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‘Metal assemblages in Late Bronze Age Greek mainland funerary contexts: an investigation for their identification as functional metal hoards’

By

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DECLARATION

I certify that:

a) The following dissertation is my own original work.

b) The source of all non-original material is clearly indicated.

c) All material presented by me for other modules is clearly indicated.

d) All assistance received has been acknowledged

ABSTRACT

Bronze Age metal hoards in Europe have been extensively studied with a focus on their intended purpose and the reason/s behind their survival in the archaeological record, but definite answers cannot be given. A similar issue is also encountered in the Late Bronze Age Aegean more specifically and debate exists whether the increase in metal hoarding in the final centuries of the Late Bronze Age in the Aegean is the result of a copper/bronze shortage or abundance. Both in the Aegean and wider Europe, most scholars studying metal hoards are focusing on those from non-funerary contexts, dismissing the idea that metal assemblages in tombs interpreted as grave goods may also be hoards and which may have even been intended to be retrieved in the face of poverty and/or a metal shortage. This possibility has only been briefly looked at by Greek scholars and archaeologists and so the purpose of this thesis is to study further this possibility using the case studies of the Late Bronze Age tholos tombs at Kokla and Nichoria and the chamber tombs 2, 7 and 10 at Dendra in the Peloponnese. The research questions that are answered in this project are: *can the content and context of selected non-funerary metal hoards provide any clues for their identification? Are there content similarities between funerary metal assemblages and non-funerary metal hoards? Could the funerary metal assemblages be retrieved from the tomb and put back into circulation? Can a metal shortage be responsible for the increase in metal hoarding on the late LBA Greek mainland?* Through the study of metal assemblages from these tombs that are not clearly associated with any burials and their comparison to selected non-funerary hoards, also from the Late Bronze Age Greek mainland, this thesis shows that there are significant similarities between the two in the content and to some extent even the context. It concludes that these funerary metal assemblages can reasonably

be considered as retrievable hoards to be used in times of need. The availability of scrap metal, the good-quality bronzework and the Linear B tablets from Pylos are argued to indicate that there was not a copper/bronze shortage on the mainland in the final centuries of the Late Bronze Age. Therefore, this research also concludes that the rise in metal hoarding during that time probably does not relate to an actual copper/bronze shortage.

TABLE OF CONTENTS

ABSTRACT……3

LIST OF FIGURES……7

LIST OF TABLES……8

ACKNOWLEDGEMENTS……10

LIST OF ABBREVIATIONS……11

INTRODUCTION……12

CHAPTER 1. Literature review……19

1.1 Metal hoards in prehistoric Europe and Aegean scholarship and research……19

1.2 My definition of a hoard……39

CHAPTER 2. Metal assemblages in LBA Aegean non-funerary contexts……41

2.1 The LBA Greek mainland hoards……42

2.2 LBA Aegean hoards: the physical state of the content……51

2.3 Discussion……60

2.4 Reasons for the deposition of these hoards……67

2.5 Concluding remarks……68

CHAPTER 3. Metal assemblages in funerary contexts……70

3.1 The tombs……72

3.2 The tombs and their owners……82

3.3 Grave goods/funerary ritual implements purely intended as such and grave goods/funerary ritual implements intended for more than just that……..92

3.4 Concluding remarks……97

CHAPTER 4. Discussion and concluding remarks……99

4.1 A summary of the thesis findings……..100

4.2 Hoarding practices in the EH, MH, and LH (EBA-LBA) periods on the Greek mainland and the late 13th-12th c. metal shortage……102

4.3 Comparison of funerary and non-funerary metal assemblages and the 'legal looting' of the dead……115

4.4 Concluding remarks……121

BIBLIOGRAPHY……125

LIST OF FIGURES

1 The LH IIIB2 (terminus post quem) shaft in the House of Tripods……..17

2 BA European hoard categorisation based on context……..20

3 BA European hoard categorisation based on content……..22

4 EBA, MBA and LBA Greek hoards of the mainland only……..42

5 An example of a cleaver……51

6 Map showing the locations of Kokla (Kokla tholos tomb), Nichoria (MME tholos tomb) and Dendra (chamber tombs 2, 7 and 10)……..71

7 The LH I-IIIB Kokla cemetery……..73

8 The Mycenaean-Protogeometric cemetery at Nichoria……..74

9 The LH IIA-IIIB cemetery at Dendra……..75

10 The bench in the burial chamber of the LH IIB/IIIA tholos tomb at Kokla……87

11 The LH IIIA-B MME tholos tomb from Nichoria……87

12 Map showing the locations of the Uluburun and Cape Gelidonya shipwrecks……111

LIST OF TABLES

1 BA Aegean chronology……13

2 Spyropoulos' types and definitions of LBA Aegean hoards……..28

3 Blackwell's LBA Aegean hoard categorisation……34

4 Two categories into which the Mylonas, Tsountas, Athens Acropolis, Poros Wall, Orchomenos, Anthedon, and Thebes (Arsenal) hoards fall into according to Blackwell……35

5 The LBA Greek mainland hoards of Poros Wall, Mylonas, Tsountas, Athens Acropolis, Orchomenos, Tiryns and Anthedon and their content, findspot & context and categorisation……..43

6 Physical state of the contents of the Poros Wall hoard of Mycenae in Argolis……..52

7 Physical state of the contents of the Mylonas hoard of Mycenae in Argolis……..53

8 Physical state of the contents of the Tsountas hoard of Mycenae in Argolis……..54

9 Physical state of the contents of the Tiryns hoard of Tiryns in Argolis……55

10 Physical state of the contents of the Athens Acropolis hoard of Athens in Attica……..58

11 Physical state of the contents of the Anthedon hoard in Boeotia……..59

12 The rest of the LBA mainland hoards (see **Fig. 4**) that contain tools from the toolkit of the hoards studied……..64

13 Date and topographical notes of the LBA tombs at Kokla, Nichoria and Dendra selected for study on this thesis……..72

14 Burials and their associated metal and non-metal artefacts of the LBA tombs at Kokla, Nichoria and Dendra as they were retrieved during excavation……..76

15 Metal and non-metal artefacts and architectural features (e.g. pits, cists and benches) that are not directly associated with burials in the LBA tombs at Kokla, Nichoria and Dendra……79

16 Dimensions of the tombs under study and of the other tombs of the same cemetery (where available)……..88

17 EH-MH Greek mainland hoards……103

18 This table summarises the contents of LH mainland hoards of **Table 5** (Chapter 2) for comparison purposes……..105

19 This table summarises the different kinds of material (metals and non-metals) represented in the LH mainland hoards according to **Table 5**……..106

20 This table summarises the contents of the LH funerary metal assemblages that I have considered as more than "pure" grave goods and funerary ritual implements in **Table 15**……..116

21 This table summarises the different kinds of materials (metals and non-metals) represented in the LH funerary metal assemblages that I have considered as more than "pure" grave goods and funerary ritual implements……117

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LIST OF ABBREVIATIONS

ATR – Agia Triada

BA – Bronze Age

C. – Circa

EBA – Early Bronze Age

EC – Early Cycladic

EM – Early Minoan

IA – Iron Age

LBA – Late Bronze Age

LC – Late Cycladic

LH – Late Helladic

LM – Late Minoan

MBA – Middle Bronze Age

MC – Middle Cycladic

MH – Middle Helladic

MM – Middle Minoan

MME – Minnesota Messenia Expedition

NW – Northwest

UMME – University of Minnesota Messenia Expedition

INTRODUCTION

In the BA Aegean archaeological record we encounter different types of metal including copper and its alloy – bronze, tin, lead, gold and its alloy – electrum, silver, and iron used for the manufacture of a wide variety of objects, from tools to personal ornaments. The metals' major advantage over other materials such as stone and clay is that they are recyclable. For example, once a metal object becomes damaged beyond further usage or repair, it can be remelted and cast into a new identical object or something completely different and be used again or exchanged (Sherratt 2000, 83). This means that metal by-products produced from the manufacturing of metal objects, such as casting waste and filings, can also be gathered, remelted, and made into objects. Indeed, as will be seen in this thesis, such material forms part of the content of Aegean LBA foundry hoards that supposedly belonged to bronzesmiths. Other hoard types in the Aegean include merchant's, craftsman's, personal hoards, and votive, and they turn up in various contexts such as in citadels, domestic and storage buildings, wells, buildings foundations, and in unknown contexts (stray finds). In the Aegean, metal hoarding is observed since the EBA but intensifies in the LBA (see **Table 1** for BA Aegean chronology), and it has been suggested that a metal shortage in the late LBA Greece is reflected in the structure of several Greek mainland hoards (Blackwell 2018, 509-10, 517-8, 522, 534).

There are different definitions of what may constitute a hoard, ranging from the intentional deposition of more than one object on one occasion, to the unintentional, or even the gradual formation of them (Spyropoulos 1972, 1; Harding 2000, 352-3; Bradley 2013, 122; Blackwell 2018, 510). However, there is disagreement in European and Aegean scholarship whether metal assemblages in tombs can also be the result of hoarding. Harding (2000, 352-3) and Blackwell (2018, 510) believe that hoards are assemblages found in non-funerary contexts and that funerary assemblages should not be seen as hoards because they believe that, without expanding further, the intentions behind their deposition are different from that of hoarding. Spyropoulos (1972, 1), Iakovidis (1982, 226), Wells (1990, 126-7), Paschalidis and McGeorge (2009, 81, 84) and Paschalidis (2018, 464), on the other hand, suggest that funerary metal assemblages can also be the result of hoarding, that they were even intended to be retrieved and put back into circulation in case of poverty or metal shortage. This thesis aims to contribute to Aegean scholarship on the topic of metal

hoarding with an in-depth discussion on whether selected funerary metal assemblages (the focus of this project) can be identified as retrievable hoards, testing the proposals of Spyropoulos, Iakovidis, Wells, Paschalidis and McGeorge, and Paschalidis.

Dataset and methodology

My approach to test these proposals is to compare the contents of funerary metal assemblages using a range of selected case studies to non-funerary metal assemblages that have been considered as hoards by both Spyropoulos and Blackwell, but I will also include a study of European metal hoarding more generally. This will allow me to show any similarities and/or differences that may have existed between these different kinds of metal assemblages – this is a task not included in any of the earlier scholarship on the topic. For my desk-based approach, I will systematically study in detail the funerary metal assemblages based on excavation reports and primary and secondary scholarship, recording in detail the kinds of artefacts and the metal they are made of, their context within the tomb, as well as how these assemblages have been perceived by excavators and scholars and why. The same approach will be used for the study of the LBA Greek mainland metal hoards. This will involve the gathering and detailed examination of data of individual metal hoards to understand the reasons that may have led to their deposition, what metals and kinds of metal artefacts were hoarded, the physical state of the artefacts, what types of metal hoards we can identify, and their physical and historical contexts.

For the purposes of this thesis, I will be examining funerary metal assemblages from the Peloponnese from the tholos tomb of Kokla (LH IIB-IIIA) and chamber tombs 2 (LH IIIA), 7 (LH III) and 10 (LH IIIA) of Dendra in Argolis and the MME tholos tomb of Nichoria (LH IIIA-B) in Messenia. Therefore, the geographical and chronological scope is the LH IIB-IIIB southern

Greek mainland. These tombs except Kokla were some of the examples of tombs containing metal hoards given by Paschalidis and McGeorge (2009, 84) and Paschalidis (2018, 464). These tombs fulfil the criterion that the *metal assemblages in the tombs must not be directly associated to burials (if any) in the tomb at the time of excavation* which stems from the scholarly view that during LBA rites of secondary burial (reburial/redeposition of the deceased in the tomb) in the Aegean the bones became part of the ancestors and lost their individuality, and the grave goods became distant from their owners, meaning that the grave goods could have been legitimately removed by family members during the post-funerary rites, or to be used in future burials (e.g. Baboula 2000, 72, 75; Boyd 2014b, 201; Paschalidis 2018, 464). The Kokla tholos was not given as an example by these scholars, but since it also fulfils this criterion, it is also included in the study. I will also examine the evidence for secondary burial rites which account for the disassociation of the metal assemblages from burials in these tombs, as believed by Paschalidis and McGeorge (2009, 84).

A factor that affected the choice of these specific tombs for study was the variability in the metal assemblages. I want to include metal assemblages with as many different artefacts and kinds of metals (bronze, gold etc.) represented in them as possible, in order to see to what extent they compare to LBA Greek non-funerary metal hoards, and these tombs fulfil this. Therefore, tombs that have metal assemblages not directly associated with burials but do not add any variability in the dataset are omitted to help keep the discussion more detailed. For example, the LH IIIA-B Tsountas chamber tombs 2 and 5 contain the same content of bronzes and gold artefacts seen in several tombs that will be under study (Chapter 3) such as tools, vessels, jewellery, and toiletry together with other non-metal finds (Tsountas 1888, col. 137-8, 173-4; Paschalidis and McGeorge 2009, 84). The LH IIIC chamber

tomb 6 of Palaiokastro, contained bronzes similar to the tombs under study including weapons, tools, and jewellery/ornaments (Demakopoulou and Crouwel 1998, 273-6, 282-3). The metal assemblages of these three tombs do not add any significant variability in terms of objects and metals nor in the overall richness of the tombs. Finally, the LH IIIB2 (terminus post quem) shaft in the House of Tripods contained a primary burial furnished with twenty double axes and an unidentified tool, all bronze, and four bronze tripod cauldrons and a clay vessel which were placed on a wooden plaque that sealed the grave (Onasoglou 1995, 25-9; see also Pl. 9-15). Although the bronze cauldrons are not directly associated with the burial, which would make them fit the criterion above, since the burial is primary, they would not have been placed there as part of secondary funerary rites, and so I believe they were only placed above the deceased on the plaque because there was not enough space for them in the shaft (**Fig. 1**). Therefore, this grave seems to be problematic and so it is excluded. These tombs were the rest of the examples of tombs containing metal hoards provided by Paschalidis and McGeorge and Paschalidis (2009, 84).

There is a limitation/disadvantage in comparing funerary metal assemblages from the tombs chosen with non-funerary hoards. Both kinds of metal assemblages date to the LBA, but may not always come from the same period of the LBA (e.g. LH IIB, IIIA, IIIB etc.). Although it is still possible to compare the contents and see whether funerary metal assemblages resemble non-funerary hoards, it is not possible to get an accurate picture of the kinds of metals and metal artefacts chosen to be deposited in tombs and hoarded outside tombs in a particular period of the LBA. The inclusion of the LH IIIC chamber tomb from Palaiokastro would have contributed towards this, but instead, the variability in the dataset has been prioritised.

The research questions that will lead the research of this thesis are the following:

A) Can the content and context of selected non-funerary metal hoards provide any clues for their identification?

B) Are there content similarities between funerary metal assemblages and non-funerary metal hoards?
C) Could the funerary metal assemblages be retrieved from the tomb and put back into circulation?
D) Can a metal shortage be responsible for the increase in metal hoarding on the late LBA Greek mainland?

This is an essential research to be carried out because it will not only further our knowledge and understanding of Aegean funerary and non-funerary metal assemblages, but as a result also study the possibility of the tombs being multipurpose ('houses' for the deceased and storage facilities), therefore expanding on the different contexts that hoards can be found, both in the Aegean but potentially in the wider Europe too.

In terms of the organisation of the thesis, Chapter 1 is a review of important scholarship on BA hoards and the different definitions of a hoard and my preferred definition. Chapter 2 is the study of the content and context of the non-funerary metal hoards that will be compared with the funerary metal assemblages. Chapter 3 deals with the examination of the funerary metal assemblages and their contextualisation within their wider context. The final chapter, Chapter 4, is a discussion on whether a metal shortage may have been responsible for the increased metal hoarding in the late LBA Aegean. It is also concerned with the comparison of the content of the non-funerary and funerary metal assemblages and whether the latter can be considered retrievable hoards. It ends with the conclusions that can be drawn from this research.

CHAPTER 1. Literature review

This chapter reviews previous scholarship on LBA European and Aegean metal hoards and hoarding practices, discusses key issues regarding the definition of the term 'hoard', the different types of hoards and the (possible) reasons behind metal hoarding, and concludes with my own suggestion on the most appropriate definition of a 'hoard'.

1.1 Metal hoards in prehistoric Europe and Aegean scholarship and research

In 2013, Bradley discussed hoards and the deposition of metalwork in BA Europe and addressed the problems of interpreting metal hoards in the archaeological record. Bradley (2013, 122) defines hoards as 'collections of buried objects that were apparently deposited together on the same occasion'. He notes that, except that hoards can help establish a chronological horizon for the manufacture of different metal objects, recognise metalworking styles and communication patterns, they may also act as an indirect political historical document because BA metal hoarding reached its peak in certain areas during periods of crisis, also marked by the building of hillforts which indicate warfare, therefore their concealment relating to safekeeping (Bradley 2013, 122). For example, in the Urnfield period of the LBA in southern Germany, hostilities marked the construction of hillforts and the increase in the deposition of metal hoards (Harding 2000, 355). Similarly, in the LBA Greek mainland too, although hoards appear throughout the BA, their increase in the late 13th and 12th centuries coincides with the fall of the palaces and the crisis and a possible metal shortage during these two centuries (Blackwell 2018, 509-10, 521). I will return to this later where I investigate the reason/s behind the practice of metal hoard deposition in the LBA Aegean. However, in other parts of LBA Europe, increased metal hoarding does not coincide with hillfort building; for example, in Britain and Ireland hoarding peaked in the

Ewart Park/Dowris phase of the LBA period but hillfort building had already started before that period (Harding 2000, 355). The conclusion that can be drawn from these points is that, even though crisis might have increased the frequency of hoarding in certain areas, it does not mean that it is a universal phenomenon and that safekeeping was necessary only for turbulent periods. Let us not forget that metal assemblages could also represent accidental losses (Harding 2000, 364).

There are indications that BA European hoards were associated with features of the natural landscape but, according to Bradley (1998, 5, 9; 2013, 124-5), categorising hoards based on context into dry-land and wetland hoards creates problems and is a far too simple of a distinction (**Fig. 2**):

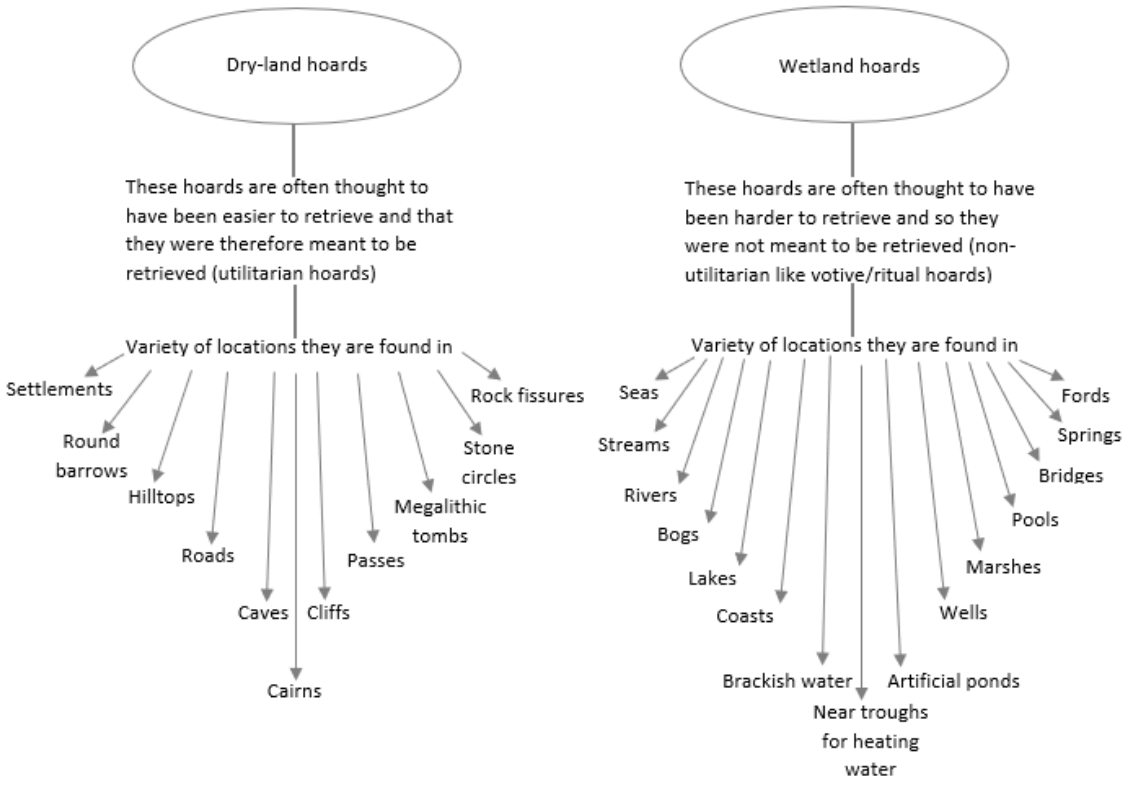

Fig. 2: BA European hoard categorisation based on context. Image produced by the author according to Bradley 1998, 5, 9; 2013, 124-5.

Many of the dry-land hoards were never recovered, and many others that were clearly marked by a boulder, outcrop, or a mount were not recovered either (where they could have been, hypothetically, because they were marked) (Bradley 1998, 10; 2013, 124). Bradley (2013, 124) adds that this might have been the case because their recovery was forbidden. He does not explain why, but one could reasonably expect that if a hoard was intended as votive/ritual deposited for the gods, it should not be disturbed, probably because such as act would have been sacrilege. In this case, their marking may have served to indicate the place for further hoard deposition for the gods or for ceremonial gatherings. Here we may also consider that, hoards whose location was marked but they were not retrieved could be because their owner perished, as hypothesised by Spyropoulos (1972, 210) (see below for Aegean LBA hoards). In addition, some dry land hoards were buried too deeply, and therefore their retrieval would have been more difficult (Bradley 1998, 5). As for the wetland hoards, several of the sea hoards feature the same content as dry-land hoards (Bradley 2013, 124-5; 1998, 9). Also, hoards in different water environments can feature similar contents, but content can also differ between different kinds of water environments (Bradley 2013, 125). For example, in central Germany, swords are found in rivers, and small metal finds like pins are found in marshes, and in the English Fenland weapons are found in rivers and ornaments in still water (Bradley 2013, 125). However, there are cases where metal objects such as weapons, ornaments and tools as well as other objects such as horse harness were found together, fragmented, and mixed with metalworking residues, associated with burnt mounts close to water bodies, e.g. the LBA hoard from Isleham in Cambridgeshire (Britton 1960, 279-82; Bradley 2013, 125). So here, the distinction between dry-land and wetland hoards fades (Bradley 2013, 125). Dry-land metal hoards from south-east England were associated with fresh water, suggesting that the presence of water may

have also influenced the choice of deposition place for some dry-land hoards (Bradley 2013, 125). Bradley (1998, 5) also adds that the conditions of the initial deposition could have been different from the conditions they have been found today; they could have been initially deposited in wet environments, now dry, and vice versa.

According to Bradley (2013, 123-4), BA hoards have been misleadingly categorised based on three criteria, which can overlap (**Fig. 3**):

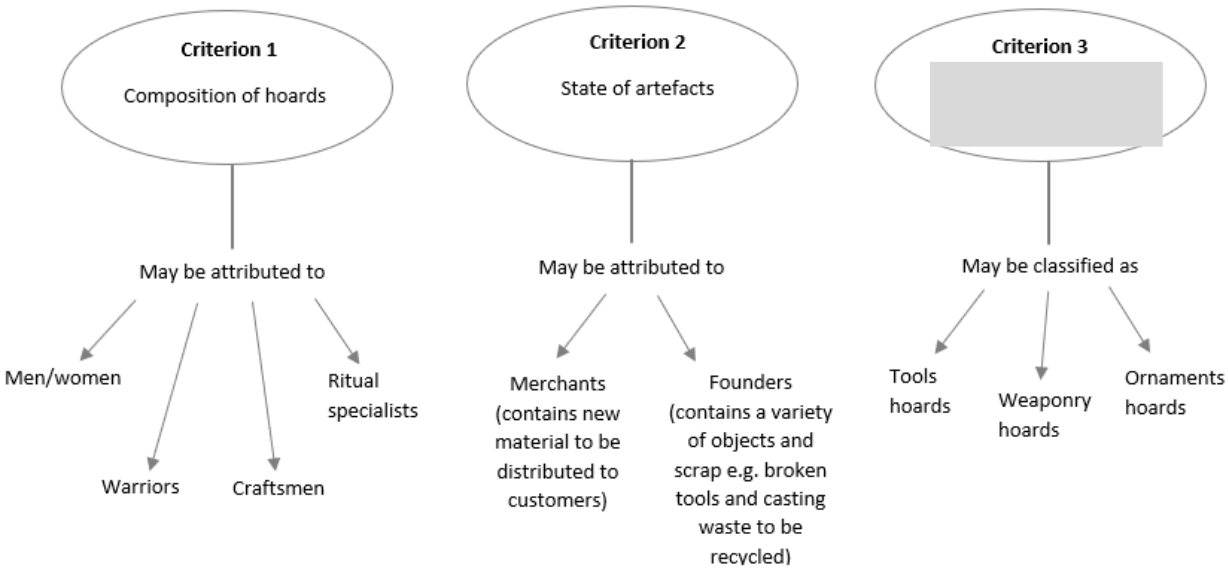

Fig. 3: BA European hoard categorisation based on content. Image produced by the author according to Bradley 2013, 123-4.

Elsewhere in his study, Bradley (2013, 134) also mentions another category that belongs under the third criterion, the 'mixed' hoard, which comprises of tools, weapons, and ornaments mixed together, breaking down this strict distinction (also Bradley 1998, 8-9). He also points out that categorising metal deposits based on the number of artefacts present such as single or multiple finds, also creates an issue because single finds could have originally been part of a larger collection of artefacts (Bradley 1998, 6). In his 2013 study, though, Bradley does not mention this kind of metal deposit categorisation, even though he discusses single metal finds.

Bradley then highlights three problems when interpreting hoards as personal or craftsman hoards on the basis of their content only: in hoards interpreted as personal valuables, why do these only contain metal artefacts and not any other materials? Only the hoards containing ceramics in central Europe seem to be the exception (Bradley 2013, 122). If hoards were deposited because the objects in them were of some value, then we should probably think that ceramics were also valued in some ways in some areas. Also, could these ceramic hoards represent refuse instead? Additionally, hoards may be hidden in places that we do not have access to, or are difficult to access, like wells, and certainly not every hoard has been discovered. This, therefore, does not give the full picture of hoarding. In Europe, hoards mostly contain bronze and gold artefacts, and iron hoarding is not near as frequent when iron is introduced, probably because copper, tin, and gold sources are scarce (Bradley 2013, 122-3). Secondly, why many hoards whose location seems to have been marked have not been retrieved? (Bradley 2013, 123). This has been discussed above already. Thirdly, why are most hoards of bronze deposited in remote places from the settlement where they would have been easier to retrieve? (Bradley 2013, 123). I think that one reason for that could have been the issue of security; perhaps, if a hoard was somebody's possessions intended to be retrieved (and not a non-retrievable votive/ritual hoard), it might have been thought that it would have been safer to deposit it further away from the settlement, where it would have been less likely to be found by another individual and steal it.

The physical state of the hoarded artefacts can be varied too (Bradley 2013, 125). Hoards may contain whole artefacts, or fragmented, or both (Bradley 2013, 128). The artefacts can be finished or unfinished, or significantly worn out from use, or all of these mixed together (Bradley 2013, 128). According to Bradley (2013, 128), hoards containing the by-products of

metalworking (like moulds, ingots, casting jets, slag, and crucibles) are not guaranteed they were functional hoards, to be melted down and manufacture new products, even though metal analysis does indicate this was happening in the BA. In addition, the scrap hoards' content is similar across assemblages, but regional differences based on local conventions seems to exist (Bradley 2013, 129). Here Bradley (2013, 129) adds that scrap hoards must have been more diverse when first deposited in the ground, and as material was removed to be reused, it was replaced by other, therefore not giving the image of the original hoard. I wonder, however, whether every item removed from the hoard would have necessarily been replaced by another.

To complicate matters further in regarding the utilitarian hoards as strictly utilitarian, Southern Scandinavia may provide evidence that the smiths of northern Europe were more than just craftsmen manufacturing goods (Bradley 2013, 129-30). Most BA cult houses there are found near cemeteries and graves and it is believed they were used for funerary rituals, ancestral worship, and communication with the deities (Goldhahn 2007, 280, 282). According to Goldhahn (2007, 299, 302, 306), one such cult house at Hallunda contained furnaces in which burnt human or animal bones were found, and these furnaces were also associated with bronzeworking material like tin, moulds, castings, crucibles etc. Goldhahn (2007, 303) suggests that these furnaces were possibly used for the sacrificial cremation of animals or humans, which would have raised the temperature high enough for bronze melting. Perhaps the smith was also a ritual specialist, carrying out sacrifices to ensure the transformation of raw material into finished goods safely and successfully (Goldhahn 2007, 303, 306; Bradley 2013, 130). This may have involved the smith, a 'great transformer' and 'Bronze Age cosmologist' (Goldhahn 2007, 314), to deposit some of the scrap metal as offerings to the deities (Bradley 2013, 130). That may be the reason why scrap hoards were

never retrieved, and therefore they might have not been utilitarian at all (Bradley 2013, 130). All these issues highlighted suggest how important the study of both the content and the context of the hoards is (Bradley 2013, 123).

Bradley then moves the discussion to the relationship of metal hoards with single metal finds and metal grave goods (Bradley 2013, 130). He argues that hoards and single finds have many things in common, for example, some single finds were originally part of a hoard and some single finds were also intentionally damaged or fragmented similarly to those of dry-land hoards (e.g. striking used weapons violently to prevent them from being usable before being deposited in River Thames) (Bradley 2013, 131). The variation in context of hoards also characterises single finds (Bradley 2013, 124; 1998, 6). Harding (2000, 361) also points out that single finds may have been deposited for the same reasons as hoards. Also, the same objects could have been deposited in hoards or as single finds in different periods of the BA or objects could have been grave goods in one phase of the BA but not in another (Bradley 2013, 131-2). Unfortunately, Bradley does not provide specific examples of phases in the BA where we see such differences in the deposition patterns of these objects. Bradley (2013, 134-5) also notes that ornaments, weapons, and tools may have been deposited separately in hoards if they were significant in a particular area, but they may have been mixed in hoards if their style and appearance started to become old-fashioned and deposited as votive offerings, or if they travelled to an area where they were not as distinct and important as they were in their place of origin, therefore being used as raw material for the smith. Certain valuable metal objects like ornaments of bronze or gold and maybe weapons too that could have been insignia, could have been deposited in tombs and hoards to withdraw them from circulation and prevent further usage to make sure they did not lose their value (Bradley 2013, 132-3). What this means is that, if a valuable/rare object remains

for long in circulation even if its original owner has passed away, it can lose its material value (Bradley 1998, 40-1) and ideological value and its special story could be forgotten because people are getting used to its presence.

All in all, Bradley (2013, 135) concludes that single metal finds and metal grave goods should also be studied extensively like the hoards and establish the relationship between them. Also, we should examine the act of hoarding in different phases and regions, and pay attention to the physical state and characteristics of individual artefacts (Bradley 2013, 135). He makes the very important point that modern researchers categorise metal assemblages as hoards, seeing them as "one" artefact, and that this might not have been how the past societies that deposited these items viewed them, and so we should study the artefacts separately (Bradley 2013, 135). Finally, he recommends that archaeologists should study European hoarding not only in the BA, but in earlier and later periods as well, and observe how the practice may be changing (Bradley 2013, 135-6). Also, it would be fruitful to see how ritual behaviour, which possibly also included hoarding, is affected when iron replaces bronze (Bradley 2013, 136). Bradley (2013, 136) also asks: Does the deposition of bronze and gold together mean that both metals were treated the same? And by the same people? Hoards and single finds should be examined while still in the ground and studied extensively within their spatial context, which has only happened on a small scale, to understand their relationship with topographical features such as settlements (Bradley 2013, 136-7).

I agree with Bradley's hoard categorisation. Clearly, the BA European hoards display enormous variation in their content and context, and therefore their categorisation cannot be simple. Particularly in the case of the dry-land hoards, I believe that their contextual variation is significant; why did hoards need to be deposited in such a varied context if they

all had the same purpose of being retrieved? Is it simply the fact that variation in the context cannot be avoided because in most cases it is beyond human control? Did topographical features served as natural markers of retrievable hoards, or did they have religious significance? This then means that some of these hoards would have been votive depositions and therefore non-utilitarian, unretrievable.

Turning to Aegean hoards, Theodoros Spyropoulos was the first to systematically examine Mycenaean hoards, in particular those of Tsountas (LH IIIB-C) (Mycenae), Mylonas (LH IIIB/B-C) (Mycenae), Poros Wall (LH IIIB-C) (Mycenae), Anthedon (likely contemporary in date with the other hoards), Athens (terminus ante quem LH IIIB), and Tiryns (likely LH IIIC) (Spyropoulos 1972). At the end of his study, he includes only a brief account of a hoard from Orchomenos (c. LH IIIC) because he became aware of this hoard only after the completion of his study of these hoards (Spyropoulos 1970, 265; 1972, 221). To describe these hoards Spyropoulos uses the Greek term 'θησαυρός' which in English translates to 'treasure', but in the introduction of his book it becomes clear that with this term he does not refer to assemblages of precious items only (as the term 'treasure' would make us assume). More specifically, he defines the term 'θησαυρός' as 'α) σύνολον αντικειμένων, ποσότης πράγματός τινος (Store) καί β) θέσις είς ήν τίθενται διάφορα αντικείμενα (Magazine)' (Spyropoulos 1972, 1). In English this translates as 'a) a set of objects, of some quantity (store) and b) a place/site where various objects are placed/deposited (magazine)' (my translation). He argues that there are five types of 'θησαυροί' for which he also gives definitions (Spyropoulos 1972, 1-2) (**Table 2**):

Unfortunately, Spyropoulos does not explain what he means with 'not the usual grave goods', but he does give the example of the chamber tomb 2 from Dendra (Spyropoulos 1972, 2).

I think it is important to mention here that in Greek there are several words that may describe a 'hoard', so except for 'θησαυρός' that Spyropoulos uses, other words include 'απόθεμα' and 'κομπόδεμα' (Stafilidis and Stafilidis, *Hyper Lexicon*). Also, Spyropoulos does not specifically attempt to distinguish between assemblages of non-precious and precious metals. Therefore, no matter if an assemblage is made up of precious or non-precious metals, he considers all as hoards.

Spyropoulos (1972, 2) argues that trader's and founder's hoards and hoards of precious items were hidden as a result of their owners' fear of losing them during periods of danger, and that the owners would have consequently chosen to hide them in a place that they would remember in order to retrieve them later.

Judging by the content of the hoards that he examines, Spyropoulos considers all to be founder's/smith's hoards, including that from Orchomenos (except for that of Tiryns which has been mainly categorised as a hoard of precious objects, while only a small part of it, e.g. its bronze slab ingot, could have been remelted or exchanged) (Spyropoulos 1970, 264; 1972, 4, 187, 190, 203, 221). Spyropoulos (1972, 203) notes that he considers the smiths to have been founders too, and so the smiths would have melted the metals and turned them into finished goods because there is no evidence that these two tasks were performed by two different people. These hoards contained agricultural, carpentry, masonry, metalworking, butchering, and leatherworking tools, weapons, toiletry items, vessels, jewellery/ornaments and other miscellaneous material such as raw material (e.g. copper

ingots and copper leaves), metal fragments and scrap metal (Spyropoulos 1972, 177-93, 195, 198-200, 202-3; Lowe Fri 2011, 53-65; Blackwell 2018, 522-4) (see Chapter 2). From these items, only toiletry and jewellery/ornaments are not consistently present in all hoards. There are variations in the types of tools, toiletry items, vessels, and weapons represented within the hoards, and variations also occur in the miscellaneous material (Spyropoulos 1970, 264; 1972, 177-93, 195, 198-200, 202-3, 221). Many of these items were worn out from use, ranging from heavily worn out to very little or not at all, and Spyropoulos (1972, 196-203) suggests that heavily worn out metal objects, scrap metal, metal fragments and raw material, would have been destined for melting/remelting, whereas tools, weapons, vessels, and toiletry items in good condition would have been ideal either to be those of smiths (in the case of tools), could have been retouched for further use or were those made by the smith. Spyropoulos dates these hoards based on the typology of the metal objects and on comparisons with similar, securely dated items from the wider Aegean and Mediterranean including from Crete, other Greek islands, Cyprus, Egypt and Italy, and where available on securely dated pottery from hoard contexts. He notes, however, that the lack of associated pottery and of excavation notes for many of the hoards render their dating difficult (Spyropoulos 1972, 3, 7, 98-176).

Spyropoulos identified evidence of destruction and/or abandonment of settlements in the LH IIIB and LH IIIC periods throughout Peloponnese and Attica, called by him as 'the great destruction' (i.e. the fall of the palaces in the LH IIIB which accompanied destructions and abandonment of many settlements; see Chapter 4) but, he notes that catastrophic events happened prior and after this event too (Spyropoulos 1972, 205-9). He suggests that the hoards of Poros Wall, Tsountas, Mylonas, Athens Acropolis and Anthedon do not indicate a metal shortage in the late 13th and 12th c., and the great quantities of copper oxhide ingot

fragments in the Poros Wall hoard instead indicates the great quantities of metal available to bronzesmiths (Spyropoulos 1972, 197, 199, 201, 203). He concludes that, except the Tiryns hoard and the Orchomenos hoard that he did not study in detail, all the other hoards were deposited for safekeeping because of the destructions and were never recovered because their owners perished or for other reasons that he does not mention they were unable to recover them (Spyropoulos 1972, 210), but as I pointed out in my review of Bradley's study, safekeeping would have happened anyway.

In my view, Spyropoulos has approached the issue of chronologically dating the hoards the right way because the context of a hoard is equally important as is the content, as Bradley also points out, even though context and content cannot always give us definite answers. By examining the context, Spyropoulos has also been able to provide a possible explanation behind the hoards' deposition, and this again proves how important the context of the materials we are examining is. Spyropoulos' opinion that the hoards were deposited because of the 'great destruction' sounds only partially right to me because, as mentioned earlier, in other parts of Europe tensions such as warfare which were responsible for hillfort building did not correspond to the intensification of metal hoarding. Therefore, this increase in metal hoarding on the mainland may have been coincidental. Also, destructions on the Greek mainland are observed since the LH IIIA (Kilian 1996, 67; Dakouri-Hild 2001, 106; Middleton 2010, 14), and this further strengthens this point.

Forty-six years after Spyropoulos' study, Blackwell re-examined the same hoards apart from that of Tiryns, added another one from the Arsenal at Thebes (probably LH III) to the discussion and studied systematically the Orchomenos hoard (Blackwell 2018, 522; Appendix, 6-7). Blackwell examined the individual components of the hoards and identified

the likely function of those artefacts separately, and by considering the context of the hoards, it was possible to identify their most likely origin of most of them and their indented function. He has recognised a toolkit (consisting of a double axe, a broad and narrow chisel, a knife and a sickle-some of which repeated several times in a single hoard) present in almost all examined hoards, which has led him to suggest that these hoards were carefully formed and that the elite context of most of them may suggest palatial influence in their formation (Blackwell 2018, 522, 526).

According to Blackwell (2018, 510), 'metal assemblages may have been in storage, buried in the ground, or hidden deliberately' and 'the deposition of hoards may have been purposeful or by chance, and hoards may represent single deposits or gradual accumulations of metal (particularly in the case of assemblages in storage)'. Kleitsas *et al*. (2018, 90) suggest that the hoard from Tiryns (known also as the 'Tiryns Treasure') was formed gradually over a period of centuries, and Blackwell (2018, 521) acknowledges that although its contents date to different phases, its deposition dates to the LH IIIC. For this reason, he considers Bradley's (2013, 122 – see above) definition of hoard as more 'restrictive' (Blackwell 2018, 510). However, Blackwell does not delve enough into the issue of the gradual accumulation of metal in storage areas, for example, how and why it happened. I would like to comment on what Blackwell (2018, 510) has put forward: first, he argues that metal assemblages in funerary contexts such as the large amounts of copper and copper alloy artefacts from the Tomb of the Tripods of Mycenae, cannot be considered hoards because they 'represent a depositional practice different from that of metal hoarding'. He also says that 'hoard', 'cache', and 'assemblage', terms which he uses interchangeably in his study, must not be confused with precious metals such as gold and silver, called 'treasures' which are the result of status-displaying activities (Blackwell 2018, 510, 518). Therefore, to expand on his

definition of a hoard given above, he uses the term 'hoard' as 'groups of non-precious metal objects from non-mortuary contexts' (Blackwell 2018, 510). Blackwell does not elaborate on his first point, but Boyd (2014b, 193) argues that it is widely believed that objects deposited in tombs are objects for the dead to use in the afterlife or are items that are only placed with the deceased to connote his/her wealth and status they owned/held in life. But why are they not considered hoards? The metal and non-metal funerary assemblages are assemblages deposited deliberately in the tomb and some of them are even disassociated from burials and placed in pits in the floor of the tombs, resembling non-funerary hoards (Chapter 3). Regarding his second point, I believe we should keep in mind what Bradley (2013, 132-5) mentioned above: that ornaments of bronze and gold (as well as weapons and tools) in BA Europe could have been deposited in hoards too, therefore implying that hoards can be made up of precious objects too. As mentioned above, Spyropoulos (1972, 1) also accepts both Mycenaean funerary metal assemblages and assemblages of precious objects as hoards, a view that clearly contrasts with Blackwell's definition of a hoard and treasure here, which in turn suggests that Spyropoulos' perception of a hoard might be different to or, rather, more flexible than Blackwell's.

According to Blackwell (2018, 517-8), a hoard might have been intended as a utilitarian or non-utilitarian (**Table 3**):

Table 3: Blackwell's LBA Aegean hoard categorisation.

	Type of hoard	Definition/description	Bibliographical references
Utilitarian	Personal	These hoards that is deposited all in one single place and is intended to be retrieved in the future. They contain a wide range of objects such as different types of tools, vessels, raw material such as ingots, weights, and scrap metal. They have been found in locations such as domestic contexts, palatial citadels, wells, as well as in later contexts like a classical temple (e.g. the Anthedon hoard) in which case they are not the original contexts.	Blackwell 2018, 517-8, 526-7
	Craftsman's		
	Trader's		
	Founder's		
Non-utilitarian	Ritual	These are deposited in places other than domestic contexts and are not meant to be retrieved, especially for religious ritual purposes, such as in wells and rivers, and they contain a small range of well-preserved objects.	
	Votive		
	Foundation		

Like Bradley, Blackwell (2018, 518) also points out that it is often difficult to label a hoard as utilitarian or non-utilitarian because they may have been intended as both (Blackwell 2018, 518). The utilitarian hoards may have been preserved because factors such as memory loss prevented its retrieval (Blackwell 2018, 518). I would also add that the owners might have perished. This last suggestion may be the answer or one of the answers in Bradley's question on why marked hoards had not been retrieved ending up being discovered by archaeologists today (Bradley 2013, 123).

Like Spyropoulos, Blackwell (2018, 524-5, 528-9, 531) has interpreted the hoards of Poros Wall, Athens, Orchomenos, and Anthedon as foundry deposits because of their oxhide ingots, broken tools, weapons and vessels, and other pieces of metal alongside toolkits in good condition. For the hoards of Tsountas and Mylonas, Blackwell (2018, 529) does not clearly state if they are foundry but implies that they are. The original deposition place of the Anthedon hoard is not known, but that of Mylonas and possibly Athens and Tsountas were found within citadels, the Poros Wall hoard was found near the citadel, and the Orchomenos hoard came from a well which Blackwell considers a secondary deposition context, but the tholos tomb of Orchomenos indicates the palatial character of the place

(Blackwell 2018, 526-8). The Athens hoard was found between fragmentary walls and the fortification walls of the Acropolis of Athens, but he does not specify the character of these BA walls (Blackwell 2018, 527). It is not yet known if Athens had a palace, and the only indications that one may have existed there is a column base and steps similar to those of the palace at Mycenae (Osborne 2020, 137). Therefore, although Blackwell (2018, 528) later states that this hoard was found within the citadel, I do not think it is appropriate. Even though it is not clear if the Tsountas hoard was found within the citadel at Mycenae, Blackwell later states that it was found within the citadel, which I believe it would not be appropriate to say given that its actual location is unclear (Blackwell 2018, 527, 529). Blackwell (2018, 527-9) considers the hoard from Thebes (Arsenal) to have come from within the citadel and that it represents palatial property, although the extend of the palace at Thebes is not decided yet.

According to Blackwell (2018, 528-9, 530-2, 534) these foundry hoards found within citadels and outside citadels, can be interpreted as such (**Table 4**):

Table 4: Two categories into which the Mylonas, Tsountas, Athens Acropolis, Poros Wall, Orchomenos, Anthedon, and Thebes (Arsenal) hoards fall into according to Blackwell. Note, however, that there are uncertainties regarding the context of some hoards, as seen already.

Context	Content	Interpretation	Bibliographical reference
Within citadels	They contain newly made material for the palace by semi-dependent smiths, damaged loaned tools (once good-condition tools given from the palace to smiths to work) and other objects possibly collected from the surrounding regions to be given out by the palace to smiths again for refurbishment or recycle, and raw metal like ingots. Examples: Mylonas, Tsountas, Athens Acropolis, and Thebes (Arsenal) hoards.	Palace stock	Blackwell 2018, 528-32, 534
Outside citadels	They are made up of many more damaged items to be melted down and raw metal to be used for production of new tools. There are also good-state tools probably to be used as models. Examples: Poros Wall, Orchomenos, and Anthedon hoards.	Metal allocations to smiths to produce artefacts for the palace	

Anthedon did not have a citadel, but the hoard from there may have originated from a Mycenaean centre because it contains almost an identical toolkit like the above hoards from Mycenaean centres (it is missing a broad chisel, but its trunnion/lugged axe may have served as a broad chisel) (Blackwell 2018, 522, 531).

Blackwell (2018, 510) makes also the very important point that, if we regard metal deposition as a result of social and political unrest, then this attributes a metal value to the hoards only, because we do not take into account the functionality of specific components of each hoard. For example, there were traces of wood fibre found in the Athens hoard, perhaps suggesting that some of the items were deposited whole (with their wooden handles), possibly because of their functionality and not solely of their metallic value (Borgna 1995, 31; Blackwell 2018, 528). A point made by Iakovidis (1982, 226) and supported by Blackwell (2018, 512) is that collecting broken and damaged artefacts might not necessarily suggest a metal shortage, because such items must have always been collected to be recycled and reused (Blackwell 2018, 512). Indeed, would have they wanted to waste metal when they could have reused it? For him, the presence of the toolkit in the 13th-12th century mainland hoards that he studied is linked with a shortage of metal indicated by Pylian Linear B tablets (the Jn and Ja series) written in the final years of the 13th c., which record a large number of smiths some of whom did not receive metal at all (Blackwell 2018, 514-7, 533-5). This metal shortage coincides with political, social, and economic tensions in the 13th c. that eventually led to the collapse of the Mycenaean palaces and its aftermath in the 12th c. BC (Blackwell 2018, 509-10). The relevant Linear B tablets will be examined in more detail in Chapter 4. Iakovidis (1982, 226) and Blackwell (2018, 517) also argue that the decline of metal vessels in tombs in the 13th century and their occasional appearance in hoards, and the few metallurgical workshops on the

mainland are also indicative of metal shortage on the mainland. Iakovidis (1982, 226) also argues that metal grave goods retrieval increased because of metal shortage, but unfortunately, he does not give any examples of tombs that display this. This metal shortage on the mainland, would have surely made metal being strictly controlled by the palace, indicated by the selection of specific tools and elite contexts of most of the hoards he studied (Blackwell 2018, 512, 533-5). So, is this metal shortage also responsible for the rise in the hoard deposition in the Aegean? This will be discussed in Chapter 4. Blackwell (2018, 513, 535) points out that a shortage of metal on Crete does not seem to have been the case and that metal was more abundant on Crete. Blackwell (2018, 509) says that in the mainland, hoards were deposited anyway and appear in quieter times too, not only in the troublesome transitional periods, but he does not give any examples. The only pre-Mycenaean hoards he mentions later in his study are those from Lerna and Malthi which date to the MH (Blackwell 2018, 521). As I mentioned earlier, this proves that safekeeping would have always been a concern, regardless of the conditions of a given period. The Aegean does not have many copper and tin sources and so protection of these and copper alloy is understood (Blackwell 2018, 510).

All in all, Blackwell's study identified a deliberate partial structure of these Mycenaean hoards by the palace, and that the palace carefully controlled metal (either raw material like ingots, functional tools, and scrap) because of the metal shortage (Blackwell 2018, 533-4). Also, hoards in palatial contexts are identified either as metal to be returned to the palace (palatial stock), or metal allocations for smiths (Blackwell 2018, 534). He rightly points out, that looking at the contents of a hoard as a whole might cause the problem of oversimplified interpretations, because different objects in a hoard might have been deposited for different reasons (Blackwell 2018, 518). For this reason, this thesis will follow

Spyropoulos' and Blackwell's hoard categorisations because their interpretations seem reasonable to me for the prehistoric Aegean hoarding practice. I will also examine the different kinds of artefacts in the funerary metal assemblages to provide a meaningful comparison with the artefacts in non-funerary assemblages. I believe that Blackwell's conclusions are justified by the approach and evidence he used. I appreciate this holistic approach in examining the hoards, as it is indeed the best way to try and understand their nature.

To sum up the review of these important studies of BA metal hoarding, there are several points to include here. First, it is evident that categorising hoards based on the type of content and its physical state and context like Bradley, Spyropoulos, and Blackwell have done, is the only way to understand their identity. However, the interpretations given in regards to whom they belonged, how they were destined to be used and the reason behind their deposition are only interpretations given by archaeologists and scholars today. Bradley has shown that BA European hoards cannot often strictly be categorised based on their context or content. Scholars should have an open mind about hoards because, for example, the fact that many BA European foundry hoards (as are interpreted today) have not been retrieved may at least some of them be evidence of Bradley's point; that they were deposited dedications by smiths to the deities. And this may also apply to some Aegean BA hoards. Therefore, my view is that there are no clear boundaries that determine to whom a hoard might have belonged, and especially also when it comes to why it was buried/hidden, if they were meant to be nonutilitarian, and how they would have been used if they were meant to be retrieved. However, as already pointed out, this thesis will follow Spyropoulos' and Blackwell's hoard distinctions for the reasons mentioned earlier.

Additionally, Bradley and Blackwell also argue that components of a hoard should be studied individually, and indeed, this is what Spyropoulos also did in his study, because not all components may have been deposited for the same reasons. This is particularly visible, for example, in BA Aegean foundry hoards, to which Blackwell and Spyropoulos have attributed different roles to different components of these hoards, e.g. damaged tools would have been melted down, whereas tools and other objects in good condition were either models for the smiths or the tools that the smiths used or their finished products. Also, another important point of Iakovidis and Bradley and supported by Blackwell to keep in mind for this research is that hoarding and recycling of metal happened anyway.

1.2 My definition of a hoard

From this literature review, we saw three different definitions of hoards. All three authors – Bradley, Spyropoulos and Blackwell – provide definitions that appear to be either accurate or partially accurate. I agree with Blackwell that Bradley's definition of a hoard is restrictive, although it can surely describe well a number of European BA hoards. Blackwell's addition that hoards could have also formed gradually and by chance makes, in my opinion, the definition more complete and more inclusive. However, merging the two definitions does not give a fully satisfactory definition of a hoard, and this is where it is important to bring in part of Spyropoulos' definition too, specifically that metal assemblages can be made up of precious metals too – as has also been implied by Bradley too. For the purposes of this thesis then, I define a hoard as *an assemblage of precious or non-precious metal items, formed intentionally or unintentionally in one occasion or gradually, which could have been deposited in the ground, or in a storage area, and which could have been utilitarian or nonutilitarian like a votive or ritual offering, or a mixture of both*.

What has not been explained by any of the aforementioned scholars is how many items make up a hoard, for example, if there are limits to the number of metal artefacts that a metal assemblage needs to consist of in order to be called a hoard. Therefore, to my definition of a hoard above, I will also add one criterion that Harding includes in his study of BA European hoards: that a hoard is an assemblage of more than one object, without a maximum number (Harding 2000, 352-3). Keeping this in mind, I aim to investigate whether LBA Aegean funerary metal assemblages could be regarded hoards like Spyropoulos believes and, more specifically, utilitarian hoards similarly to Iakovidis using the methodology specified in the introduction of the thesis. As seen, this is not supported by Blackwell, and Bradley does not argue whether he considers European BA funerary metal assemblages as hoards. If this is indeed the case, then I will add to my definition above that hoards can also be found in funerary contexts. I will avoid using the word 'treasure' to describe assemblages of precious metal items, either funerary or non-funerary. This is because what we consider 'treasure' today may not have been the case for the prehistoric Aegean people. For us, a treasure can be anything from an accumulation of items of gold and other precious metals to a person who we value and love. For the prehistoric Aegean people all metals could have been "precious", either because of their different properties and/or expenses generated in acquiring and processing them. The value of a metal (precious like gold and non-precious like bronze) may have particularly increased in times of metal shortage and poverty. That interpretations are based on modern standards is also acknowledged by Harding (2000, 354) who views the categorisation of hoards (merchant's, founder's, personal etc) as: 'a 'common-sense' interpretation of what past finds might have meant to their makers and owners'.

CHAPTER 2. Metal assemblages in LBA Aegean non-funerary contexts

This chapter presents and discusses the content and spatial context of the Aegean LBA non-funerary metal hoards that have been studied by Spyropoulos and Blackwell, namely those of Poros Wall, Tsountas and Mylonas from Mycenae, Thebes (Arsenal), Athens Acropolis, Orchomenos, Anthedon, and Tiryns (see Chapter 1). So far, at least 16 BA hoards have been excavated on the Greek mainland only (**Fig. 4**), but only LBA hoards are included in this thesis. Of these, only the aforementioned hoards are included because Spyropoulos (1972, 197, 199, 201, 203), argues that the hoards he studied do not indicate a metal shortage on the mainland at the time of their deposition. Blackwell (2018, 512, 514-6, 522-6, 533-5), on the other hand, concludes instead that the same toolkit present almost unchanged in all these hoards except that from Tiryns probably indicates a metal shortage in the late LH IIIB and LH IIIC (see Chapter 1). One of the research questions is whether there had been a metal shortage in the late 13th and 12th centuries and whether it accounts for the deposition of the hoards studied in this chapter and for the increased deposition of Greek mainland hoards in these centuries. This will be answered in Chapter 4. The rest of the LBA mainland hoards are similar in content with the hoards examined here (similar tools, weapons, vessels, toiletry and scrap/miscellaneous) (Blackwell 2018, 6-9, Appendix), and therefore, they do not add any more variability to the dataset. The hoard from Tiryns, on the other hand, is largely different in content than the rest of the LBA mainland hoards (Spyropoulos 1972, 177-93; Blackwell 2018, 6-9, Appendix) and it enriches the data for comparison with the funerary metal assemblages in Chapter 4. Therefore, the current chapter is concerned with these eight hoards only.

2.1 The LBA Greek mainland hoards

In this section, I present the aforementioned hoards grouped by date in **Table 5**. The hoards are labelled as 'utilitarian' or 'non-utilitarian' following their classification in earlier scholarship.

Before looking at the physical state of these hoards, it is important to first provide some explanation behind the categorisation of the tools. The tools in **Table 5** have been placed under the different categories based on Spyropoulos (1972, 195, 198-200, 202) and Blackwell (2018, 519, 523-4). Spyropoulos does not categorise the tools of the Orchomenos hoard, but I have based on both his categorisations of tools of the other hoards and Blackwell's. Spyropoulos (1972, 202-3) places the dirk/sword casting of the Athenian Acropolis hoard under the metalworking tool section intended to be used as raw metal to be melted down. However, I included it in the 'Other' section because I think that the casting itself is neither a tool nor a complete weapon since, like the Tsountas hoard sword casting and according to Blackwell (2018, 529), it would have needed refinement and sharpening to be usable. Similarly, Spyropoulos (1972, 195, 200) categorises cleavers as toiletry items, but Blackwell (2018, 6-7, Appendix) as tools. Iakovidis (1982, 223) too believes they are general choppers used in households or workshops. Therefore, I have included the cleavers in the 'Tools' section too because based on their morphology (**Fig. 5**) they look more like tools to me rather than items of toiletry. Regarding knives, Spyropoulos (1972, 195, 198-200, 202, 221) sometimes categorises them as toiletry items, as tools, or as weapons. Blackwell (2018, 524; 2018, 7-8, Appendix) includes them in the 'tools' category because they can be used for many different tasks, an 'all-purpose tool' – from food preparation to crafting. I believe the knives, being multi-purpose tools, could have also been used as weapons and as toiletry items (e.g. cutting hair), but I place the knives under the 'All-purpose' tools too. Spyropoulos (1972, 195, 198-200, 202) considers chisels as carpentry tools, but Blackwell (2018, 524) argues that they are masonry tools too, and so I have categorised them as such. Finally, Spyropoulos (1972, 195, 198-200, 202) considers the double axes as agricultural tools, but like Lowe Fri (2011, 53-65) and Blackwell (2018, 524), I

believe that it is more appropriate to consider them as carpentry, masonry (stone dressing) and even butchering tools, as experimental work has demonstrated. Therefore, any tool that is a type of axe or part of an axe, like half double axes, are also grouped as carpentry/masonry and butchering tools. Tools of unknown/undetermined use are included in the 'Other tool' section.

Also, there seem to be discrepancies in the types of objects and their numbers in the LBA mainland hoards. It is not always clear why this may be the case, but in some cases it might be due to differences in the identification of objects. For example, regarding the swords in the Mylonas hoard, Blackwell (2018, 7, Appendix) mentions three swords and Spyropoulos (1972, 52-4, 199) and Borgna (1995, 23) mention two swords, and a dagger. Unfortunately, Mylonas (1962, 406-7) does not mention any finds from the hoard in detail, other than three knives and double axes of which the number is not given. According to Molloy (2010, 404), weapons that are >30cm long (from the pommel to the tip of the blade) are daggers, and weapons over 30cm are swords. In the Mylonas hoard, two of the weapons are indeed over 30cm and so they are swords (48.6cm and 49.5cm) and the third weapon is 38.8cm (Spyropoulos 1972, 52-4) which would mean it is actually a sword, not a dagger as Blackwell (2018, 7, Appendix) categorises it. Finally, the different numbers that Tsountas mentions for many of the objects in the Tsountas hoard can be explained by the fact that Tsountas (1891, col. 25) mentioned the kinds of objects and their numbers for one of his hoards, and only the kinds of objects for the other.

2.2 LBA Aegean hoards: the physical state of the content

This section is the presentation of the physical state of the content of the hoards (**Tables 6**-**11**) presented in **Table 5**. Spyropoulos (1972, 9-78, 181, 184-9, 196, 198-200, 202, 221) describes and categorises in detail (in fact, in most cases, in more detail than the excavators and the rest of the scholars consulted) the objects from the Poros Wall, Mylonas, Tsountas, Athens Acropolis, Anthedon and Tiryns hoards based on their degree of wear/damage. Therefore, I have combined the information given by Spyropoulos and the excavators and other scholars where available. The hoards are then discussed to see if their classification as utilitarian or non-utilitarian is justified.

Argolis

Attica

Boeotia

Orchomenos hoard, Boeotia

Blackwell (2018, 525) mentions that all artefacts in this hoard are fragmentary, and that only a set of tools making up a toolkit are well preserved including a double axe, a broad chisel, a narrow chisel, a knife and a sickle (the latter only missing its tip) and a drill. One of the knives has its blade bent completely backwards and, similarly to the hoards of Anthedon and Athens Acropolis, its double axe halves were probably deliberately broken and placed in the hoard, as suggested by tool marks and damaged shaft holes (Blackwell 2018, 531-2).

Thebes (Arsenal) hoard, Boeotia

According to Blackwell (2018, 528-9) the hoard from Thebes (Arsenal) contain serviceable and broken tools, scrap metal and unused perhaps newly made objects.

2.3 Discussion

The hoards of Poros Wall, Mylonas, Tsountas, Athens Acropolis, Orchomenos, Anthedon and Thebes (Arsenal) (the Tiryns hoard will be discussed below) are classified as foundry (utilitarian), but Borgna (1995, 40-3) interprets those of Mylonas, Tsountas, and Athens as foundation hoards (**Table 5**).

Table 5 shows that there is a great variation in the kinds of objects in the hoards, including different types of tools, weapons, toiletry, vessels, jewellery/ornaments, and other miscellaneous scrap items and raw metal like ingots and slag. All hoards contained four or more different categories of objects, except that of Thebes. These hoards would therefore fit Bradley's (1998, 8-9; 2013, 134) definition of a mixed hoard (Chapter 1), although they either contain more groups of objects than just tools, weapons, and ornaments or one of these groups is substituted for another one. Additionally, Blackwell (2018, 525, 528-9, 531-

2) mentioned damaged and good-state tools in both the Orchomenos and Thebes hoards and **Tables 6-11** (again, excluding the Tiryns hoard) show that the LBA Aegean hoards presented have objects that are damaged and/or worn out to a varied degree, as well as good-state objects. Only that of Mylonas seems to have the most well-preserved objects and from the description given by Blackwell for the hoard from Thebes, I am not sure if it compares mostly to the Mylonas hoard or the others in terms of object damage/wear. Indeed, according to the definitions of foundry hoards of Spyropoulos (1972, 1), Bradley (2013, 123-4) and Blackwell (2018, 528-32, 534) in Chapter 1, I believe that the hoards of Poros Wall, Mylonas, Tsountas, Orchomenos, Anthedon, and Thebes are reasonably classified as foundry, judging by their content only. The Athens Acropolis hoard is lacking metal ingots or scrap metal, but its broken tools could have been remelted to make new items, and therefore it is also rightly classified as a foundry hoard. Not only that, but Blackwell (2018, 529) suggests that its sword/dirk casting was newly made, and I may suggest that this hoard may have originally included metal ingot(s) or miscellaneous scrap metal which could have been already used to make the dirk/sword casting. According to Spyropoulos (1972, 197, 199, 201-2) and Blackwell (2018, 528, 532), the good quality tools and other objects could have been the founder's/smith's tools, models or newly made tools/objects or to help make moulds. Rolfe (1889, 107) has suggested too that the good quality tools of the Anthedon hoard may be the products of the smith. It is noteworthy that, in Chapter 1, Bradley (2013, 134-5) noted that ornaments, weapons, and tools might have been mixed in hoards and have been used as raw material by the smith. This is indeed observed with two of the mainland foundry hoards, those of Tsountas and Anthedon, both containing tools, weapons, and ornaments among other objects. I think that, unfortunately, the immediate spatial context of these foundry hoards does not verify their categorisation

as foundry. For example, they were not found in or close to an area with metalworking/bronzeworking evidence, like a metal workshop (**Table 5**).

As seen in Chapter 1, Blackwell (2018, 528-32, 534; **Table 4**) divides LBA Aegean foundry hoards into those found in citadels and those found outside citadels. Blackwell (2018, 528-32) suggests that the Mylonas, Tsountas, Athens Acropolis and Thebes (Arsenal) hoards represent palace stock, either being items manufactured by founders/smiths or to be given to founders/smiths, because they came from within citadels and contain fewer damaged objects and whole metal ingots (to be rationed to smiths) in relation to the Poros Wall, Orchomenos, and Anthedon hoards. The latter hoards represent metal allocations from the palace to founders/smiths because they were found outside citadels and contain many more damaged items of which some may have been deliberately broken apart as metal rations, and scrap, and fragmented metal ingots (interpreted as calculated rations for the founders/smiths). These interpretations could be true to some extent, but the Tsountas and Athens hoards seem to have numerous damaged items, the very badly damaged artefacts not being much less than the rest in the Athens hoard (**Tables 8** and **10**). Also, as seen in Chapter 1, I think it is important to keep in mind that it is unclear whether the Tsountas hoard came from within the citadel, and it is also not certain if the Athens Acropolis hoard came from within a citadel, since the existence of one is questionable. The extent of the citadel at Thebes is also unclear (Kavvadias 1888, 30; Tsountas 1891, col. 23-5; Spyropoulos 1972, 8; Blackwell 2018, 524; Osborne 2020, 137; **Table 5**). Therefore, I would suggest that, if the Tsountas, Athens Acropolis, and Thebes hoards were actually deposited outside citadels, they could represent metal allocations instead, which had not been worked by founders/smiths yet (hence the whole metal ingots), and the good-quality items being models or, in the case of tools, the founders'/smiths' tools. In addition, the Anthedon and

Orchomenos hoards are problematic because they have been taken from their original contexts and redeposited (Rolfe 1889, 104; Blackwell 2018, 524; **Table 5**), although Blackwell does not explain why the well in which the Orchomenos hoard was found is not its original context.

Finally, there is a toolkit in all these hoards, as Blackwell (2018, 522) notes, which consists of a double axe, a narrow chisel, a broad chisel, a knife, and a sickle, the trunnion/lugged axe possibly serving as a broad chisel in the Anthedon hoard. According to Blackwell (2018, 522, 526-7, 531), the palatial context (in this case either found within citadels or outside, but still in an area that has a citadel) of the Tsountas, Mylonas, Poros Wall, Orchomenos, Thebes (Arsenal) and Athens (possibly) hoards suggests that this standardisation in tool selection may reflect palatial influence, and that those in areas without a palace, like Anthedon, may suggest that they originated from a palatial centre because of the same toolkit. However, I cannot help but think that the presence of all these tools in these seven hoards could also be coincidental, especially since these tools seem to be variously present in almost all the rest of the mainland LBA hoards, though never all together (**Table 12**).

Regarding the interpretation of the Mylonas, Tsountas, and Athens hoards as foundation deposits, Blackwell (2018, 518; Chapter 1) and Knapp *et al*. (1988, 238) describe such deposits as unretrievable dedications made up of a small range of well-preserved objects deposited in the foundation of buildings – often a temple – with the hope to provide protection and fortunes for the building and the people living in or using it. According to Borgna (1995, 18-21), the Mylonas, Tsountas and Athens hoards were deposited in walls of foundations of buildings inside the citadels, which did not feature intentional cavities for the purpose of storing items in them. This would have made them inaccessible and therefore, they were not meant to be retrieved. The artefacts in these hoards are worn out or damaged (Borgna 1995, 31-2; **Tables 7, 8** and **10**), and therefore, do not fully satisfy the definition of foundation deposits above, but Borgna (1995, 32) argues that votive deposits can be characterised by such state of preservation. One interesting point that Borgna (1995, 31-2) makes is that, as mentioned in Chapter 1, wood fibres found on artefacts from the Athens hoard, suggest that those items were deposited whole, and probably not solely for

their metal value; this is not common in foundry hoards, and it may suggest some sort of ritual destruction of these objects. This is interesting indeed, but why could objects in a foundry hoard not have been deposited whole? I believe that the wooden handles, if intact, could have still been included if the object only required some repair. According to Borgna (1995, 36-43), these hoards found in foundations of structures within-citadels, represent the efforts of the palatial elites to remove scrap bronze from circulation, through a foundation rite, to limit and control the amount of metal available in circulation, and prevent the emergence of independent metalworking industries. In this way, the palace tried to maintain the monopolisation of the acquisition, distribution and production of bronze which was in abundance in the wider Europe in the late LBA.

The issue regarding the palatial context of the Tsountas and Athens hoards has been already highlighted. As for the findspot of these three hoards in walls, although Mylonas (1962, 406) makes it clear that the hoard he excavated was found between two large stones of the retaining wall, Borgna (1995, 21) agrees that the hoard deposition took place after the construction of the wall. I wish to point out that, in the case of the Tsountas hoard, the excavator (Tsountas 1891, col. 25) did not specify whether the hoard that was found among house wall remains was indeed incorporated in the wall stones. Also, there is scholarly disagreement as to when the wall that contained part of the Athens Acropolis hoard was built (Spyropoulos 1972, 93 versus Borgna 1995, 19-20). Given the uncertainty in the absolute chronology of these hoards (**Table 5**) and in their exact findspot relating to the walls they have been associated with (or not), it is difficult to determine whether these were certainly foundation deposits. It is certainly an attractive viewpoint, and it does not sound unreasonable to be the result of the efforts of the palace to eliminate quantities of bronze from circulation.

Regarding the hoard of Tiryns, it is interpreted as a personal hoard of precious objects (**Table 5**). It definitely fits the image of a hoard of precious items, as defined by Spyropoulos (1972, 1; Chapter 1), though it also contains bronze items. The bronze ingot and the fragment of the gold ingot, as well as its damaged gold and bronze items (**Table 9**), could have been used for the manufacture of new metal objects (Spyropoulos 1972, 182, 187, 190). Spyropoulos (1972, 4, 190), however, refutes the foundry hoard hypothesis on the basis that it contains only very few damaged items. The Mylonas hoard, however, also contains very few badly damaged items and a copper ingot, and so I think that we could categorise part of the Tiryns hoard as a foundry. Furthermore, this hoard would also be a mixed hoard. In addition, Bradley (2013, 122) refers to the hoards containing ceramics in central Europe as the exception among metal hoards in Europe. To these we can also add that from Tiryns because it also contains non-metal objects including ivory, amber, agate and carnelian.

The hoard was deposited in the LH IIIC, but the objects within date in various periods, from the Early Mycenaean to the LH IIIC (Arvanitopoulos 1915, 224; Maran 2006, 130; Blackwell 2018, 521; Kleitsas *et al*. 2018, 90). For example, one of the gold signet rings from the hoard is dated to the LH II, the two Cypriot earrings are dated to the LH IIIA-B, and the Cypriot tripod stand may be dating to the LH IIIC (Spyropoulos 1972, 177; Maran 2006, 130; Konstantinidi-Syvridi 2016, 127, 129). Because of this, Arvanitopoulos (1915, 220-1, 224), Maran (2006, 131, 141-2) and Konstantinidi-Syvridi (2016, 127) believe that this hoard, which – in my view – has been aptly argued by Arvanitopoulos (1915, 220) and Maran (2006, 132, 134, 140) that it is not a tomb loot haphazardly deposited there by the robbers, may in fact be a family 'treasure' or *keimelia* (heirlooms) of a ruling family that lived in the LH IIIC, after the palace destruction, in Megaron W to which the hoard was found near. It is

believed that such *keimelia* were kept in family treasuries over many generations and objects from such collections were selected to be deposited in the elite tombs during the funeral in the LH IIIC as well as the EIA (Maran 2006, 131). The Tiryns hoard was probably one such collection (Maran 2006, 131). Lastly, like the foundry hoards above, the context of the Tiryns hoard cannot tell us specifically that it is a personal hoard and possibly partially a foundry hoard.

2.4 Reasons for the deposition of these hoards

This section will be brief because the reasons for the deposition of these hoards, the reasons for not being retrieved (despite the fact that most are probably utilitarian), and the increase in hoard deposition in the LBA Aegean will be discussed in more detail in Chapter 4. Mylonas (1962, 406) argued that the hoard he excavated at Mycenae was hidden for safekeeping as a result of enemy attacks in the hope that it would be retrieved later. Kavvadias (1888, 30) proposed no reason for the deposition of the Athens Acropolis hoard, but Osborne (2020, 140) suggests that its deposition is a sign of the crisis that Athens may have experienced at the end of LH IIIB. Rolfe did not comment on the Anthedon hoard's deposition, neither Wace and Stubbings for the Poros Wall hoard. Tsountas did not provide any reasons behind the deposition of the hoard(s) he excavated at Mycenae either. Arvanitopoulos (1915, 220-1) suggested that the Tiryns hoard was hidden for safekeeping during the destructions of the citadel, but Spyropoulos (1972, 192-3) and Maran (2006, 141) do not agree, with the latter suggesting that its deposition may represent a dedication (this view is also shared by Konstantinidi-Syvridi 2016, 127). As discussed in Chapter 1, Spyropoulos (1972, 205-9), who examined the wider context of these hoards, has pointed out evidence of destruction and/or abandonment of settlements in the LH IIIB and LH IIIC

periods at the sites of the hoards he investigated, what he called 'the great destruction'. He concludes that the hoards he studied (except that of Tiryns) were deposited for safekeeping during these turbulent periods (Spyropoulos 1972, 210). Blackwell (2018, 514-7, 533-5) believes that the presence of the toolkit in the LBA hoards studied here is the result of a shortage of metal visible in the late 13th c. Pylian Linear B tablets of the Jn and Ja series, which record a large number of smiths some of whom did not receive any metal allocations (Blackwell 2018, 514-7, 533-5). Finally, Deger-Jalkotzy (2008, 399) believes that metal hoards of these periods are a result of security threats.

2.5 Concluding remarks

To summarise this chapter, it is noticeable that all hoards presented and discussed (except that of Tiryns) have quite a homogenous content; they are made up of several kinds of artefacts which are damaged or worn out to a varied extent. It is obvious that there seem to be specific tools present in almost all these hoards, alongside other tools. If not a coincidence, it may indeed be the result of palatial influence in the formation of these hoards, but whether this hints a tighter control of metal by the palace during a metal shortage at this time in the Aegean will be discussed in Chapter 4. With regards to the first research question of the thesis, *can the content and context of selected non-funerary metal hoards provide any clues for their identification?*, it is clear that the content of the hoards studied provide indications that they would help in identifying them as foundry and personal hoards, but their context is not particularly useful in identifying them as such. To me, the interpretation of the hoards as foundry hoards sounds very reasonable and their findspot (within the citadel or outside), may reveal valuable information about the kind of foundry deposits; they may have been metal allocations that were given to founders/smiths

but had not been worked by them yet, material that had been worked and was given back to the palace or material to be given to founders/smiths. The interpretation of three of these hoards, those of Mylonas, Tsountas and Athens, as foundation deposits may in fact hold true, although the exact findspot and the uncertain date of these hoards which make it more difficult to understand their exact relationship with their context creates issues. I am drawn towards their interpretation as foundry deposits, but even then, can we be sure that at any rate they do not represent bronze removed from circulation by elites who decided to deposit them somewhere outside the palace? Also, I believe that the Tiryns hoard is partly a foundry and a personal hoard, the latter surely comprising items that can be described as *keimelia*.

CHAPTER 3. Metal assemblages in funerary contexts

This chapter presents and contextualises the evidence for the deposition of metal assemblages in LBA Aegean funerary contexts, focusing on the relevant evidence from the tholos tombs at Kokla (Argolid) and Nichoria (Messenia), and from chamber tombs 2, 7 and 10 at Dendra (Argolid) (**Fig. 6**). In order to determine whether the hoarding of metal objects was associated with elite burials only or not, the discussion will expand to include a systematic examination of the architecture of these funerary monuments and of the burial gifts (*kterismata*) – both metal and non-metal – found therein. So, in addition to presenting the metal assemblages in the selected Mycenaean funerary contexts, I will answer two further but directly relevant questions: can we determine the status of those buried in the selected tombs on the basis of the tombs' architectural features and contents? And, how and why did metal assemblages in these tombs not directly associated with burials ended up being as such? The possibility that they may have been retrievable hoards will be discussed in Chapter 4.

In the following section I present the topographical information on the selected tombs, and their contents. **Table 13** summarises information on the date and location of the selected tombs. **Table 14** presents the primary, secondary and/or undetermined burials in the tombs and their directly associated or likely associated metal and non-metal *kterismata*, along with the condition of the tombs (looted or undisturbed, sealed or not sealed etc.) as they were found. The metal and non-metal artefacts as well as tomb features like pits, cists, and benches shown to be not directly associated with any burials in the tomb are organised in **Table 15**. This way, it is easier to see which parts of the contents are associated with burials and which not.

3.1 The tombs

Table 13: Date and topographical notes of the LBA tombs at Kokla, Nichoria and Dendra selected for study on this thesis.

Tomb and region	Date	Topographical notes	Bibliographical references
Tholos tomb at Kokla, Argolis	LH IIB or LH IIIA	Part of a LH I-IIIB cemetery of nine chamber tombs and five pit graves located on the western edge of the plain of Argos (**Fig. 7**). The location of the associated settlement has not been identified yet, although it has been suggested that it was perhaps located a few hundred metres to the north.	Demakopoulou 1981, 97; 1982, 83; Demakopoulou and Aulsebrook 2018, 119
MME Tholos tomb at Nichoria, Messenia	LH IIIA-B	Located on the western slope of the Nichoria ridge near the Messenian Gulf, on which there is evidence for MH-LH III habitation, and where a LH II-IIIA administrative centre may have existed, indicated by a large megaron complex of architecture resembling other Mycenaean palaces. The tholos formed part of a larger Mycenaean-Protogeometric cemetery of twenty-four tombs, including tholos and chamber tombs, built tombs, apsidal tombs, a horseshoe-shaped tomb, and a cist. Adjacent to the tholos tomb is the early LH II burial structure called 'Little Circle' (**Fig. 8**).	McDonald 1972, 219-20, 225; McDonald in McDonald *et al*. 1975, 72, 135-8; Shay in Mcdonald *et al*. 1975, 73; Wilkie 1992, 231, 259; Shay 1992, 209-10; Boyd 2014a, 192-3, 203
Chamber tomb 2 at Dendra, Argolis	LH IIIA	They were part of a larger LH IIA-IIIB cemetery comprising sixteen chamber tombs and a tholos tomb (**Fig. 9**). The cemetery may have been associated with the EH-LH settlement at Midea, located about 1 km far.	Persson 1931, 3-18, 73, 116; 1942, 3, 17-8, 37, 95; Åström 1977, 7-23, 66-104; Protonotariou-Deilaki 1990, 95; Gallou 2005, 115; Pappi and Isaakidou 2015, 476
Chamber tomb 7 at Dendra, Argolis	LH III		
Chamber tomb 10 at Dendra, Argolis	Early LH IIIA		

Table 14: Burials and their associated metal and non-metal artefacts of the LBA tombs at Kokla, Nichoria and Dendra as they were retrieved during excavation. Where the symbol "-" is used, it indicates the absence of the material it concerns. Where "(?)" is used, it indicates artefacts not mentioned by all archaeologists/scholars consulted in the 'Bibliographical references' section for the specific tomb.

Tomb and region	Primary burial (*in situ*) and grave goods	Secondary burial and grave goods	Undetermined/ Unspecified burial and grave goods and other human skeletal remains	Tomb condition	Bibliographical references
Tholos tomb at Kokla, Argolis	**3 burials**: one in a niche in the dromos wall at the beginning of the dromos and two in a niche in the dromos wall near the stomion **Grave goods**: -	-	-	Collapsed tholos roof and parts of its walls; intact stomion sealing; undisturbed	Demakopoulou 1981, 96-7; 1990, 113, 115, 120-1; Demakopoulou and Aulsebrook 2018, 119, 124
MME Tholos tomb at Nichoria, Messenia	**1 burial** in the stomion. Possibly of Roman period **Grave goods**:-	**4 burials** in Pit 4 north side of tholos. **Grave goods (in the fill of the pit):** **Tools:** 2 bronze knife blades **Weapons:** bronze fragments of body armour **Jewellery/ornaments:** 2 gold beads **Other:** 2 gold pieces, 6 sealstones, an agate in a gold mount and other non-metal finds	**Human bones scattered** all over the floor. **Grave goods:** **Toiletry:** 1 mirror, 1 pair of tweezers **Vessels:** silver vessel fragments, pottery **Jewellery/ornaments:** gold and glass rosettes, beads of gold, amber, carnelian, amethyst, glass and steatite **Other:** bronze fragments, bronze and gold-covered rivet heads and many more objects of rock crystal, obsidian, bone and materials already mentioned	Part of the stomion missing; collapsed tholos chamber; looted	Wilkie in McDonald *et al*. 1975, 76-9; Wilkie 1992, 238, 245, 248-9, 251, 253-4, 841

			Bone assemblage of several individuals scattered over Pit 1, southwest side of tholos. **Grave goods (possibly associated with the bone assemblage over Pit 1)** **Toiletry:** 1 pair of tweezers **Jewellery/ornaments:** gold and ivory rosettes Pit 1 (undisturbed) had grave goods in its fill as such: **Weapons:** bronze arrow plates **Toiletry:** bronze tweezers **Vessels:** pottery fragments **Other:** needles, a sealstone and a steatite conulus Also, **human and animal (possibly pig) bone remains** Pit 2 (disturbed) on the east side of the tholos had in its fill grave goods as such: **Weapons:** fragments of bronze spearhead, bronze fragments of body armour **Vessels:** **Jewellery/ornaments:** gold-leaf rosettes, gold, glass, amber, faience, amethyst, and carnelian beads **Other:** 1 scale pan fragment, 1 blade fragment (of a tool? A weapon?), 3 sealstones, a beehive fragment and alabaster fragments Also **human bone fragments**		

Chamber tomb 2 at Dendra, Argolis	-	-	**1 burial** in a pit in the dromos near the stomion **Grave goods**: spindle whorls and 1 bronze needle	Collapsed part of chamber roof; collapsed sealing of stomion; looted	Persson 1931, 7, 74, 80; Wells 1990, 126
Chamber tomb 7 at Dendra, Argolis	-	Shafts I, II, III and IV (all of which are looted) contained **human bones** **Grave goods**: pottery and other minor finds. Shaft III contained a ring of gold wire	A human cranium on the chamber floor **Grave goods** (associated with the cranium?): **Vessels**: pottery **Jewellery/ornaments**: 1 glass bead **Other**: 1 fragment of bronze pin and 1 decorated bone fragment Also charcoal and ash	The shafts are looted	Persson 1942, 31-3, 35-7
Chamber tomb 10 at Dendra, Argolis	-	**1 burial** in Shaft I at the back of the chamber **Grave goods**: **Vessels:** 1 gold cup **Jewellery/ornaments:** glass, faience, amber and gold beads, 2 gold pendants, 2 gold girdle ornaments, 1 gold ring, gold necklaces **Other:** 2 agate sealstones Also charcoal and ash	-	Collapsed chamber; undisturbed	Persson 1942, 63, 74-87; Wells 1990, 135

Table 15: Metal and non-metal artefacts and architectural features (e.g. pits, cists, and benches) that are not directly associated with burials in the LBA tombs at Kokla, Nichoria and Dendra. Where the symbol "(?)" is used, it indicates artefacts not mentioned by all archaeologists/scholars cited in the 'Bibliographical references' section for the specific tomb.

Tomb	Dromos	Stomion	Chamber	Bibliographical references
Kokla tholos tomb, Argolis	On the floor: **Vessels**: pottery fragments Also, 2 undisturbed goat/sheep skeletons in the fill of the dromos in front of the entrance.	-	On the bench in the tholos chamber and underneath it: **Vessels**: 3 silver cups and 4 silver kylikes (which may have been used for the burial ritual rather than as grave goods since they are associated with the bench) On the floor: **Weapons**: 14 bronze arrowheads **Vessels**: 1 gold cup, 1 gold sheet overlay once part of a now missing vessel, pottery **Jewellery/ornaments**: 12 bronze hairpins, 1 bronze finger ring, glass beads **Other**: 2 sealstones (one carnelian the other of green stone), 1 ivory relief plaque, 1 steatite spindle whorl	Demakopoulou 1981, 96; Demakopoulou 1990, 122-3; Demakopoulou and Aulsebrook 2018, 121-124
Nichoria MME tholos tomb, Messenia	On the floor: **Vessels**: fragments of pottery **Other**: limestone, and lime plaster In the fill: **Vessels**: pottery fragments	On the floor: **Vessels**: 1 pyxis. In the fill of the stomion: **Vessels**: pottery and fragments of pottery **Other**: fragments of bronze and ivory In a layer of sand: **Vessels**: pottery fragments	Scattered all over the floor: **Weapons:** bronze fragments of body armour, fragments of a bronze spearhead **Jewellery/ornaments:** gold, amber and glass beads **Other:** many fragments and small objects of bronze, steatite, ivory, and rock crystal Grave goods on the covering slabs of Pit 1: **Weapons**: fragments of bronze arrowheads	Wilkie in McDonald *et al*. 1975, 76-9; Wilkie 1992, 252-4, 256, 259, 261; Paschalidis and McGeorge 2009, 84

			Toiletry: 1 fragmented pair of tweezers **Other**: lead wire, 1 bronze needle and 1 sealstone On one covering slab of Pit 2: 1 flask base and an ox bone In Pit 3 (undisturbed) between Pit 1 and Pit 2 contained grave goods as such: **Tools**: 2 bronze "cleavers" **Weapons**: 1 bronze bent sword **Toiletry**: 1 bronze mirror with ivory handle, 2 bronze "razors" **Vessels**: 1 bronze amphora, 4 bronze bowls, 1 bronze lekane, 1 bronze jug, 1 carved bronze band possibly a rim band of a now-missing large vessel like a basin. All vessels are very deformed	
Chamber tomb 2 at Dendra, Argolis	On the floor: **Vessels**: fragments of a clay vessel **Other**: large glass paste objects and gold leaves that would have originally covered these objects	Grave goods in a pit (undisturbed): **Tools**: 2 bronze knives (1 with wooden handle and the other with traces of wooden handles), 2 bronze cleavers or razors (1 with remains of wooden handle) and 1 bronze fishing spear **Weapons**: 1 bronze spearhead (with parts of wooden shaft), 1 bronze sword (with parts of wooden handle) **Toiletry**: 4 bronze mirrors (2 with traces of wooden handle) **Vessels**: 4 crushed bronze hydriae, 3 bronze jugs, 6 bronze bowls, 4 crushed bronze tripod-cauldrons **Other**: 7 bronze lamps	On the floor: **Weapons**: 1 broken bronze sword/dagger, 6 bronze arrowheads **Vessels**: pottery **Jewellery/ornaments**: 1 iron pendant covered with gold leaf, glass paste ornaments with gold leaf, glass beads **Other**: 1 slaughtering table, 3 steatite lamps, boar tasks and other bone objects, gold seashells, 1 gold piece, 1 carnelian, 1 iron stud and 2 menhirs stones resembling idols There was also a hearth or altar and charcoal Next to a looted pit: Bat and feline remains	Persson 1931, 74, 76-80, 92-108, 110

			In a sacrificial pit: **Tools**: 1 bronze knife **Vessels**: 1 crushed silver cup with gold rim **Jewellery/ornaments:** 1 ivory flower **Other**: 1 carnelian Also contained remains of domesticated animals	
Chamber tomb 7 at Dendra, Argolis	On the floor: **Vessels**: pottery fragments	On the floor there were terracotta figurines	Shaft V (undisturbed) in the floor: **Tools**: 1 bronze knife, 2 bronze cleavers (1 with wooden handle remains) **Weapons**: 1 bronze sword **Toiletry**: 1 bronze mirror (with remains of wooden handle) **Vessels**: 2 crushed bronze bowls	Persson 1942, 31-3, 35-7
Chamber tomb 10 at Dendra, Argolis	The fill of the dromos contained bronze fragments, 1 fragment of ivory, 1 fragment of steatite and obsidian flakes On the floor: **Vessels**: pottery fragments, 1 clay storage vase	Grave goods on the floor: **Jewellery/ornaments**: 1 blue stone pendant **Other:** 1 bronze button Also charcoal	Charcoal on the floor Shaft II in the floor: **Vessels/utensils**: 1 silver crater, 3 silver goblets, 1 silver spoon, 1 flattened silver saucer with gold rim and gold-plated handle, 1 gold-plated ivory bowl and pottery On the floor: **Vessels**: whole and fragmented pottery **Other**: bronze scale pans	Persson 1942, 59, 63-73, 87-94

3.2 The tombs and their owners

Using the data of **Tables 14** and **15** and the tomb architecture (see below), this section aims to reconstruct – to the extent this may be possible – the social status of the individual(s) buried in these tombs to see to whom the metal and non-metal assemblages in these tombs belonged. The tombs are then contextualised within the wider cemeteries they belong to (if that is the case) to see if they are in any way unique to the others e.g., in terms of content and architecture, and therefore the occupants' status.

The contents

Precious and semi-precious grave goods, of various materials (some of which imported from the east) such as faience, ivory, amber and gold, carnelian, amethyst, jasper, lapis-lazuli, agate, blue chalcedony, steatite, rock crystal, glass, silver, gems (of very high quality craftmanship and therefore expensive) and boar's tusks (indicating engagement with hunting which was an activity the elites participated in) reveal the high status of their owner and of those who deposited them (Persson 1931, 29; Hamilakis 1996, 165; Blackwell 2018, 510; Demakopoulou and Aulsebrook 2018, 122-4; Palermo 2018, 14-5; Gallou 2020, 123; Krzyszkowska 2020, 571-3). Iron artefacts are rare on the LBA mainland, with examples cited from just few sites (ten) (Palermo 2018, 92, 95, 117; Gallou 2020, 19, 123). Its rarity made it a precious metal and was therefore reserved for the elite's jewellery (Palermo 2018, 109, 118; Gallou 2020, 123). Bronze was not precious for the LBA Aegean, although it would have been expensive to produce since there are no tin sources in the Aegean, and it would also have been expensive to import it (Renfrew *et al*. 1965, 225; Blackwell 2018, 510). Therefore, it may be plausible to assume that depositing it in tombs (especially in large quantities) would have showcased the wealth of the deceased and their family, and by taking out of

circulation a highly useful metal never to be used again would have further indicated the ability to replace it (Mee 2012, 285), although in this thesis the possibility of bronze and other metals being retrieved again and reused is examined.

From what has survived the passage of time, it is clear that the tombs under discussion were richly furnished with metal and non-metal grave goods; the Kokla tholos tomb contained items of silver, gold, bronze, glass, ivory, steatite, and carnelian, and Demakopoulou and Aulsebrook (2018, 122) also consider the green stone of one of the sealstones as precious. The three silver cups and the four silver kylikes found on and beneath the bench have been interpreted as a set (since they are placed close to each other) and they served as implements for a funerary ritual rather than as the grave goods, and it has been suggested that the gold cup and the vessel with the gold overlay were intended as grave goods as they were found on the floor (Demakopoulou and Aulsebrook 2018, 124, 129-33, 139). The MME tholos tomb at Nichoria produced artefacts of gold, bronze, ivory, faience, glass, amber, steatite, carnelian, rock crystal, agate, and amethyst. The chamber tombs 2, 7 and 10 at Dendra contained artefacts of gold, silver, iron, bronze, ivory, faience, amber, carnelian, glass, steatite, and boar's tasks were also found.

Finally, animal burials and/or sacrifices may provide further indications of the wealth of the owners' tombs. According to Wright (2004, 172), domesticated animals represent wealth and Recht (2011, 80-1) writes that most evidence for LBA animal sacrifices occurs at elite contexts such as palaces and elite tombs. The two goat/sheep skeletons in the fill of the dromos of the Kokla tholos tomb have been interpreted as the remains of a sacrifice after the last opening and sealing of the tholos (Demakopoulou 1990, 122-3). The sacrificial pit in the chamber floor of tomb 2 at Dendra also contained remains of sheep/goat and oxen

interpreted as the remains of sacrifice (Persson 1931, 80, 110). The Nichoria MME tholos also had animal bone remains (possibly of pig) in the fill of pit 1 and an ox bone on top of pit 2 in the chamber floor (Wilkie 1992, 249, 251). Four pairs of horses (animals which were particularly expensive to acquire and maintain, and therefore confined to the elites) and a carefully structured pile of donkey bones were found in close proximity to the MH/LH tumuli in the Dendra cemetery, which most likely are the remains of sacrifices as part of rituals for the cemetery as a whole which would have conveyed the elites' wealth and ability to kill and replace valuable assets like horses and donkeys (Recht 2011, 104; Pappi and Isaakidou 2015, 469-70, 473-5, 477-8).

Overall, the owners of these tombs were individuals of particularly high status who were able to acquire expensive and precious and semi-precious items and have them deposited in their tombs. This would have been an act of conspicuous consumption, which is the more-than-necessary expenditure of expensive goods and services from the part of the elites only to convey their wealth, because these items were taken out of circulation not to be used again (Cavanagh 2008, 337; Efkleidou 2018, 66, 68-9). Permanent removal from circulation however may not have been the case for every metal assemblage in every tomb (see below and Chapter 4). Animal sacrifice, especially that of horses and to an extent donkey and sheep/goat sacrifice were another kind of conspicuous consumption (Pappi and Isaakidou 2015, 478). But do the tomb type and architecture reveal the same kind of wealth?

Tomb architecture

The tombs under discussion are represented by two types: the tholos and the chamber tomb. These were family tombs, although chamber tombs would have gradually started to be used for multiple burials in the beginning of the LBA and not from the beginning of their

existence in EBA (Mee 2012, 279, 285; Gallou 2020, 114). From these two types, it is considered that the chamber tombs have been the commoners' graves, the people of low status (Wilkie 1992, 259) – objections on this theory are presented below. Chamber tombs were much more abundant than tholoi in the LBA, and some are found to be associated with small villages, which would also support the idea that they would have been used by lower status people (Cavanagh 2008, 336; Mee 2012, 286). The tholos, on the other hand, is thought to have been reserved for the royalty (Wilkie 1992, 259; Cavanagh 2008, 331, 334; Mee 2012, 285). This is because its size can reach monumental dimensions, and its construction is very complex and skill-demanding; it involves hewing out the dromos, the tholos chamber and the stomion from the rock and dressing them in ashlar masonry, which was a demanding and time-consuming stone-dressing technique (though some are made in rubble masonry), unlike chamber tombs, whose dromos, stomion and chamber are all just hewn out from the rock (Persson 1931, 27-42; Wilkie 1992, 231, 259; Fitzsimons 2007, 102-6; Cavanagh 2008, 328, 331-2, 334; Mee 2012, 285; Efkleidou 2018, 70). Moreover, the interior of the tholoi were elaborated with pillars and benches and their interior and/or exterior facades were decorated with colourful frescoes, and these would have been additional indicators of the elites' wealth since they would have required more time and effort to make, with the frescoes requiring the commissioning of artists too (Chapin 2012, 230-2; Papadopoulou 2017, 150; Efkleidou 2018, 70). Therefore, through the building of a tholos tomb, its commissioner would have showcased their wealth and wide contacts by being able to hire a large workforce for a long period of time (Fitzsimons 2007, 103-4). The construction of a tholos would have been a case of architectural conspicuous consumption, where the elites would have spent a lot of resources in constructing an unnecessarily

elaborate tomb, which would have only been useful in the display of the elite wealth and prestige (Fitzsimons 2007, 106; Efkleidou 2018, 66, 70).

Once burials took place, the tholoi were covered by a mound, making them look even more 'wasteful' from the outside (Boyd 2014b, 195; Efkleidou 2018, 70). This mound prevented people from getting used to the view and magnificence of the tomb, making the image of the tholoi extraordinary and awe-inspiring (Efkleidou 2018, 70). Therefore, as tholos tombs were family tombs, reopening them for fresh interments or second funeral rites, would have made an impression to the people attending the ceremonies (Efkleidou 2018, 70).

Remarkably, the Kokla tholos tomb is a combination of a tholos and a chamber tomb; the chamber wall, the stomion and the sections on both sides of the stomion are stone-dressed, as in the case of tholos tombs, while the dromos is left undressed, like in chamber tombs (Demakopoulou 1981, 94; 1990, 113). More specifically, the stone-dressing technique of the chamber of the Kokla tholos is rubble masonry (**Fig. 10**), much like the chamber and dromos of the MME tholos at Nichoria (**Fig. 11**; Demakopoulou 1981, 96; Wilkie 1992, 237-8, 241). Above the stomion, the tholos at Kokla featured red and blue discs painted in fresco (Demakopoulou and Aulsebrook 2018, 121). As seen in **Table 15** and **Fig. 10**, the interior of the tholos at Kokla is further elaborated with a bench, on which, as well as beneath it, the silver vessels rested. **Table 16** shows the dimensions of the tholos tombs as well as those of the other tombs of the same cemetery (where available). Regarding the tholoi under study, the one at Kokla is the largest and most elaborate monument compared to the chamber tombs in the same cemetery (**Fig. 7**). From the available information on the dimensions of the tombs at Nichoria, the MME tholos also surpasses in size the rest of the tombs in the

same burial ground, probably indicating the greater wealth of the individual/family that owned it (**Fig. 8** and **Table 16**).

Table 16: Dimensions of the tombs under study and of the other tombs of the same cemetery (where available). The tombs under study are shaded. The width of the dromoi is not given because they were not consistently given by excavators/scholars. For clarification: L =Length; W =Width; A.L =Axial length; Diam. =Diameter.

Region	Tomb	Dimensions (in meters)	Comments	Bibliographical references
Kokla	Tholos (I)	Dromos: L.: 23	No dimensions given for the chamber tombs and cist graves, though **Fig. 7** gives an indication of their sizes relatively to each other.	Persson 1931, 19, 22, 81, 86, 91; 1942, 19-20, 23, 31, 37-9, 51, 54, 59, 63, 95-6; Åström 1977, 11, 60-70, 106, 109; Demakopoulou 1981, 94; 1982, 84; Wilkie 1992, 237, 241; Boyd 2014a, 193; Demakopoulou and Aulsebrook 2018, 120-1
		Burial chamber: Diam.: 5.4		
Nichoria	Tholos (MME)	Dromos: L.: 8.9	No dimensions given for the dromoi of the other tholos and chamber tombs.	
		Burial chamber: Diam.: 6.6		
	Tholos ("Little Circle")	Burial chamber: Diam.: 2		
	Tholos (V)	Burial chamber: Diam.: 5.1		
	Tholos (possibly) (N2)	Burial chamber: Diam.: around 4		
	Tholos (N3)	Burial chamber: Diam.: 3.4		
	Tholos (N4)	Burial chamber: Diam.: 3.4		
	Tholos (N5)	Burial chamber: Diam.: 5.2		
	Tholos (N6)	Burial chamber: Diam.: 3		
	Tholos (L5)	Burial chamber: Diam.: 2		
	Tholos (L6)	Burial chamber: Diam.: Unknown		
	Chamber (Rizomilo Sainoraki)	Burial chamber: Diam.: Unknown		
	Chamber (Rizomilo)	Burial chamber: Diam.: Unknown		
	Chamber (Vathirema)	Burial chamber: Diam.: 6x3.7		
	Horseshoe-shaped (N1)	Burial chamber: A.L.: 1.66		
	Horseshoe-shaped (T1)	Burial chamber: A.L.: around 1.27		
	Horseshoe-shaped (T2)	Burial chamber: A.L.: 1.51		
	Stone-built apsidal (AI)	Burial chamber: A.L.: 3.8		
	Stone-built apsidal (AIII)	Burial chamber: A.L.: 3.1 (possibly)		
	Stone-built apsidal (possibly) (AIV)	Burial chamber: A.L.: 2.9 (possibly)		
	Apsidal cist (L1)	L.: 2.1		

	Apsidal cist (L2)	L.: 1.7		
	Apsidal cist (L3)	L.: 1.7		
	Apsidal cist (L4)	L.: 2.2		
	Cist (AII)	L.: 1.35		
Dendra	Tholos	Dromos: L.: 17.9	Although the dimensions of the burial chamber of tomb 2 are not given, **Fig. 9** shows that it is similar in size to chamber tomb 9. So, it must be around 5x4.3. The dimensions of the dromoi and burial chambers of tombs 4, 5, 15 and 16 are not given, but refer to **Fig. 9** for a reference to the size of the first two tombs. Tombs 15 and 16 are not shown.	
		Burial chamber: Diam.: 7.3		
	Chamber (1)	Dromos: L.: 5.25 Burial chamber: 2.6x3.5		
	Chamber (2)	Dromos: L.: 19.2 Burial chamber: Unspecified		
	Chamber (3)	Dromos: L.: 9 Burial chamber: around 3.05x2.95		
	Chamber (4)	-		
	Chamber (5)	-		
	Chamber (6)	Dromos: L.: 9.6 Burial chambers: around 5x3.3-2.75 (chamber narrowing on one side) and 2.8x2.5		
	Chamber (7)	Dromos: L.: 13.3 Burial chamber: around 3.5x3.25		
	Chamber (8)	Dromos: L.: 12.85 Burial chambers: 4x3.75 and 3.25x2.5		
	Chamber (9)	Dromos: L.: 15.75 Burial chamber: 5x4.3		
	Chamber (10)	Dromos: L.: 19.45 Burial chamber: around 6.35x5.25		
	Chamber (11)	Dromos: L.: 8.3 Burial chamber: 2.6x3.6		
	Chamber (12)	It has an entrance shaft instead of a dromos. Burial chamber: 2.5x2.35		
	Chamber (13)	Dromos: L.: 7 Burial chamber: 5x3.9		
	Chamber (14)	Dromos: L.: 5 Burial chamber: 2.90x4.62		
	Chamber (15)	-		
	Chamber (16)	-		

The tholos tombs under discussion seem to have been truly impressive, and perhaps fit for a royal family. Indeed, Wilkie (1992, 268) calls the individuals of the MME tholos rulers. However, chamber tombs could have been equally as impressive (Cavanagh 2008, 334; Mee 2012, 285). Interestingly, in the Dendra cemetery, **Fig. 9** shows that chamber tombs 2, 9 and 10 are very similar in size to the tholos tomb and the dromoi of tombs 2 and 10 are even

longer than that of the tholos (**Table 16**). Persson (1931, 14, 16, 24) argued that the LH III tholos at Dendra contained the skeletons of a king, his queen, and a princess, but note that the chamber of tomb 5 is the largest of the chamber tombs, even of the tholos (**Fig. 9**). Chamber tombs 2, 7 and 10 exemplify the great richness that chamber tombs can also have, as already seen, with Persson (1942, 95) even calling the individual from shaft I in tomb 10 a queen because of the large amount of 'female' jewellery in the shaft and the absence of weapons. This is interesting because this would suggest that it was not the rule that royals would have been buried in tholos tombs, even in the same cemetery. **Fig. 9** and **Tables 14-16** show that tombs 2 and 10 are much larger and wealthier than 7, 10 being the largest of these three and the one containing many more precious artefacts (though 2 and 7 were looted). However, we cannot know for sure that she was a queen.

Perhaps the most architecturally impressive chamber tomb is the LH IIA-IIIB chamber tomb 4 at Pellana, Laconia, which is termed a 'monumental chamber tomb', being overall larger than the MME tholos tomb at Nichoria (dromos: 12.8 m. long; chamber: 10.1 m. in diameter) (Gallou 2020, 19). Its chamber is also larger than that of the Kokla and Dendra tholoi. Additionally, chamber tomb II of the Kokla cemetery contained the skeletons of a dog and four horses (!) together with secondary burial remains (Demakopoulou 1982, 83). According to Hamilakis (1996, 165) and Wright (2004, 161), dog burials/sacrifices are mostly associated with elite burials, and these animals are associated with hunting, an elite activity. Undoubtedly, the animal sacrifices, especially those of horses, would have denoted the exceptional wealth and high status of the people who were buried in this tomb.

Contextualising the metal and non-metal assemblages of the tombs under study

This part of the thesis contextualises the contents of the tombs under study with the contents of other chamber/tholos tombs within the same cemeteries in order to examine whether the individuals or families who owned the tombs under discussion were the only ones capable of depositing such wealth in their tombs within their local communities.

The chamber tombs in the Kokla cemetery also contained rich grave goods such a carnelian sealstone, beads of semi-precious stones (amethyst, carnelian and rock crystal, faience, glass and one of gold), bronzes, and good quality pottery some of which may have been Cretan imports (Demakopoulou 1982, 83; Demakopoulou and Aulsebrook 2018, 119). Demakopoulou and Aulsebrook (2018, 124) write that the richness of the chamber tombs suggests that they belonged to elites, though it is clear that the tholos contained the most precious artefacts.

At the cemetery at Nichoria, information is provided by Shay (in McDonald *et al*. 1975, 75; 1992, 209-10, 219-20) and Boyd (2014a, 196-8) for only the grave goods of three of the tholos tombs – the 'Little Circle', N4 and N5. According to Shay (in McDonald *et al*. 1975, 75; 1992, 209-10, 219-20) and Boyd (2014a, 197), among the pottery and clay finds, a bronze fragment, and chert and charcoal, the LH II 'Little Circle' also contained animal remains and ibex horns (an animal that was most likely not native to Nichoria), the latter being an exotic grave good, and so I believe it would have been expensive to acquire, denoting the high status of one or several of the deceased. Wilkie (1992, 231), on the basis of the prominent position of the 'Little Circle' on the NW boarder of the settlement, also argues that the individuals buried in there were wealthy and important. N4 contained pottery alongside objects whose material is not specified, and N5 contained items of gold and silver alongside

pottery (Boyd 2014a, 196, 198). Nonetheless, Wilkie (1992, 231) argues that the MME tholos is the richest of all the tholoi at Nichoria.

Finally, the high status of the individuals of chamber tombs 1, 3, 6, 8, 9, 11, 12, 13 and 14 in the Dendra cemetery is indicated by glass, gold, bronze, amber, carnelian, faience, amethyst, steatite, agate, green stone, silver, ivory, and Egyptian alabaster artefacts and remains of boar's tusks (Persson 1931, 81-90; 1942, 23-31; 41-51; 56-9; 97-101; Åström 1977, 7-18, 68-103, 106-4). Unfortunately, tombs 4 and 5 have not been published (Persson 1942, 17) and the grave goods of tombs 15 and 16 have not been described. The wealth of the tholos tomb, which seems to have contained the largest concentration of grave goods from all tombs in the cemetery, is indicated by the gold, faience, rock crystal, bronze, ivory, lapis lazuli, agate, carnelian, steatite, glass, iron, silver, and copper grave goods as well as the presence of gems (Persson 1931, 27-42).

Summarising this section, it is clear that the individuals in the tombs under study, as well as most of the individuals buried in the tombs of the same cemeteries, were individuals capable of acquiring highly valuable items. Clearly not all chamber tombs were those of low status individuals and this is visible in the cemetery of Dendra and Kokla. But is it possible to recognise items in the tombs under study that were more than grave goods/funerary ritual equipment?

3.3 Grave goods/funerary ritual implements purely intended as such and grave goods/funerary ritual implements intended for more than just that

The objects deposited in tombs are often considered to have been grave goods, i.e. items that were the deceased's possessions or gifts by the mourners that could have been useful in the afterlife and which displayed the status of the deceased and the living relatives

offering them (Cavanagh 2008, 334, 337; Boyd 2014b, 193; Gallou 2020, 111, 113, 124). In the case of tombs whose burial chamber was found empty of human skeletal material but which contained artefacts (the so-called 'cenotaphs', see below), have also been often interpreted as grave goods offered to the individuals for who those tombs were built (Gallou 2005, 115). Exceptions include the three silver cups and the four silver kylikes in the Kokla tholos, interpreted as funerary ritual equipment (Demakopoulou and Aulsebrook 2018, 124; 129-33). But could metal and non-metal assemblages not directly associated with any burials in the tombs (where there are burials) such as in the tholos at Kokla, pit 3 in the tholos floor of the Nichoria tomb, the pit in the stomion floor of Dendra tomb 2, shaft V in the chamber floor of Dendra tomb 7 and shaft II in the chamber floor of Dendra tomb 10 have been more than mere funerary ritual equipment and grave goods? In the case of grave goods, how and why did they get separated from the deceased?

Staring with the so-called 'cenotaphs', at first sight the term seems to apply to the tholos at Kokla and the Dendra chamber tomb 2 (**Table 14**). For the former tomb, however, it has been suggested that the dead were removed from the tomb during secondary burial and buried somewhere else, leaving the precious items in the tomb for future burials, or the tomb may have reached its end of life, involving the transfer of the remains of the last member of the family by a community member (Demakopoulou 1990, 121; Gallou 2005, 116-7). Rituals would have been performed: the sacrifice of the two goats/sheep mentioned earlier after the skeletons were removed and the tomb sealed (since they were found undisturbed in the middle of the dromos fill), ritual fragmentation indicated by pottery fragments on the floor of the dromos (if not accidentally broken), libations indicated by the set of silver vessels, and in the case of the second theory, the deposition of precious items in the tomb (Demakopoulou 1990, 122-3; Gallou 2005, 116-7; 2020, 144). The transfer of the

dead may have even happened because the tomb at some point had started to collapse, with future burials being laid in the niches in the dromos wall, as the burials in 'quite' good condition in the dromos niches would suggest actual burials (Demakopoulou 1990, 121, 123). The dromos fill was found undisturbed, so these burials could not have happened after the tomb was abandoned. But, in my opinion, this does not explain why the precious objects were left behind in the tomb. The tomb had been opened at least three times as suggested by construction of the steps at the base of the chamber (Demakopoulou 1990, 113), and I think this may support the idea of opening the tomb for secondary burials and possibly for the deposition ritual during the end of use of the tomb as suggested already.

Regarding the Dendra tomb 2, Persson (1931, 80; 109) argued that it was a cenotaph because no human skeletal remains were retrieved from the chamber. Persson (1931, 115) suggested that the two stones, the 'menhirs', were used as a substitute of the bodies of the tomb owners and would have received the same funerary treatment as the bodies would. However, this tomb may have not been originally a cenotaph either, because the burial in its stomion, which Persson does not specify if it is disarticulated or otherwise, may have been originally deposited in the chamber and was later deposited in there with its grave goods by the looters (Persson 1931, 74; Demakopoulou 1990, 122; Wilkie 1992, 250; Gallou 2005, 116). However, it seems unlikely to me that the looters would have spent time in digging a pit to place a body and its grave goods in there, while looting a tomb. Wilkie (1992, 250) instead suggests that cenotaphs may be the result of secondary burial, the skeleton/s having been reburied in pits in the chamber or dromos. So, could the burial in the stomion be a secondary burial? Fragments of the same vessel in the chamber and the dromos suggest to Persson (1931, 108) that there was a ritual that took place in the chamber, that involved sacrifice and pottery smashing in the chamber, after which the chamber was cleaned. Given

the fact that this tomb contained a hearth/altar, charcoal, and the pit with remains of domesticated animals, I think these could be connected to sacrifices, feasting, and fire lighting for fumigation and purification rituals in the chamber, which accompanied secondary burial rites (Gallou 2020, 138, 143). During the secondary treatment of the dead, the metal assemblages which might have originally accompanied the deceased, were swept in the pit in the stomion, thus becoming disassociated from any burials. Depositing the grave goods in pits in the chamber or dromos during preparations for new burials and secondary treatment of the dead is a practice also observed at other Mycenaean tombs (Kontorli-Papadopoulou 1987, 158; Gallou 2020, 143-4).

Regarding the MME tholos at Nichoria, according to Wilkie (in McDonald *et al*. 1975, 77) and Wilkie (1992, 246), it has evidence for reopening for secondary burials suggested by disturbances in the blocking wall of the stomion and the careless rebuilt of it. The bronzes in pit 3 may have been placed in the pit to make space during secondary burials or when the tomb was cleaned after plundering (Wilkie 1992, 253). Boyd (2014a, 201-2) also recognises several episodes of activities since its construction, one of them being the rearrangement of the tomb floor somewhen in the LH IIIA, which involved the deposition of the bronzes in pit 3 and the reburial of the remains of the individuals in pit 4. Tombs 7 and 10 at Dendra also provided evidence for the opening of the tomb for secondary burials, judging by secondary blocking walls found in the dromos (Persson 1942, 31, 37, 59, 63). Persson (1942, 32) added that charcoal and ash in the chamber of tomb 7 suggest purification fires, which, as we have already seen, were part of second funeral rituals. Persson (1942, 94) argued that the rest of the burials in tomb 10 might have been removed to another tomb because it had started to collapse. But then why was the ‘queen’ left in there? As with the case of tomb 2, I believe

that the bronzes in shaft V of tomb 7 and the precious items in shaft II of tomb 10 may have been swept in there during secondary burials.

I think it is likely that the metal and non-metal deposits in the tombs under discussion in this thesis were removed from their original place in the tomb and were disassociated from the burials through the secondary manipulation of the deceased. I believe that the "pure" grave goods, those used for the status display of the deceased and their family and for their use by the deceased in the afterlife, are those directly associated with the burials. During secondary funeral, grave goods could have been removed from the tomb or hidden (Gallou 2020, 143), and the assemblages discussed here, except those of Kokla, seem to have been hidden in the ground. Fear of looters, as Kontorli-Papadopoulou (1987, 157-8) argues, may also account for the hiding of grave goods in pits. But why did they remain in the tomb when the deceased was/were removed? It is possible that they could have been left in the tombs to be used for future burials, as previously suggested for the precious artefacts in the Kokla tholos or as a sign of respect for the ancestors. But it may also suggest that they had an additional role. Baboula (2000, 72, 75), Boyd (2014b, 201), and Paschalidis (2018, 464) have suggested that grave goods could have been legitimately removed from the tomb during secondary funerary rites in the LBA Aegean because they became distant from the dead they accompanied. Iakovidis (1982, 226) believes that metal artefacts were removed from tombs on the Greek mainland in the late 13th c. due to a metal shortage. Similarly, Wells (1990, 126-7) suggests that the removal of precious objects from a tomb by members of the deceased's family may have been because they inherited them or they needed them because of metal shortage and that this is a different kind of looting. This is called 'legal looting' by Paschalidis and McGeorge (2009, 84) and Paschalidis (2018, 464) and it has been

suggested by the aforementioned archaeologists that it is observed in chamber tombs H (LH IIIB-C) and N (LH IIIC) at the cemetery of Achaea Klauss which contained secondary burials associated with broken metal artefacts or handles of missing metal artefacts (Paschalidis and McGeorge 2009, 81, 84; Paschalidis 2018, 69, 73, 117, 120, 123, 464) (the 'legal looting' is discussed in more detail in Chapter 4).

Therefore, there is this idea of removing metal grave goods that have been disassociated from the specific person they were deposited in the tomb for. The criterion in the introduction of this thesis chosen for selecting the tombs presented in **Tables 14** and **15** (*metal assemblages in the tombs must not be directly associated to burials [if any] in the tomb at the time of excavation*) is based on this case of disassociation which, in my opinion, is clearer when the grave goods are separated physically from the deceased either by being placed in pits or the skeleton is missing, of which both cases can be the result of secondary burial (cf. Persson 1931, 80; Baboula 2000, 75; Paschalidis and McGeorge 2009, 81, 84; Papadopoulou 2017, 145; Paschalidis 2018, 464). Other metal and non-metal assemblages not clearly associated with burials are those in the MME tholos floor and Dendra chamber tomb 2, and so these may have also been intended to be removed, though they have been disturbed by looters.

3.4 Concluding remarks

To summarise, it has become clear from the tombs' content and in some cases the tomb architecture that the tombs discussed here were those of high-ranking individuals, who could afford to deposit valuable metal and non-metal grave goods and were able to obtain precious vessels for the funerary rituals. Chamber tombs would have been used for a wider portion of the society, but as we saw above, the extraordinary wealth deposited in some of

them, as at Dendra, and the animal sacrifices do prove the point that they could have been as wealthy as tholos tombs and in all likelihood belonged to local rulers. I believe that the assemblages in the tomb at Kokla, pit 3 in the floor of the MME tholos, the pit in the stomion of Dendra tomb 2, shaft V in the chamber of Dendra tomb 7, and shaft II in the chamber of Dendra tomb 10 could have not only been grave goods/funerary ritual equipment, and, particularly in the case of the tombs examined here other than the tholos of Kokla, the fact that they were hidden in the ground in the tomb may be signifying that they fulfilled their role as grave goods, but are now fulfilling another role, perhaps that of a metal deposit to use in an hour of need?

CHAPTER 4. Discussion and concluding remarks

The aim of this thesis is two-fold: to test Spyropoulos' claim that metal hoards can also be found in Mycenaean tombs as in non-funerary contexts (Spyropoulos 1972, 2), supported by Paschalidis and McGeorge (2009, 84) and Paschalidis (2018, 464) but refuted by Blackwell (2018, 510), and to investigate whether funerary metal assemblages can be both burial gifts and utilitarian hoards, the latter awaiting retrieval from the tombs to be put back into circulation in case of a metal shortage, as previously hinted at by Iakovidis (1982, 226), Wells (1990, 126-7), Paschalidis and McGeorge (2009, 84) and Paschalidis (2018, 464). My approach has been to compare published funerary metal (or rather, largely metal) assemblages not associated with burials (Chapter 3; **Table 15**) with metal assemblages from non-funerary contexts (Chapter 2; **Table 5**) that have been accepted as retrievable hoards and see if the same types of metals and objects are present in both categories. This follows up from the discussion of the hoarding practice.

This final chapter therefore brings together and contextualises the data and findings of the research, and presents the conclusions of the thesis. It starts with a summary of the findings before focusing on the development of the hoarding practice outside funerary contexts on the EBA-LBA Greek mainland and assessing whether there was truly a metal shortage in the final centuries of the LBA which may be manifesting in the structure of the hoards from Mycenae, Poros Wall, Athens, Thebes, Orchomenos and Anthedon (except that of Tiryns) studied in Chapter 2 and which may have increased metal hoarding during those centuries. Consequently, the possible reasons behind the deposition of the aforementioned hoards including that of Tiryns are discussed. The thesis ends with the conclusions that can be drawn from the discussions in this chapter.

4.1 A summary of the thesis findings

The review of previous scholarship on European and Aegean hoards (Chapter 1) has shown that both the content and context of the hoards must be studied when trying to understand – to the extent this may be possible given the lack of any literary sources – the nature of hoards, even though they cannot always satisfactorily reveal to whom they might have belonged, how they might have been used if retrieved and the reason(s) behind their deposition.

Also, based on the definitions that are given by Bradley, Spyropoulos, Blackwell and Harding, I have come to the conclusion that the most appropriate definition of a non-funerary hoard would be as *an assemblage of more than one precious or non-precious metal objects, formed intentionally or unintentionally on a single occasion or gradually, deposited in the ground or in a storage area, and which may have been utilitarian or nonutilitarian like a votive or ritual offering, or a mixture of both*.

The current chapter examines whether this definition could be applied to the Mycenaean funerary sphere where metal assemblages have also been found.

The research questions set at the beginning of this thesis are:

A) Can the content and context of selected non-funerary metal hoards provide any clues for their identification?
B) Are there content similarities between funerary metal assemblages and non-funerary metal hoards?
C) Could the funerary metal assemblages be retrieved from the tomb and put back into circulation?

D) Can a metal shortage be responsible for the increase in metal hoarding on the late LBA Greek mainland?

Chapter 2 answered the first question: the hoards of the Poros Wall, Tsountas and Mylonas from Mycenae, that of the Arsenal at Thebes, and those from the Athenian Acropolis, Orchomenos and Anthedon have been argued to be foundry hoards based on their mixed content (i.e. intact to little or very damaged objects, miscellaneous scrap and raw materials like ingots and slag). The hoard of Tiryns may be interpreted both as a hoard of multiple uses, such as a foundry and a personal hoard, on the basis of the presence of ingots and precious jewellery and other vessels in good and bad condition. Also, there is the possibility that the Tsountas, Athens, and Thebes hoards were metal allocations given by the palace to founders/smiths which, at the time of these hoards' deposition, had not been worked yet by those founders/smiths (as opposed to metal assemblages ready *to be given* to founders/smiths or just returned to palaces, as it has been argued). This is because of their unclear context. In terms of placing these hoards in their wider European context, they can also be described as mixed hoards, due to them containing multiple groups of objects, except that from Thebes. However, the find context of these hoards alone does not provide us with any diagnostic material that can be used to identify these hoards as foundry and personal hoards, and therefore we can only rely on their content.

In addition, it was pointed out that, although the presence of a toolkit in these specific hoards other than that of Tiryns may be a hint to a late 13th c. metal shortage that pushed palaces into carefully controlling metal, it may be coincidental and therefore unrelated to a metal shortage. Nonetheless, the possibility of a metal shortage will be examined in the current chapter.

Finally, we saw that the tholos tombs at Kokla and Nichoria, and the chamber tombs 2, 7 and 10 at Dendra all belonged to very wealthy individuals, as indicated by the rich content of valuable artefacts and their architecture (Chapter 3). Evidently, these tombs belonged in wealthy cemeteries, although this is less visible in the case of the tholos at Nichoria, since not much information is given for the rest of the tombs in the cemetery it belongs to. It is shown, both from the tombs' content and architecture, that chamber tombs could have also been as wealthy and impressive as tholos tombs. The assemblages in the tholos at Kokla, pit 3 in the floor of the Nichoria MME tholos, the pit in the stomion of Dendra tomb 2, shaft V in the chamber of Dendra tomb 7 and shaft II in the chamber of Dendra tomb 10 were most likely disassociated from any burials in the tombs through secondary treatment. Secondary burial rites probably account for the Kokla tholos and Dendra tomb 2 becoming cenotaphs. The fact that most of them were carefully hidden in the ground of the tomb may be an indication that they might have ceased to serve as grave goods, so instead they may have been placed there possibly to be used for another reason such as a retrievable hoard in case of poverty or need. Their removal by relatives of the deceased or perhaps other authorised members of the community, termed 'legal looting' by Paschalidis and McGeorge and Paschalidis, is discussed in this chapter in more detail.

4.2 Hoarding practices in the EH, MH, and LH (EBA-LBA) periods on the Greek mainland and the late 13th-12th c. metal shortage

This section examines the development of hoarding practices on the Greek mainland from EH to LH times. The EH and MH hoards (**Fig. 4**) are arranged in **Table 17** below. This is essential in order to detect changes (if any) and whether they could be attributed to the metal shortage (if there was indeed one) in the late 13th and 12th centuries.

Table 17: EH-MH Greek mainland metal hoards.

Hoard name and region	Chronology	Findspot	Content	Category	Total no. of artefacts	Bibliographical references
Rodotopi hoard, Ioannina	EH	Unknown	**Tools**: 4 copper single axes (2 broken)	Foundry or votive	4	Kleitsas *et al*. 2018, 77; Blackwell 2018, 9 Appendix; Kleitsas 2019, 15, 33-4
Eutresis hoard, Boeotia	EH II	In pit V in a structure called 'House 1'.	**Tools**: 1 copper axe-adze, 3 copper chisels	Unspecified	4	Goldman 1931, 215-6; Grammenos *et al*. 1994, 106-7
Thebes hoard, Thebes	EH II	Unspecified	**Tools**: 1 single axe, chisels (number of which not specified). All probably copper or bronze	Unspecified	1+	Grammenos *et al*. 1994, 106-7
Petralona hoard, Chalkidiki	EH II	In a pithos in a field near Petralona with currently no evidence for habitation. EBA houses were found a few km away.	**Tools:** 4 copper single axes (broken just before the blade), 38 copper chisels	Merchant's or votive	42	Grammenos *et al*. 1994, 75-89, 97-8, 107; Kleitsas 2019, 21, 32, 34
Lerna hoard, Lerna	MH I	Eastern end of Area BD, where MH houses with pottery remains existed, part of a MH settlement (however, exact location of the hoard is not specified).	**Tools**: 1 bronze broad chisel **Weapons**: 2 bronze daggers	Unspecified	3	Blackwell 2018, 6, Appendix; Blackwell 2018, 523; Caskey 1957, 151-2, 161
Malthi hoard, Malthi	MH	Unspecified	**Tools**: 1 bronze narrow chisel, 6 bronze knives	Unspecified	7	Blackwell 2018, 6, Appendix; Blackwell 2018, 523; Branigan 1974, 153, 167, 170

In terms of size and based on **Tables 5** and **17**, we can see that Blackwell (2018, 521) rightly points out, at least partially, that the Mycenaean hoards are larger in content than the earlier ones. Although all LH hoards are surpassing in objects number the EH and MH hoards from Rodotopi, Eutresis, Thebes, Lerna and Malthi, not all LH hoards are larger than the hoard from EH II Petralona with 42 objects; the Mylonas and Thebes (Arsenal) hoards are smaller, with 20+ and 32 items respectively. The Poros Wall hoard has 36+ items, the Anthedon hoard 32+, the Tiryns hoard 35+ and the Athens Acropolis hoard 34+. However, the hoards of Poros Wall and Anthedon are most likely larger than that of Petralona since they also contain uncounted miscellaneous and scrap pieces, copper or bronze slag (not mentioned if there are multiple of them), and bronze sheets. The hoards of Tsountas (62+ items) and Orchomenos (103+ items) are well larger than that of Petralona (**Tables 5** and **17**).

In terms of the artefacts and the materials (metal, stone etc.) represented, **Tables 17-19** show that the LH hoards are more diverse than the earlier ones.

Table 18: This table summarises the contents of LH mainland hoards of **Table 5** (Chapter 2) for comparison purposes in this chapter. It shows the groups of objects of the LH hoards (e.g. tools, weapons etc.) and whether each hoard has one or more than one kind of object (e.g. different tools, different weapons etc.) in its groups of objects. To create this table, I have not taken into account the objects that are not consistently mentioned by the scholarship used to create **Table 5** and which have therefore been marked with '(?)'. The 'Observations' section is the observations from the comparison of the groups of objects and the different kinds of objects between the EH, MH of **Table 17** and LH hoards.

Groups of objects and different kinds of objects within each group								
Groups of objects	Poros Wall	Mylonas	Tsountas	Athens Acropolis	Orchomenos	Tiryns	Anthedon	Thebes (Arsenal)
Tools	More than one	More than one	More than one	More than one	More than one	One	More than one	More than one
Weapons	More than one	More than one	More than one	More than one	More than one	One	One	-
Toiletry	One	-	More than one	One	One	-	-	-
Vessels	One	One	One	One	More than one	More than one	More than one	-
Jewellery/ornaments	-	-	-	-	-	More than one	One	-
Other	More than one	One	More than one	One	One	More than one	More than one	More than one
Observations: The EH and MH hoards in **Table 17** consist mostly of tools and weapons, whereas most of the LH hoards a mixture of tools, weapons, vessels, toiletry, jewellery/ornaments and other items. In terms of the different kinds of objects within each group of objects, the tools and weapons of the LH hoards are also much more diverse than those of the earlier hoards, most LH hoards having many more than two kinds of tools and usually more than one kind of weapon, except for the hoards of Tiryns, Anthedon, and Thebes.								

Table 19: This table summarises the different kinds of material (metals and non-metals) represented in the LH mainland hoards according to **Table 5**. Again, to create this table, I have not taken into account the objects marked with '(?)' and the 'Observations' section below are the observations from the comparison of the materials present in the EH, MH of **Table 17** and the LH hoards.

Kinds of material								
Material	Poros Wall	Mylonas	Tsountas	Athens Acropolis	Orchomenos	Tiryns	Anthedon	Thebes (Arsenal)
Copper	✓	✓	-	-	-	-	✓ (possibly)	-
Bronze	✓	✓	✓	✓	✓	✓	✓	✓
Gold	-	-	✓	-	-	✓	-	-
Silver	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	✓	-	-
Non-metal	-	-	-	-	-	Ivory, amber, agate, carnelian	-	-
Observations: The EH and MH hoards only contain copper or bronze artefacts, and not both materials together. In contrast, although three of the LH hoards contain exclusively bronze (Athens Acropolis, Orchomenos hoards, and Arsenal at Thebes), two contain both bronze and copper (Poros Wall and Mylonas hoards, but possibly Anthedon too if its slag is copper and not bronze), the Tsountas hoard has bronzes and one gold wire, and Tiryns contains bronze, iron, and gold. Tiryns also contains objects of semi-precious stones and amber which are not seen in the EH and MH hoards.								

Therefore, regarding hoarding practices in the mainland from the EH to the LH, hoards grow in size and diversify, not only in terms of the group of objects they include, but also in the kinds of tools and weapons, and occasionally of the material of which these were made. Although this may suggest the growth in the variety of tools and weapons available, I would like to suggest that it may have also been due to preferences of hoarding. Regarding scrap metal, as Knapp *et al*. (1988, 235, 257) have noticed and as seen in **Tables 5** and **17**, EH and MH hoards do not contain scrap metal neither metal ingots, like the LH hoards. The presence of scrap metal is usually assumed to indicate a shortage of metal and therefore the need to utilise every bit of metal available, but it may be showing an expansion of the metalworking to include other types of raw material too (Knapp *et al*. 1988, 257; Blackwell 2018, 513). Iakovidis (1982, 226) believes that scrap would have always been recycled and Knapp *et al*. (1988, 257) also argue that it is only natural to start seeing more scrap metal in the late LBA, since the LBA was an era of production of a lot of bronze items, and so it would have been profitable to use it. So, was there really a metal shortage in the late LH IIIB-C like Iakovidis (1982, 226-7) and Blackwell (2018, 514-7, 535) believe? *Can a metal shortage be responsible for the increase in metal hoarding on the late LBA Greek mainland?* The next section deals with this matter.

Late LH IIB-C bronze scarcity or abundance?

In the Jn and Ja tablets from Pylos there are around 400 smiths (*ka-ke-u*): those who were allotted copper or bronze (*ka-ko*) by the palace, those who did not have a metal allotment, slaves (*do-e-ro*) who were probably also metalworkers, and the officials (*qa-si-re-u*) who carried out the metal allotment and were responsible for the return of the finished metal items to the palace (Smith 1992-3, 172, 182-3; Blackwell 2018, 515). The metal given is

usually small in quantity, around 3.5 kg on average of a 28-29 kg copper ingot, the lowest being 1.56 kg and the largest 12 kg (Blackwell 2018, 515), although Smith (1992-3, 185) tells us that the weight of a copper oxhide ingot is around 26 kg. Because of these small quantities, the smiths probably worked for private individuals, outside the palace also, and the idea of travelling smiths for work unrelated to palaces may be indicated by the Gelidonya shipwreck (discussed below) (Smith 1992-3, 180; Blackwell 2018, 515). Unfortunately, however, the tablets do not specify between copper and bronze or ingots, finished objects and scrap metal, but sometimes we may be able to suspect the metal involved (Smith 1992-3, 172-3, 185; Lantzas 2012, 99). For example, tablet Jn 693.5-.8 of Group B includes a total of 26kg of metal allotted to smiths (the standard weight of a copper oxhide ingot), and it is not totalled, which makes Smith (1992-3, 194) believe that it is because the metal was probably in the form of scrap metal, most likely bronze. Bronze or copper in the form of scrap metal or whole items from temples may also have been collected from sixteen towns of the Pylian kingdom by officials, as may be inferred from tablets Jn 829 and 881+896 (Smith 1992-3, 205, 208).

Blackwell (2018, 516) believes that, the fact that there are so many smiths with small amounts of metal or not at all, it must mean that there was metal shortage that only happened recently because, otherwise, there would have not been so many people learning and practising bronzeworking if copper and bronze were short. However, explanations for the situation of smiths without metal allotment include that they may not have been trained to produce finished items yet, and so they were not expected to produce finished goods yet (Smith 1992-3, 179). Lantzas (2012, 91) also suggests that these smiths were manufacturing items from collected scrap bronze for individuals who were not part of the palaces. Additionally, Jn tablets 601.7 and Jn 389.7 record extra metal amounts that are not allotted

to any of the smiths they record, even though there are smiths in these tablets who receive no metal allotment which probably means that not all palatial metal available was given to smiths (Smith 1992-3, 189). I think that this may suggest that the palace may have had a lot more copper and bronze available but for some reason chose to not allot all of it. The small amount of metal allocated to the smiths may have been enough for the successful repair of existing objects, rather necessarily, for the manufacture of new items (Knapp *et al*. 1988, 257).

The Cape Gelidonya shipwreck of the late 13th century in southern Turkey (**Fig. 12**), the probable origin of which is Syro-Canaanite, proto-Phoenician or Cypriot, had a cargo notably of scrap bronze and copper ingots, altogether weighing around one ton, which more likely indicates opportunistic metal exchange at a private level in a small scale (Bass 2012, 797, 800-2; Pulak 2012, 869; Blackwell 2018, 513). There were 54 copper ingots with many fragments of them from Cyprus, and 18 round flat bronze slabs, all but one made of copper from Laurion in Greece (Muhly *et al*. 1977, 358; Bass 2012, 800; Jansen *et al*. 2018, 569). Tin was also carried (Bass 2012, 800). It is interesting to note that chemical analysis of two of the bronze slabs performed by Muhly, Wheeler and Maddin have shown that the slabs, although made of bronze, have a lower tin quantity than good-quality bronze, indicating that they were probably made of scrap bronze (Muhly *et al*. 1977, 358). However, although this is a possibility, Jansen *et al*. (2018, 570) argue that this may be the case because the slabs were made from an ore that contained both copper and tin, which would have produced a low-tin bronze, and which characterises the Kamariza deposit in the Laurion specifically. The bronze scrap included broken Cypriot tools such as ploughshares, axes, knives, chisels, adzes and axe-adzes alongside hooks, a spade and casting waste (Bass 2012, 800). According to Sherratt (2000, 87), Pulak (2012, 869-70) and Blackwell (2018, 513), this

indicates the trade in scrap metal alongside bulk copper trade in the Aegean and the eastern Mediterranean as part of a smaller, opportunistic trade that must have been happening in the preceding centuries too alongside the directed long-distance palatial trade between different states (see Uluburun shipwreck below). Tools found on the ship including two stone hammerheads, a bronze swage, an anvil-like stone, stone polishers and a whetstone suggest to Sherratt (2000, 87) and Bass (2012, 800) that there might have been a bronzesmith on the ship who was travelling to different areas to collect scrap and manufacture new items to trade.

In contrast to the small cargo of metal scrap of the Cape Gelidonya shipwreck, the Uluburun shipwreck in southern Turkey (**Fig. 12**), which sunk in the late 14th c. BC, reflects the exchange of goods primarily as raw materials at a palatial level during that century, which included about ten tons of Cypriot ingots of pure copper (474 ingots in total), about one ton of tin from the Taurus Mountains in Turkey and from an area in or near Afghanistan, copper-alloy and tin vessels, Canaanite and Egyptian jewellery, scrap of gold and silver, gold and silver ingots and lumps and other exotic non-metal cargo (Sherratt 2000, 83; Pulak 2012, 862-9; Blackwell 2018, 513). According to Pulak (2012, 869-71), the ship was of Levantine origin and possibly heading to Greece, and this enormous and exotic cargo which was probably part of direct 'royal gift exchange' conducted between elites and palaces, is surely a sign of the prosperity and extensive trade in the Mediterranean that characterises the 14th century. Pulak (2012, 869) suggests that intact jewellery and precious scrap may have been used as bullion, since several of the jewellery had pieces removed from them with a chisel. The precious scrap in the ship may also indicate that such scrap was also exchanged and utilised in the 14th c. to manufacture new precious items. Bronzes of western Mediterranean origin and the Balkans including two spearheads, a pin, and a sword indicate, according to

Sherratt (2000, 84-85, 87), the beginning of the spread of bronzes from these areas all over the rest of the Mediterranean in the oncoming centuries, which suggests that there was a lot of bronze added in circulation. The presence of an Italian sword with a poor-quality blade may have been intended as scrap metal (if not damaged by its long stay in the sea), which would in turn indicate that bronze scrap was circulating in the 14th c. too (Sherratt 2000, 84, 87).

The Aegean does not have many copper sources and the large quantities of bronzes produced on the mainland suggest that the mainland relied heavily on imported copper and tin (Knapp *et al*. 1988, 251; Blackwell 2018, 510). Cyprus was one of the major copper sources in the Mediterranean, and most of the copper ingots in the LBA, especially from the 14th c. onwards are Cypriot, as also indicated by the Cape Gelidonya and Uluburun cargoes (Knapp *et al*. 1988, 252, 256; Pulak 2012, 866; Jansen *et al*. 2018, 554, 556, 561). Tin was probably sourced from east Mesopotamia, Turkey and the area of Afghanistan (Pulak 2012,

866). Cline (2021, 106-132) speaks of massive destruction across the Aegean (see below) and the Eastern Mediterranean close to the end of the 13th c. and the 12th c, such as northern Syria, southern Canaan, the Mesopotamia, Anatolia and Cyprus and unrest in Egypt. There were two Hittite invasions of Cyprus around the late and final phases of 13th c. and sites such as Kition, Enkomi, Maa-Palaeokastro, Kalavasos-Ayios Dimitrios, Hala Sultan Tekke, Sinda and Maroni had suffered destructions around the very beginning of the 12th c., attributed to fires, earthquakes, and enemy attacks (Cline 2021, 127-30). As a result, contacts with the eastern Mediterranean decreased, including those between the Aegean and Cyprus (Deger-Jalkotzy 2008, 390, 405). On the Greek mainland too, destructions are observed since the LH IIIA and earlier phases of LH IIIB including at Mycenae, Tiryns and Thebes (French 2009, 108; Kilian 1996, 65, 67; Dakouri-Hild 2001, 106-7; Middleton 2010, 14; Cline 2021, 125). At the end of the LH IIIB/beginning of LH IIIC, widespread destructions largely accompanied by fire and attributed to several theories which are beyond the scope of this thesis to look at in detail, occur at Mycenae, Tiryns, Midea, Thebes, Orchomenos, Gla, and Dimini and the palaces there were destroyed (Iakovidis 1995, 73, 77; Dakouri-Hild 2001, 106-7; Deger-Jalkotzy 2008, 390; French 2009, 108; Maran 2009, 242; Middleton 2010, 14-5; Dickinson 2012, 487). At Athens, however, there is only evidence of sudden abandonment of houses on the North Slope near the Acropolis around this time, indicated by pottery left on the floor of houses (Broneer 1933, 355), even though Middleton (2010, 15) argues that they may have been destroyed. For the fate of the Mycenaean town of Anthedon, unfortunately, there is not much mention in the scholarship.

Despite the collapse of the Mycenaean palatial system, there is evidence of repair and building of new structures within the citadel at Mycenae and at Tiryns in the post palatial period (LH IIIC) (Maran 2006, 124-7; Deger-Jalkotzy 2008, 397; French 2009, 109-10; Cline

2021, 127). During the post-palatial period, although goldwork, silverwork, ivory working and other areas of activities like textiles dropped or disappeared, but there was still high quality bronzework and new weapons appear on the mainland while older weaponry was developed further (Iakovidis 1982, 227; Deger-Jalkotzy 2008, 399-401; Dickinson 2012, 486; Lantzas 2012, 100). It is assumed that Naue II type swords appeared on the mainland in the LH IIIC (e.g. Deger-Jalkotzy 2008, 401), but if the Tsountas hoard dates in the LH IIIB and not the LH IIIC, then the Naue II sword included in it may be evidence that this type of swords was actually introduced earlier in the Aegean (Jung and Mehofer 2008, 125-6). The high-quality bronzes suggest to me that the artisans were able to practise their bronze-working skills and achieve high-standard bronze work probably because bronze (and possibly copper and tin) must have still been available in good quantities. Lantzas (2012, 99) also believes that scrap bronze and the recycling of bronze objects must have ensured in maintaining good quantities of the metal in circulation even after the collapse of the palaces. Lantzas (2012, 95-7, 103), referring to metal hoards from Mycenae like that of Poros Wall, Tsountas, Mylonas and Schliemann, even suggests that they may represent excess metal stored in the ground by itinerant smiths and Spyropoulos (1972, 197, 199, 201, 203), has also expressed this view for the mainland metal hoards that he examined; they do not show an impoverished in metal Mycenaean world and that large amounts of scrap would indicate that there was plenty of metal available. Sherratt (2000, 83) even goes as far to suggest that iron was introduced because there was too much bronze available. Also, the Tiryns hoard and the large quantity of bronzes in the House of the Tripod Tomb (twenty double axes, an unidentified tool, and four tripod cauldrons) also show that some individuals still possessed exceptional amounts of bronze and gold in the late LH IIIB and LH IIIC (Onasoglou 1995, 25-9; see also Pl. 9-15; Lantzas 2012, 103-4).

It is indeed very tempting to explain the deposition of metal hoards from the mainland during the end of the LHIIIB and onwards as a result of the generalised unrest caused by events that caused destructions and the collapse of the palatial system. It is only natural during a destruction event that can cause economic, social, and political tensions to fear for one's valuable personal belongings and hide them. But destructions did not suddenly appear during this time, as they are observed since the LH IIIA. Also, safekeeping would have surely happened anyway and as Middleton (2010, 12; 15) pointed out, not all destructions need to be indications of hostilities, as some of them may have been the result of deliberate destruction for replanning or accidents. I do not think that there was necessarily a metal shortage on the mainland late in the late LH IIIB-C. Sherratt (2000, 88) even argues that scrap hoards of precious gold and silver and bronze in Cyprus at the late 13th c. Pyla-Kokkinokremos site indicate the large quantities of metals available in the Mediterranean in the late 13th century. To me the views expressed by Spyropoulos, Sherratt, and of Knapp *et al*. that the appearance of scrap metal in the LBA and its utilisation indicates the availability of metal for use rather than shortage makes sense. This is because, thinking about how much metal would have been wasted if all the broken and "useless" bronze objects were just discarded never to be utilised again in one way or another, the fact that the Mycenaeans would have not noticed the amount of metal they were wasting sounds unrealistic to me. Therefore, I believe that the reason of the increased number of metal hoards on the mainland during the late LH IIIB-C, and the deposition of the hoards studied in Chapter 2, could have been anything other than a shortage of bronze/copper/tin, or at least a significant one, in the Aegean caused by the destructions and impacts on trade routes between the Aegean and the eastern Mediterranean. I think it is not possible to know why the aforementioned hoards were deposited, and their deposition might not have been

directly related to the destructions that happened in their surroundings (e.g. Mycenae, Tiryns, Orchomenos and Thebes). Even a fear of a future copper/bronze shortage generated by the destructions on the Greek mainland and the eastern Mediterranean from as early as the early 13th c. BC may account for the deposition of these hoards and the increase in bronze/copper hoarding. Similarly, if goldworking was impacted, the deposition of the Tiryns hoard may reflect an effort in securing some of the gold objects available in the LH IIIC.

4.3 Comparison of funerary and non-funerary metal assemblages and the 'legal looting' of the dead

This section is the comparison of the funerary metal assemblages of Chapter 3 that I have considered as more than "pure" grave goods and funerary ritual implements (those on and underneath the bench and on the floor of the tholos tomb at Kokla, in pit 3 in the tholos floor of the Nichoria tomb, in the pit in the stomion of Dendra tomb 2, and in shafts V and II in the chamber floor of Dendra tombs 7 and 10 respectively) with non-funerary metal hoards of Chapter 2 in **Tables 20** and **21** followed by a discussion on whether the former can also be described as hoards and a discussion on the 'legal looting' of the dead. Therefore, the last two research questions intended to be answered in this section are: *Are there content similarities between funerary metal assemblages and non-funerary metal hoards? And could the funerary metal assemblages be retrieved from the tomb and put back into circulation, as Iakovidis, Wells, Paschalidis and McGeorge and Paschalidis argue?*

The comparison

Table 20: This table summarises the contents of the LH funerary metal assemblages that I have considered as more than "pure" grave goods and funerary ritual implements in **Table 15**. It shows the groups of objects and whether each assemblage has one or more than one kind of object in its groups of objects. The 'Observations' section includes observations from the comparison of these funerary assemblages with the content of the LH non-funerary hoards in **Table 18**.

Groups of objects and different kinds of objects within each group					
Groups of objects	Kokla tholos	MME Nichoria tholos	Dendra tomb 2	Dendra tomb 7	Dendra tomb 10
Tools	-	One	More than one	More than one	-
Weapons	One	One	More than one	One	-
Toiletry	-	More than one	One	One	-
Vessels/utensils	More than one	More than one	More than one	One	More than one
Jewellery/ornaments	More than one	-	-	-	-
Other	More than one	-	One	-	-
Observations: Most funerary metal assemblages contain 4 groups, like the Mylonas hoard and only the Dendra tomb 2 contains as many groups as most non-funerary hoards (5). Dendra tomb 10 may be compared to the hoard from the Arsenal at Thebes because it also contains the fewest groups (1) of the funerary assemblages. Regarding the groups of objects, I do not think that there is a distinct difference between the funerary metal assemblages and the non-funerary assemblages studied. In terms of different kinds of objects within each group, from the non-funerary hoards, only that of Thebes (Arsenal) contains more than one kind of object in all its groups of objects. From the funerary metal assemblages, only that from Dendra tomb 10 contains multiple kinds of objects in the group of objects that it has (in this case only vessels). Therefore, in this aspect, the funerary metal assemblages are not any different from the non-funerary metal hoards.					

Table 21: This table summarises the different kinds of materials (metals and non-metals) represented in the LH funerary metal assemblages that I have considered as more than "pure" grave goods and funerary ritual implements. The 'Observations' section below are the observations from the comparison of the materials present in these funerary metal assemblages and the LH non-funerary hoards of **Table 19**.

Kinds of material					
Material	Kokla tholos	MME Nichoria tholos	Dendra tomb 2	Dendra tomb 7	Dendra tomb 10
Copper	-	-	-	-	-
Bronze	✓	✓	✓	✓	-
Gold	✓	-	-	-	-
Silver	✓	-	-	-	✓
Iron	-	-	-	-	-
Non-metal	Carnelian, glass, green stone, steatite, ivory	-	-	-	Ivory, pottery

Observations: It is clear that the metal represented mostly in the funerary and non-funerary metal assemblages is bronze. The presence of gold and silver in the metal assemblages in the Kokla tholos and Dendra tomb 10 sets them apart from most non-funerary hoards, except those of Tiryns and Tsountas. Silver, however, is present only in the metal assemblages of these two tombs and so these assemblages are unique. Copper, however, is found in the Poros Wall, Mylonas, and possibly Anthedon hoards and iron only in that of Tiryns and not in the funerary assemblages. In this aspect, these non-funerary hoards are unique. One aspect which unites some of these funerary assemblages with the hoard of Tiryns only, is the inclusion of non-metal objects, which do not form the greatest part of these funerary assemblages, and this is observed at Kokla and Dendra tomb 10.

Based on **Tables 20** and **21** and given their similarities with non-funerary metal assemblages that have already been considered as hoards, I believe that it may be reasonable to consider the funerary metal assemblages hoards. They definitely fit the category of a mixed hoard, since they are made up of several different groups of objects, except the metal assemblage from Dendra tomb 10. I need to point out, however, some further observations from **Tables 5** and **15**; although all non-funerary hoards from the mainland studied here contain ingots (i.e. a raw material) this pattern is not observed in the tombs under study. Also, regarding the kinds of tools, these are not the same between the funerary and non-funerary assemblages. For example, the only tools represented in the funerary assemblages are knives, an axe, and cleavers, along with a fishing spear (the latter not found in any of the non-funerary hoards studied). The non-funerary hoards include knives and cleavers, and also chisels, awls, saws, files, sickles, double axes, drills and hammers. Taken together, the tomb context of the funerary metal assemblages was definitely responsible for the slightly different content of these assemblages, since the funerary metal assemblages' primary purpose was to convey the status of the deceased and to serve as necessities in the afterlife following the contemporary funerary practices and traditions. Of course, the context is also different. However, we may note that although both the funerary metal assemblages and all non-funerary hoards come from completely different context, they do come from elite contexts such as a palace or in its vicinity and a rich tomb (except the Anthedon hoard) (Chapters 2 and 3). Finally, these funerary metal assemblages are made up of more than two metal objects, and so they meet the required number of objects for them to be called hoards. Keeping these things in mind, I support Spyropoulos', Paschalidis and McGeorge's and Paschalidis' claim that funerary metal assemblages and particularly the ones examined are hoards, and so in my definition of hoards, the funerary context should be added.

The 'legal looting' of the dead

Could these funerary metal hoards be retrieved from the tomb and put back into circulation? This is where the chamber tombs N and H in the Achaea Klauss cemetery in northwestern Peloponnese mentioned briefly in Chapter 1 come into the discussion. chamber tomb N contained a bronze handle probably belonging to a bronze kalathos that was possibly a grave good accompanying the secondary burial K, and chamber tomb H contained a bone hilt-plaque once from a bronze knife that formed part of the grave goods deposited with secondary burials on the east side of the chamber floor (Paschalidis and McGeorge 2009, 81, 84; Paschalidis 2018, 69, 117, 123, 464). Generally, Paschalidis (2018, 464) observes that most of the bronze items found together with secondary burials in this cemetery were broken and incomplete and that this is not the case with non-metal items or with metal objects of burials *in situ*. It is possible that the knife to which the bone plaque belonged to in tomb H, and the vessel to which the handle in tomb N belonged to may have been accidentally or intentionally broken during use e.g. during rituals for the secondary burial of the dead. Certainly, ritual killing of bronze objects as part of secondary funerary rites has been observed at other tombs e.g. a broken bronze knife in the LH IIA tomb ATR 2 at Epidavros Limera (Gallou 2020, 43, 144) and as seen in Chapter 3, intentional fragmentation, albeit of pottery, often accompanied secondary burial rites. But again, where did the rest of these artefacts in chamber tombs N and H go? This is clearly intentional, and it must be a sign of 'legal looting' (Paschalidis and McGeorge 2009, 84; Paschalidis 2018, 464). Therefore, metal grave goods may have been 'temporary hoards' which might have been recycled or exchanged in the future (Paschalidis and McGeorge 2009, 84; Paschalidis 2018, 464). Another piece of evidence that may support the 'legal looting' theory, is the condition of the two tombs at Achaia; both chamber tombs, as most of the chamber tombs

in this cemetery, were found sealed and therefore they were not disturbed by grave robbers after their final closing (Paschalidis and McGeorge 2009, 81). Indeed, why would have the robbers tried to seal the tombs after plundering them?

Chamber tombs N and H in the Achaea Klauss cemetery remind us of the cases of the Nichoria and Kokla tholos tombs. In the case of Nichoria, there was a carved bronze band in pit 3, possibly a rim band of a missing large vessel like a basin, judging by other earlier similar metal vessels with additional metal rims (Wilkie 1992, 261; **Table 15**). Since this tomb was looted (indicated by part of the stomion missing) (but Pit 3 remaining undisturbed), and since it has evidence for reopening for secondary burials (disturbances in the blocking wall of the stomion and the careless rebuilt of it) (McDonald *et al*. 1975, 76-7; Wilkie 1992, 246), we may be dealing with another case of 'legal looting', where family members of the deceased may have removed the body of the vessel to which the bronze band belonged to. Wilkie (1992, 277) has suggested this too for the metal armour whose fragments have been found in the tomb. Another suggestion may be that the vessel had been broken by the plunderers and then the bronze band was placed in Pit 3 by the family members who may have cleaned the tomb on several occasions during its use (Wilkie 1992, 250, 253, 255), but to me there is no clear reason why the plunderers would have removed the bronze band (unless it dropped somehow). However, we should also consider the possibility that the body of this vessel might have been made from a perishable material, like wood, which has perished, leaving behind only the bronze rim band. In the case of the Kokla tholos tomb, there was a gold sheet overlay, once part of a missing vessel, found on the floor of the tholos (**Table 15**). We saw earlier that this tomb was not looted, although the construction variations of the door and the steps at the base of the door and the fact that there are no skeletal remains found in the tholos are evidence for the reopening of the tomb and the

removal of human skeletal remains following secondary burial to a different location (Demakopoulou 1990, 113, 121). According to Demakopoulou and Aulsebrook (2018, 129), the material of the vessel this gold sheet overlay once covered cannot be determined and it might have been made either of metal or of stone or wood. Accordingly, if the vessel was metal, it might have been removed as part of the 'legal looting' of the tomb.

4.4 Concluding remarks

I believe that, given the similarities between the funerary and non-funerary metal assemblages studied in this thesis, the former should also be considered hoards, and more specifically, mixed hoards. The differences between these two different types of metal assemblages should not necessarily prevent the funerary metal assemblages from being considered as hoards, since, as already mentioned, hoards are not identical. Therefore, I believe that Spyropoulos' claim is correct and that the funerary context should also be included in the numerous contexts of the dryland where metal hoards can be found. I also support the view that they can have a dual purpose: that of status-displaying and afterlife goods of the deceased, as well as 'temporary hoards'. I find Paschalidis' and McGeorge's view of the broken handle and missing knife blade in the Achaea Klauss Chamber Tombs N and H representing the 'legal looting' of the tombs convincing, since this breakage and missing parts of bronze objects is only observed in grave goods of secondary burials. Accordingly, I believe that the funerary metal hoards in the tomb at Kokla, pit 3 in the tholos floor of the Nichoria tomb, the pit in the stomion floor of Dendra tomb 2, shafts V in the chamber floor of Dendra Tomb 7 and shaft II in the chamber floor of Dendra tomb 10 could have been hoards representing metal assemblages intended to be retrieved in the future and that these tombs are therefore some kind of family treasuries, where usable metal may

have been hidden and kept safe. I think this is particularly visible in the cases where funerary metal hoards are found in pits and shafts in several of the tombs studied here, since they look like they are placed in there to be stored. Although grave goods could have been deposited in pits in tombs to hide them from robbers, or in preparation of new burials in these tombs (Kontorli-Papadopoulou 1987, 157-8), subsequently, this would have ensured that the family of the deceased could have removed the metals from these pits/shafts when they would need them.

Finally, the fact that scrap bronze was traded as in the case of the Uluburun and Cape Gelidonya shipwrecks, surely indicates that people knew that even scrap metal is still usable metal that can be melted and turned into something useful that they can then use or exchange. Also, the fact that there was good-quality bronze work in the 12th c. also suggests that there was still bronze available for the craftsmen to learn and practise their bronze-working skills. I am not able to agree with certainty with Blackwell, that the intentional structuring of the content of the hoards of the Poros Wall, Mylonas, Tsountas, Athens Acropolis, Orchomenos, Thebes (Arsenal) and Anthedon possibly by the palace was the result of tighter monitoring of metal due to a metal shortage. If the similar structure of these hoards is not coincidental and if indeed the palace was trying to tightly control metal by carefully structuring metal hoards, I cannot tell if it was an existing metal shortage to blame. I think instead that it would have been the result of the *fear* of a copper/bronze shortage, generated by the destructions that were taking place all over the Aegean and the east Mediterranean from as early as the early 13th c. BC. Safekeeping would have surely happened anyway, like nowadays for example, where people hide/store large amounts of money and other precious items to avoid losing them in case of a robbery.

As a future step, this research could include the systematic investigation of LBA non-funerary and funerary metal assemblages from Crete to examine how these two kinds of assemblages compare with each other and whether the Cretans were also storing metal hoards in tombs for cases of emergency, as Baboula (2000, 75) has suggested for the Cretan LBA cemetery of Armenoi. Furthermore, in order to get a more complete image on how the metal hoarding practice evolves from the EH to the LH on the mainland, a future comparison between EH, MH and LH metal hoards could be expanded to include the rest of the LH metal hoards of the mainland that have been excavated to date (**Fig. 4**). The comparison could go even further and include EBA-LBA metal hoards from the Aegean islands and Crete and see how the metal hoarding practice evolves in the wider Aegean.

Finally, as a further step forward in the study of BA Aegean funerary and non-funerary hoards, one could focus the discussion on chemical, isotopic and metallographic analyses and reflect on issues of provenance and distribution, as well as on technological knowledge and craftsmanship which may in turn shed light on the value and significance of the objects to the people who chose to deposit them in the hoards. This would be particularly important in the case of the funerary metal hoards discussed in this thesis; if the metal artefacts included in them proved to be foreign or of exquisite craftsmanship, they may have been ideal for exchange in times of need. This may then support the suggestion that these hoards were hidden and separated from the deceased with the intention to be retrieved later. As far as I am aware, such analyses have not been carried out on the funerary metal hoards discussed in this thesis, whereas those available for other funerary and non-funerary BA Aegean metal hoards are regrettably few, e.g. for the EBA hoards of copper artefacts from Rodotopi in Ioannina and Petralona in Chalkidiki (Kleitsas 2019, 19-34), the EBA gold jewellery hoard from Poliochni on Lemnos (Cultraro 2008, 456), the LBA

hoards of bronzes from Stephani in Preveza and Katamachi in Ioannina (Kleitsas *et al*. 2018, 77-98) and a LBA bronze hoard possibly from Palaepaphos on Cyprus (Karageorghis 2019 [and appendix by Charalambous and Kassianidou], 57-60). Noteworthy is the Italian provenance of a Naue II sword from the LBA Tsountas Hoard (Jung and Mehofer 2013, 178-180), whereas the chemical composition of the LBA copper-based ingots from the Poros Wall and Tiryns hoards suggests that the raw metal probably originated from Cyprus and Laurion in Greece respectively (Mangou and Ioannou 2000, 209-216). No doubt, future research in this field could provide further valuable insights into BA metal hoarding practices in the region.

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