniatures.

### Small miniatures in secular contexts

Of course, not all small miniatures served ritual functions, and indeed, *could* not when placed in mundane or secular environments. Many of the small miniatures studied in this analysis come from domestic spaces where they served utilitarian functions. At the farmhouse of Chalinomouri, for instance, a structure just east of the settlement of Mochlos, a deposit of pottery, including a large fragmentary basin, a stone grinder, mammal bones, and shells in Room 6, was identified as an area for food preparation and consumption (Barnard and Brogan 2003, 90). Among the assemblage was found part of a miniature globular jar. With a maximum diameter of 4.4 cm, the jar is large enough to hold small quantities, but still markedly smaller than the rest of the ceramic assemblage.

Similarly, in Space BV 5 at Pseira, a possible cooking area with mostly closed vessels and cooking pots was uncovered (Floyd, Betancourt and Davaras 1998, 64–5). A miniature tripod vessel with a base diameter of 3.5 cm and a 3.8 cm-tall miniature straight-sided cup were included in this assemblage and could have held substantial quantities to be used in cooking activities.

These are just two examples of many in which small miniatures appeared in domestic contexts with no obvious connection to ritual activity. From kitchens to storage closets, small miniatures served utilitarian functions in the daily life of Minoan Crete when used in mundane spaces rather than placed in definable ritual environments.

## MINIATURISATION IN THE SEMIOTIC IDEOLOGY OF MINOAN CRETE

The review of previous scholarship earlier in this paper revealed how miniature ceramic vessels of the ancient Mediterranean world have largely been interpreted as cult objects or small toys for children. Both of these interpretations stem from the belief that tiny things are not able to function normatively in the real world;<sup>28</sup> if a miniature is understood as a votive or ritual object, it serves the spiritual or supernatural sphere, and if a toy, it forms part of the world of children, often regarded as removed and separate from adult life.<sup>29</sup> It was clear from the very beginning of this data analysis, however, that miniatures cannot be relegated to these exclusive domains of Bronze Age Cretan life.

<sup>28</sup> Brück (1999) critiques archaeology's tendency to describe ritual as non-functional and irrational.

<sup>29</sup> Ruth Phillips (1998, 73) maintains that a miniature's playability is one of three key attributes, along with universality and aesthetic resonance, unique to small-scale objects, and the one which connects it with the playfulness of childhood. For more on the playfulness of miniatures, see Stewart (1993, 56–65) and Crawford (2009).

Surrounded by a visual and material world rich in scale manipulation, Bronze Age Cretans must have been well-versed in the language of the miniature. Their world was filled with small-scale signs navigated by a particular semiotic ideology. Webb Keane (2018, 64–5) defines semiotic ideology as ‘people’s underlying assumptions about what signs are, what functions signs do or do not serve, and what consequences they might or might not produce’. Although those assumptions are variable depending on social and historical contexts, a semiotic ideology ‘ties general semiotic processes to specific judgements of ethical and political value’ (Keane 2018, 64). The manifestations of these processes differ depending on historically specific traditions (Swenson 2021, 6). In Bronze Age Crete, a semiotic ideology that included a focus on reduced scale and indexical iconicity seems to have integrated the miniature into multiple spheres of society.

Although we may never fully comprehend the nuances of the Bronze Age Cretan ontology, it is possible, through the affordances of miniaturisation, to gain a better understanding of what miniatures and the small-scale meant in Minoan Crete and what semiotic power they may have held for their ancient viewers. This data analysis revealed a general ubiquity of small-scale pots within domestic spaces and, with further scrutiny, two distinct categories of miniature vessel: small and micro-miniature.

These categories can be more robustly understood by applying the semiotic approach of semiotician and philosopher Charles Sanders Peirce. Peirce proposed that the form that a sign takes, its signifier, falls into one of three categories of signs used in communication: icon, index, or symbol.<sup>30</sup> An icon and a symbol communicate in opposite ways; an icon physically resembles what it represents, while a symbol’s association is completely arbitrary. A symbol does not resemble its signified in any way, and its meaning must be learned through association. An index is different from both of these, for it does not resemble the signifier, but instead represents evidence of it. Peirce refers to the way in which these signs were understood as the interpretant. The interpretant of any particular sign is dictated by semiotic ideology.

Micro-miniatures can be seen as clear icons of their larger prototypes. Their appearances, however, in contexts where they could not serve the same purposes as their originals suggest that their pragmatism was rooted in something other than their functional similitude. Instead, it was the iconicity of micro-miniature vessels that was of foremost importance in Bronze Age Crete. Through ritual, that iconicity was recognised by ancient users as indexicality in a process identified by Christopher Ball (2014) as dicentisation. Based on Peirce’s concept of the dicent interpretant, in which an interpretant represents a sign as different from its object and therefore actually existing, Ball (2014, 152) defines dicentisation as a process in which ‘a likeness or a conventional relation is interpreted as actually constituting a relation of physical or dynamical connection’. In other words, a micro-miniature did not just physically represent its prototype, but, as an index, also served as evidence of something else. Indeed, it has been noted that ritual effectively conflates iconic similarity with indexical connectivity (Stasch 2011; Tambiah 1984); just as miniature pots resembled their prototypes, this iconicity was also connected with causality, pointing to and acting upon outside forces. It is, of course, very difficult to know the precise nature of these forces in a prehistoric context, but we can surmise that micro-miniature pots indexed offerings, libations, or sacrifices to the divine, facilitated a deity’s favour, brought about fertility, or ensured good health. Indeed, it seems that it was the iconicity of a micro-miniature itself that was of foremost importance and, in this way, was able to straddle the line between what was real and unreal – an ambiguity that fits well with its spiritual narrative.

Unlike micro-miniatures, which were religiously potent regardless of context, small miniatures did not always serve ritual functions. Instead, they could fulfil secular or religious functions depending on context. While micro-miniatures broke from the functionality of their prototypes and were defined instead by their iconicity, small miniatures remained very similar to their larger-scaled versions in terms of both form and function. They did not rely solely on their iconicity to define them, but instead functioned practically without undergoing the

<sup>30</sup> The concept of sign categories was first published by Peirce in an 1867 paper entitled, ‘On a new list of categories’.

transformative process of dicentisation initiated by micro-miniatures. Small miniatures were not, therefore, always integrated into the religious world of Minoan Crete. Instead, those that were used in ritual relied on their contexts for identity and function; by ritually and materially framing the vessel, it was the depositional act and ritual that went along with them that allowed the small miniatures to be transformed into ritual objects. In this way, the deposit itself was the significant and contextualising force, not the miniature material contained within it.<sup>31</sup>

Although micro-miniatures seem to have functioned as signposts of sacred events and can be understood as ritual objects regardless of context, it cannot be assumed that small miniatures functioned in the same way. A small miniature could index its ritual assemblage and the sacred environment in which it was placed, but its contiguous relationships could also simply index a quotidian assemblage of a kitchen or living space.

It is clear, therefore, that miniature vessels were able to cross and activate multiple scales of social interaction and ritual communion in Bronze Age Crete. A wide range of material evidence, including seals, figurines, terracotta models, miniature wall-paintings, and miniature pots, points to a semiotic ideology of reduced scale and indexical iconicity which integrated the miniature into multiple spheres of Minoan society. Small and micro-miniatures served distinct semiotic functions in Minoan Cretan ritual, with small miniatures also fulfilling practical functions beyond the ritual domain. Indeed, the data demonstrate that many more small miniatures were used in daily life than were incorporated into ritual, emphasising the need for scholars to proceed with caution when interpreting miniature ceramic vessels in Bronze Age contexts; however, the unique affordances of micro-miniatures, small, abstracted icons, rendered them particularly suitable material forms through which the human mind could engage with the spiritual. When the mysteries of life and the unknowable aspects of the lived world eluded the inhabitants of Bronze Age Crete, it seems to have been the miniature to which they often turned for support, recognising that sometimes 'the small conjures up infinity more easily than the large' (Morris 2006, 11).

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<sup>31</sup> In her doctoral dissertation on foundation deposits in ancient Greece, Gloria Hunt (2006, 5) notes that, by and large, Greek building deposits are defined by their locations and contexts rather than their material objects. This is markedly different from the foundation deposits of Egypt and early Mesopotamia, the identities of which rely on their distinctive contents.

APPENDIX

Table A1. The contexts in which the miniature vessels included in this analysis were uncovered, organised by site. Each context type(s), as used in this analysis, is also included, as are the relevant references.

Site	Building/House/Sector/Area	Room/Space/Area/Context	Context Type (UDM = Unspecified Domestic Material; FDT = Feasting, Dining, and Tableware; CFP = Cooking and Food Preparation)	Reference
Choiromandres	--	Protopalatial Building	Fill, Unknown	<i>currently under study</i>
		Early LM IB Levelling Fill	Fill	
		Mature LM IA Destruction Level	UDM	
		Upper Storey Collapse	UDM	
		LM IIIA2	UDM	
Gournia	House of the Partridge Vase/House of the Stone Pounder	--	UDM	Boyd Hawes et al. <a href="#">1908</a>
	Miscellaneous Houses	--	UDM	
	Between Pit House and Northwest Area	Open Area/Exterior Yard	Exterior	<i>currently under study</i> ; Watrous et al. <a href="#">2015</a>
		Collapse of Protopalatial Material	Unknown	
		Dump Behind House	Dump	
	House Aa	--	Unknown	
	House He	--	Unknown, Fill	
	Metal Workshop	--	Unknown	
	Kilns	--	Dump	
	Northeast Area	Small LM I Midden	FDT	
		MM III Midden	Dump	
		Mixed Dump Material and Slope Wash	Unknown	
	Northwest North Area	North Cobbled Court	Unknown	

	East Room of Central Building	Manufacturing
	Staircase of Central Building	Unknown
	Room 105, Southwest Building	Manufacturing
	Outdoor Area 110	Exterior
	South Terrace, Area 106 Southwest	Unknown
Northwest South Area	--	UDM
Palace 'Tower'	--	Unknown
Palace Court	--	Exterior
Pit House	Room 114	UDM
	Room 115	Dump
	Room 116	UDM
	Room 117	UDM
	Room 119	UDM
	Room 122	Unknown
	Room 123	Manufacturing, UDM
	Dump/Fill in Cistern North of Pit House	Dump
Southwest Wing of Palace	Room 13	Ritual
	Room 16	Storage
	Room 17	Ritual
	Unknown Rooms in Southwest Wing	Unknown

Haghia Triada	Sacello	Sounding 5	UDM	La Rosa <a href="#">1979–80</a> ; <a href="#">1986</a> ; Girella <a href="#">2010</a>
	Northeast Sector	Destruction Layer of the Complesso della mazza di breccia (CMB)	Unknown	
		Mixed Dumps	Dump	
	Under the Cyclopean Building	--	UDM, Fill	
	Cyclopean Building	--	UDM	
	Villa	--	FDT	
	Unknown	--	Unknown	
Karoumes	LM I Levelling Fill	--	Fill	Vokotopoulos <a href="#">2007</a>
	Area 4	--	Manufacturing	
Knossos	Central Palace Sanctuary	--	Ritual	Panagiotaki <a href="#">1999</a>
	West Polychrome Deposits	--	Fill	MacGillivray <a href="#">1998</a>
	Loomweight Basement	--	Manufacturing	MacGillivray <a href="#">1998</a>
	The Town Drain	--	Fill	MacGillivray <a href="#">1998</a>
	Early Magazine A	--	FDT	Macdonald and Knappett <a href="#">2007</a>
	House West of the Southwest House	Deposit B	UDM	Macdonald and Knappett <a href="#">2007</a>
		Deposit D	CFP	Macdonald and Knappett <a href="#">2007</a>
	Southwest House	Deposit E	Unknown	Macdonald and Knappett <a href="#">2007</a>
	The South House	--	Exterior, UDM	Mountjoy <a href="#">2003</a>
	House of the Fallen Blocks	--	Unknown	Mathioudaki <a href="#">2018</a>
	House of the Sacrificed Oxen	--	Unknown	Mathioudaki <a href="#">2018</a>
	Minoan Unexplored Mansion	--	Exterior	Popham et al. <a href="#">1984</a>
	The Little Palace	--	FDT, Storage	Hatzaki <a href="#">2005</a>
Monastiriaki Kephali	--	Unknown	Preston <a href="#">2013</a>	

Kommos	East Building	--	Fill	Betancourt 1990
	South Building	Room 25	Storage	
		Room 44	UDM	
		Unknown	Unknown	
Malia	Building A	Room I 1	UDM	Poursat 1996; Poursat and Knappett 2005
		Room I 10	UDM	
		Room I 11	Storage, UDM	
		Room I 13 E	Storage	
		Room I 14	Storage	
		Room I 20a	FDT	
		Compartment II B	UDM	
		Room III 2	Storage	
		Room III 4	FDT	
		Room III 6	UDM	
		Room III 8	FDT	
		Room III 9	Storage	
		Room III 12	UDM	
		Room III 13	Storage	
	Building B	Court IV 1	UDM	
		Room IV 4	Storage	
		Room IV 4c	Storage, Manufacturing	
		Room V 6	UDM	
	Building C	Space VI 4	Exterior	
		Room VI 9	Unknown	
Room VII 1		UDM		
Room XII 6		Unknown		

	East Backfill	--	Fill	
	Placette Ouest	--	Exterior	
	South Backfill	--	Fill	
	South Workshop (L'Atelier Sud)	Room XI 4	Manufacturing	
		Square A5	Unknown	
		Square A6	Unknown	
		Square B12	Unknown	
		Square C12	Unknown	
		Square Z11	Unknown	
	Potter's Workshop (L'Atelier de Potier)	Room VIII 2	Storage	
		Room VIII 5	Manufacturing	
Mochlos	Artisan's Quarter, Building A	Room 2	Manufacturing	Barnard and Brogan 2003
		Room 6	Ritual, Manufacturing	
	Artisan's Quarter, Building B	Room 1	Ritual	
		Room 3	CFP	
		Room 4	Manufacturing	
		Room 8	Manufacturing	
		Room 13	CFP	
	Chalinomouri	Room 6	CFP	
	Neopalatial Town	Floor of Avenue 2	Exterior	<i>currently under study</i>
		House B.4	Storage	
		House C.1	CFP	
House C.2		UDM		
House C.3		UDM, CFP		
House C.10		UDM		
House C.10, Room 8a		CFP		

		House C.12, Room 2	UDM	
		House C.12, Room 4	CFP	
		Building D7	Storage, CFP	
		Plateia B	Exterior	
Myrtos Pyrgos	West Slope Tumble		Unknown	<i>currently under study</i>
	Area 35	House B	UDM	
Palaikastro	Building 1	Corridor 11, Context 1.1C.11.1	UDM	MacGillivray and Sackett 2019
		Room 1/2/3/4, Context 1.2C.1.1	CFP	
		Space Between Buildings 1 and 4	Fill	
	Building 2	Room 2	FDT	Knappett and Cunningham 2003
	Building 4	Room 13	Unknown, CFP	<i>currently under study</i>
		Room 14	CFP	
		Room 15	Ritual	
		Room 16	UDM	
		Northwest Façade	Unknown	
	Building 5	Room 5, Context 5.3.5.2	Unknown	<i>currently under study</i>
		Room 7, Context 5.3.7.3	Storage	
		Room 19, Context 5.3.19.1	Storage	
	Block M: Southeast Building	Drain, Context 12a.1	Fill	Knappett and Cunningham 2012
		Room 1B	Fill	
Room 1/3		FDT		
Room 5		FDT		

		Room 6	UDM, Unknown	
		Room 8	UDM, Manufacturing	
	Block M: Southwest Building	Street	Exterior	
	Block M: Northwest Building	Room 34	FDT	
		Room 40	CFP	
		Room 41	Manufacturing	
		Room 45	FDT	
		Room 50	UDM	
		Room 53	Exterior	
		Room 64	Exterior	
	Building 7	Room 1	UDM	<i>currently under study</i>
		Rooms 6, 10, 13, and 14	Unknown	
		Context JH	Unknown	
Phaistos	--	Bastione I e Rampa LII	Exterior	Levi 1976; Levi and Carinci 1988; La Rosa 1998–2000; 2001; 2002; Baldacci 2017
		Corridoio L	Storage	
		Grande Frana	Unknown	
		La Casa Protopalaziale CVIII–CVIV	UDM	
		Vani CVI–CVII	Fill	
		Strada dal Nord, a Est del Vano CII, Allargamento, Strato 38	Fill	
		Strada dal Nord, a Est del Vano CII, Allargamento, Strato 46	Exterior	

		Vani LIII–LV, Sottoscala	Storage	
		Vani XXVII–XXVIII	Storage	
		Vano IL	Unknown	
		Vano LXIX	UDM	
		Vano LXXXVI	UDM	
		Vano LXXXVIII	FDT	
		Vano XCIII	Storage	
		A Sud dei Vani XCI–XCIII, XCVI, Strato 34	Unknown	
		Area a Sud dei muri M/12, M/14, M/15	Unknown	
		Area W of Vani XCIV–XCV, Strato 17	Unknown	
Pseira	Building AD Center	Room 6	UDM	Betancourt and Davaras <a href="#">1995</a>
	Building AA	Room 10	Unknown	
	Building AC	Space 10	Ritual	Betancourt and Davaras <a href="#">1998</a>
	Plateia Building	Space BV	CFP, UDM	Floyd, Betancourt, and Davaras <a href="#">1998</a>
		Room BS	CFP, UDM	
	Area BR	--	Exterior, Unknown	
	Building BT	--	Storage	Betancourt and Davaras <a href="#">1999</a>
	Building DA	--	Exterior	Betancourt and Davaras <a href="#">1999</a>
	Area BJ	--	Exterior	Betancourt and Davaras <a href="#">1999</a>
	Area AF South	--	UDM	Betancourt <a href="#">2009</a>
Building AF North	--	Storage, UDM		

Sissi	Zone 2	Building BA, Space 2.3	Manufacturing	<i>currently under study</i> ; Driessen et al. <a href="#">2009</a> ; <a href="#">2011</a> ; <a href="#">2017</a>
		Building BC, Spaces 2.6 and 2.7	UDM	
	Zone 3	Exterior of Room 3.3	Ritual	
	Zone 4	Building CD, Room 4 and 4.4	FDT	
	Zone 8	Building CD, Area 8.3	FDT	
		Building CD, Room 8.8	Fill	
	Zone 10	Unknown	UDM	
		Space 10.5	Dump	
		Space 10.6	FDT	
	Zone 17	Space 10.5	Unknown	
		Room 10.6	FDT	
		Space 17.1	Unknown	
	Zone 18	--	Ritual	
	Court-Centred Building (CCB)	East Wing, Room 15.2	FDT	

## ACKNOWLEDGEMENTS

Invaluable support from the Department of Art History at the University of Toronto (UofT) and the Social Sciences and Humanities Research Council of Canada enabled this research to be conducted as part of my doctoral studies. Additional grants from the Frederick and Joan Winter Student Travel Bursary through the Canadian Institute in Greece, the Joseph W. and Maria C. Shaw Graduate Scholarship in Archaeology through UofT's Archaeology Centre, and the School of Graduate Studies at UofT made it possible to conduct fieldwork and data collection in Greece. I thank each of these institutions and funding bodies for their instrumental support.

I also offer my thanks to the Ephorate of Antiquities of Heraklion and the Ephorate of Antiquities of Lasithi for granting me permission to study the material on Crete, and to the archaeological schools and institutes that assisted with permit applications: the American School of Classical Studies at Athens, the British School of Athens, l'École Belge d'Athènes, l'École Française d'Athènes, and Scuola Archeologica Italiana di Atene. On Crete, the staffs of the Institute for Aegean Prehistory Study Center for East Crete and the Heraklion Archaeological Museum deserve special mention for helping me comb large storerooms to find the smallest of pots.

Since my research employed material and data from 13 archaeological sites across Crete, the generosity of other archaeologists and academics was vital to its success, and I am indebted to those who welcomed me into their apothekes, dighouses, and museums in the summers of 2018 and 2019: Giorgia Baldacci, Holly Barton, Philip Betancourt, Tom Brogan, Matt Buell, Gerald Cadogan, Ilaria Caloi, Filippo Carinci, Kostis Christakis, Nicola Cucuzza, Tim Cunningham, Jan Driessen, Marianna Figuera, Paula Gheorghide, Luca Girella, Sean Hemingway, Eleanor Huffman, Kapua Iao, Carl Knappett, Rachel Kulick, Charlotte Langohr, Quentin Letesson, Colin Macdonald, Sandy MacGillivray, Iro Mathioudaki, Pietro Militello, Nicoletta Momigliano, Jerolyn Morrison, Irene Nikolakopoulou, Maia Pomadère, Jean-Claude Poursat, Catherine Pratt, Dario Puglisi, Joseph Shaw, Maria Shaw, Jeffrey Soles, Evgenia Tsafou, Eleni Tziraki, Leonidas Vokotopoulos, L. Vance Watrous and John Younger.

My sincere gratitude to Carl Knappett who has not only been a supportive and encouraging mentor throughout my graduate education, but who also provided invaluable feedback on this manuscript.

To my husband, Jonathan. Thank you for being there from the beginning, among crates of pottery on Crete, for your map-making skills along the way, and for your love and support every day since. And finally, to Ronan, who came into the world as these pots were shared with it. Our love for you is anything but miniature.

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## Δύο μεγέθη μικρότερα: δύο κατηγορίες μικρογραφικής κεραμικής στη Μινωική Κρήτη

Συχνά θεωρημένα ως τελετουργικά αναθηματικά ή παιδικά παιχνίδια, τα μικρογραφικά κεραμικά αγγεία στο Αιγαίο της Εποχής του Χαλκού έχουν προσελκύσει ελάχιστη ενδελεχή μελέτη. Η παρουσία τους στα ιερά κορυφής, ιερά άντρα, και ιερά στην Κρήτη έχει οδηγήσει στην άκριτη σύνδεση τους με τελετουργική δράση, ακόμα και εκτός ιερών χώρων. Όταν τα μικρογραφικά αγγεία βρίσκονται σε οικιακούς χώρους, συχνά απορρίπτονται ως αντικείμενα οικιακής τελετουργίας ή απλά παιχνίδια. Όμως τα μικρογραφικά αγγεία, ποικίλα σε μορφή και ανασκαφικά συμφραζόμενα, είναι τόσο συχνά σε αρχαιολογικές έρευνες σε Μινωικούς οικισμούς που αξίζουν

περαιτέρω συστηματικής έρευνας. Εξεταζόμενα παράλληλα με την πληθώρα του Μινωικού υλικού πολιτισμού μικρής κλίμακας, συμπεριλαμβανομένων των ειδωλίων, των σφραγίδων, των μικρογραφικών τοιχογραφιών, και των ομοιωμάτων, η μικρογραφική κεραμική φαίνεται να είναι μια όψη μιας μεγαλύτερης σημειωτικής ιδεολογίας – που είναι πολύ εξειδικευμένη στη γλώσσα και τη δύναμη της μικρογραφίας. Αναλύοντας 504 μικρογραφικά αγγεία από δεκατρείς θέσεις στην κεντρική και ανατολική Κρήτη, αυτό το άρθρο ερευνά το μεγάλο εύρος τύπων των μικρογραφικών αγγείων που χρησιμοποιούνταν στην Πρωτοανακτορική και Νεοανακτορική περίοδο και χρησιμοποιεί την ανάλυση των ανασκαφικών συμφραζομένων για να εξάγει τις έννοιές τους. Η ανάλυση των ανασκαφικών συμφραζομένων και των δεδομένων αποκαλύπτει δύο διακριτές κατηγορίες εντός του συνόλου των μικρογραφικών αγγείων: «μικροσκοπικά μικρογραφικά» και «μικρά μικρογραφικά» αγγεία. Ενώ τα μικροσκοπικά μικρογραφικά αγγεία ήταν όντως εγγενώς τελετουργικά, τα μικρά μικρογραφικά χρησίμευαν σε μια ποικιλία πρακτικών λειτουργιών στον κόσμο της Μινωικής Κρήτης και δεν θα πρέπει να θεωρηθεί ότι σχετίζονται με τελετουργικά. Για να διαφοροποιήσουμε μεταξύ των κατηγοριών, εξετάζονται η σχέση ανάμεσα στο μικρογραφικό αγγείο και το πρωτότυπό του, καθώς και η σημειωτική σημασία του. Εφαρμόζοντας τις θεωρήσεις της εικονικότητας και της δεικτικότητας του Peirce στις δύο αυτές κατηγορίες, η χρήση και η σημασία των μικρογραφικών αγγείων της Εποχής του Χαλκού διαφωτίζεται περαιτέρω, στην τελετουργία και πέρα από αυτή.

Μετάφραση: Στ. Ιερεμίας